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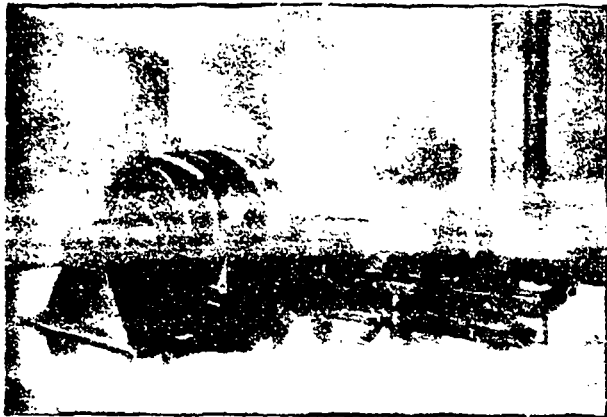
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HIGH SPEED STEAM ENGINES

Centre Crank and Side Crank, Specially Designed for Both Belted and Direct Connection

SEND FOR OUR NEW ILLUSTRATED CATALOGUE No. 6.

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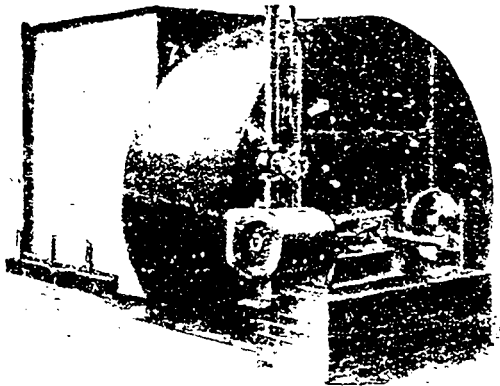
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These are of the latest improved type.

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SAULT STE. MARIE, ONT.

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Suitable for Car Wheels, Cylinders and Fine Castings, where the utmost strength is required.

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Tee Rails, 12, 18, 24 and 28 lbs. per yard.

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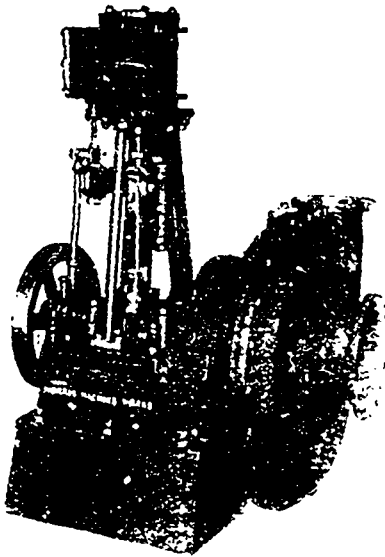
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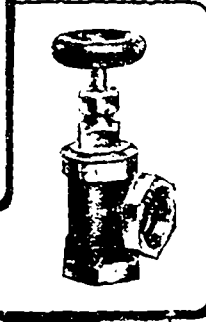
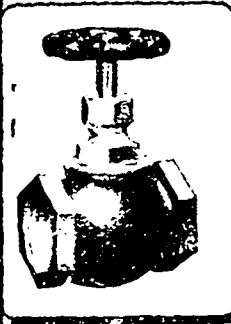


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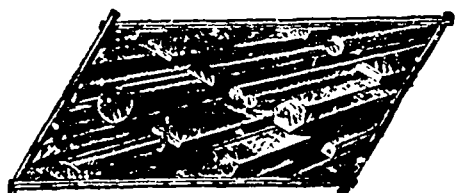
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Equipped with Automatic Feed, Worm Gear
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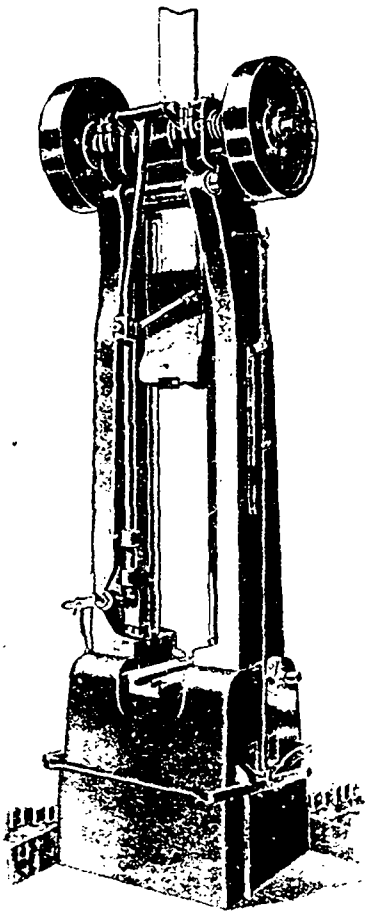
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TRADE MARK

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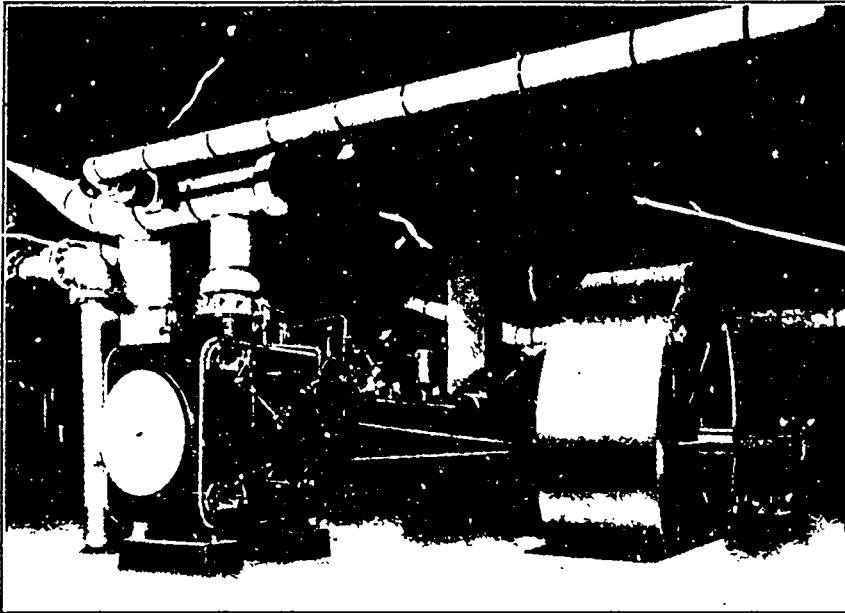
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All Machinery Parts in Steel,
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THE BILLINGS & SPENCER CO.
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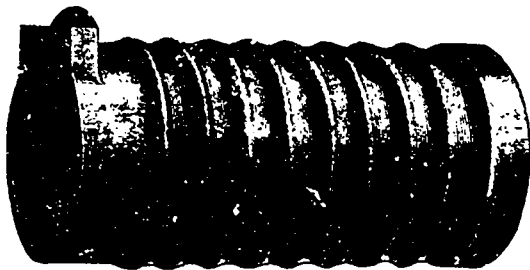


This cut shows one of the six Robb-Armstrong Corliss Engines in the Plant of J. R. Booth, Ottawa.

ROBB ENGINEERING CO., Limited, AMHERST, N.S.

DISTRICT OFFICES } 320 Ossington Avenue, Toronto; Wm. McKay, Manager.
Bell Telephone Building, Montreal; Watson Jack, Manager.
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MORISON Suspension Furnaces

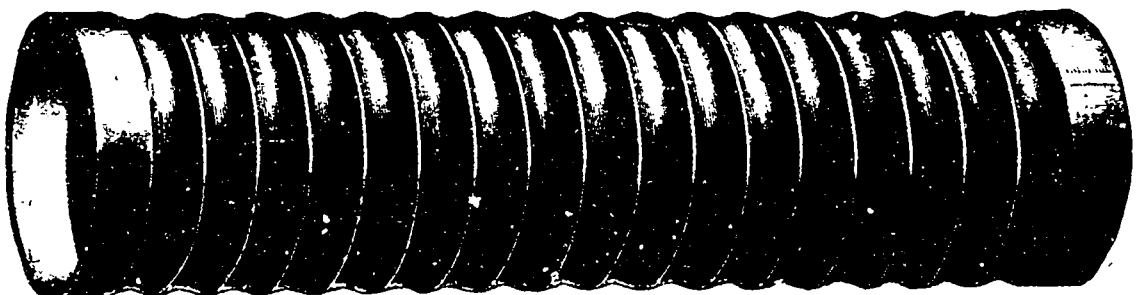


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With Plain Ends or Flanged to any required shape.

Uniform Thickness, Easily Cleaned, Unexcelled for Strength, Unsurpassed for Steaming Capacity.

The universally satisfactory record of "THE MORISON" proclaims it the best furnace made.



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ELLIOTT BUSINESS COLLEGE, corner of Yonge and Alexander Streets, Toronto, ranks highest than the average college, students admitted at any time, advantages unsurpassed, graduates highly successful, catalogue free.

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THE COMMERCIAL PRESS, 17 Lombard Street, Toronto, make a specialty of commercial printing, Circulars, Letter Heads, Statements, etc. Good printing adds to the efficiency of any circular.

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WANTED - Aggressive salesman calling on manufacturers in Maritime Provinces, to carry side line. Good commission. Address CANADIAN MANUFACTURER, McKinnon Bldg. Tor. Ont.

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WANTED - Twelve-inch Belt Tightener; complete, one "Evans" or "Beal" wheat strainer J. H. Dracas, Streetsville.

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FACTORY SITE FOR SALE - A stone building with Mansard roof, water power, 30 feet head, with steam auxiliary, good town plenty of cheap help, no bet or place for a knitting mill, formerly used for a woollen mill, convenient to post office and railway investigate a snap. Address CANADIAN MANUFACTURER.

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ENGINE FOR SALE

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Special Machinery

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We build machinery to help you draw it right.

Save time and stock by using our machinery.

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Manufacturers of

LINOLEUMS FLOOR OIL CLOTHS TABLE OIL CLOTHS

Also Carriage, Stair and Enamelled Oil Cloths, Decorative Burlaps.

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"INTRA" STEEL

Made by Messrs JONES & COLVER, Ltd.

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Specially recommended for Taps, Dies, Punches Chisels, Screw Cutting Tools, etc., combines Toughness and Durability with a cutting power superior to highest grades of Carbon Steel, at less price.

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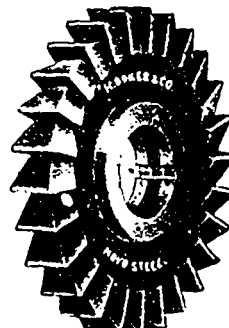
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Milling Cutters

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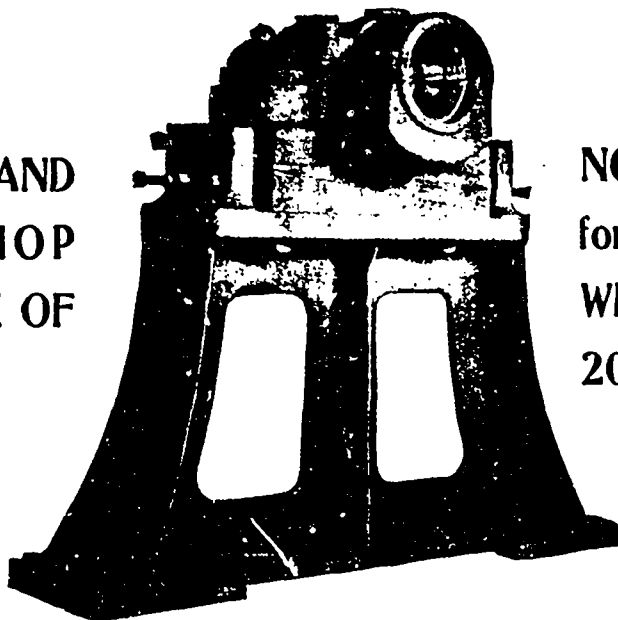


Round, Square, and Flat Bars Cutter Blanks. Sq. Cutters for Tool Holders

334 St. James St. Montreal

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OUR FOUNDRY AND
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FACILITIES ARE OF
THE BEST.



NO JOB TOO HEAVY
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WE SWING UP TO
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QUICK SHIPMENTS ASSURED.

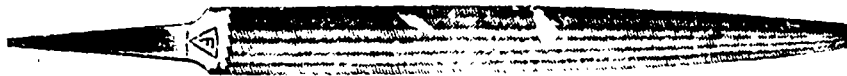
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Toronto - - Montreal

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THE SHEFFIELD FILE

Is sharp, clean, strong and uniform. It cuts quickly and easily. It is as good as new when the other kinds are worn out. Same price as inferior Files.

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ONEIDA STEEL PULLEYS

MADE OF PRESSED SHEET STEEL

STRONG — LIGHT — EASILY HANDLED IN DIFFICULT PLACES — OFFER LESS RESISTANCE TO THE AIR, THEREFORE LESS POWER IS CONSUMED BY THEIR USE

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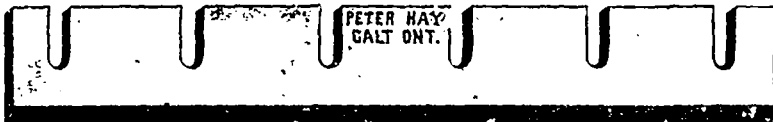
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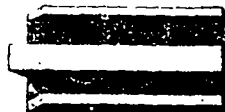
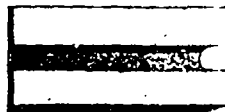
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For WOOD-WORKING,
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MACHINES,



Quality Warranted.

Send for Price List.

SHEAR BLADES,

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Bare and Insulated Electric Wire

Electric Light Line Wire, Incandescent and Flexible Cords.

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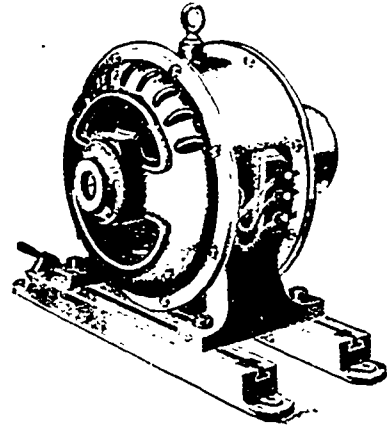
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Transformers,
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**ALTERNATING CURRENT MOTORS
and DYNAMOS for all Circuits.**

REPAIRS PROMPTLY EXECUTED.

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2 42" x 12'	35 H.P.
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2 Locomotive	25 H.P.
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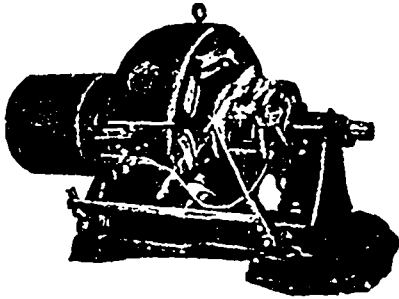
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We manufacture Direct
Current Machinery in all
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Long Distance Phone 1103.

The Electrical Construction Co. of London,
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32-40 Dundas Street, London, Can.

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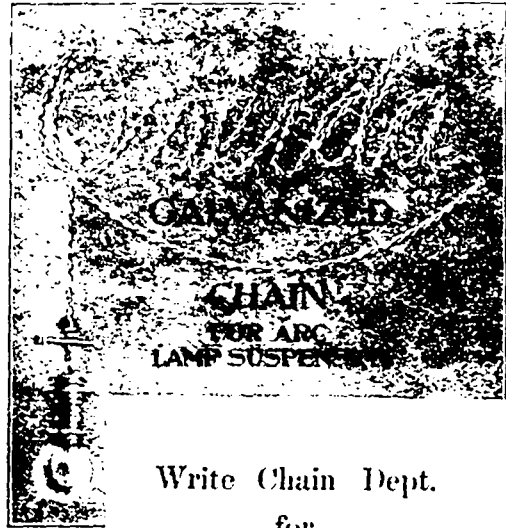
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Multipolar or Bipolar, Direct Connected or Belted.

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We contract for complete installations, including wiring of
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THE WELDING PROCESS FOR THE FOUNDRYMEN
Gives liquid steel at 500° F. anywhere in half a minute.
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STERNE'S ASBESTOS FURNACE CEMENT
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OIL CRUSHERS. LEAD GRINDERS
Color Manufacturers. Varnish Makers
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In short THE CANADIAN MANUFACTURER reaches "The Men Who Buy" for the factories and mills of Canada, the most important purchasing class in the country. The capital employed in these works, including buildings, plant, land, etc., is \$846,585,000.



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THE INDUSTRIAL SITUATION IN CANADA.

One of the problems of manufacturing, and that one of its most serious problems, is to gauge the prospective demand.

No manufacturer can solve this problem by merely examining his order sheets, or even by getting reports from his travellers as to the attitude or intentions of his customers. It is necessary to look beyond local conditions and to examine the business situation as it affects the entire country.

What is the promise of 1908? Should the manufacturers of Canada, in view of the present money stringency and contraction of demand, curtail their production to the minimum- or is there reason for believing that present conditions are but temporary?

Is there ground for the view that the recent money panic in New York has been the cause of a lack of confidence in Canada, which in turn has resulted in the curtailment of demand reported in many quarters?

Or is it true that the "land boom" in Western Canada has collapsed as a result of the poor crop of 1907 and that sooner or later there is bound to be serious losses due to the overstocking of retail stores in the West? And is it true that Canadians have been so favored with prosperity that we have been indulging in a saturnalia of extravagance which must be checked before business in this country can be placed on a safe basis?

The manufacturer whose interests are merely local may gauge his market by personal investigation, but the Captain of Industry, whose market reaches from the Atlantic to the Pacific must keep in close touch with business conditions in all sections of the country and in all branches of industry.

In this issue we are publishing letters from many

leading manufacturers throughout Canada, letters which show conclusions based on broad-minded study of the general business situation throughout the country. Our readers will find these letters well worthy of attention.

It is agreed almost unanimously that the demand during 1908 will not be equal to the sales of 1907.

Yet there is no occasion for pessimism as a result of this conclusion. It is generally agreed that last year was one of exceptional buoyancy and expansion. The demand was exceptional, in some cases phenomenal. It is generally believed that a continuance of such a demand would result in careless, immoderate and speculative methods in manufacturing as well as in trading and that disaster would be the inevitable result sooner or later.

One writer makes the point that if the crops in Western Canada are as small, or smaller, than in 1907 there is likely to be serious contraction in 1909. Several others as well as this writer refer to the other side of this condition. If there is a good crop this year business will at once feel the impetus of ample money and buoyant confidence and thus would be the end of doubt or depression.

Everything considered, the conclusion seems to be that while care must be taken to prevent serious over-production at present high prices there is no reason for doubt as to the future of Canada. With exceptional railroad construction, with unusually large expenditures by Federal and Provincial Governments and by the larger towns and cities on all manner of public works, buildings and utilities, with an influx of immigration as great as poured into the United States when the country had 40,000,000 population; with millions of square miles of splendid agricultural land waiting these immigrants; with vast forests, timber and pulp wood lands yet available; with a steadily increasing mineral production in several provinces; with a development in mixed farming in the older provinces which is giving permanence and stability to that industry and last but not least, with the establishment of new manufacturing industries in all parts of Canada to supply Canadian consumers with Canadian produce, made by Canadian workmen and thus keeping in this country millions of dollars, which would otherwise be sent out of the country, with all these factors, and many others, favorable to Canada, the future of this country is assured.

There may be periods of exceptional demand followed by shorter periods of contraction, but the manufacturer who with courage on the one hand and caution on the other, offers good value to his customers, has nothing to fear from contraction and much to expect from expansion.

THE TARIFF IN POLITICS.

The executive council of the Canadian Manufacturers' Association held sessions in Ottawa on December 5. An important discussion took place on the subject of the appointment of a Tariff Commission. The idea of the association is that the Government should appoint a commission similar to the Railway Commission for the purpose of keeping track of the conditions of trade in Canada and the extent to which Government assistance should be rendered. If the Government decides to ap-

point such a commission the association has decided to establish a tariff branch, in charge of one of the best experts the country can produce, with an adequate staff, for the purpose of keeping the Tariff Commission posted upon the changing conditions of the commerce of the country in order that the commission may be properly advised as to the recommendation it should make to Parliament for tariff changes.

The Mail and Empire in reply, says:

A permanent Tariff Commission is not what is wanted, and would be of little real service as a determiner of Customs duties. No matter how constituted, such a board could not have vested in it powers of limitation of those of Parliament, which must remain the source of all tariff changes and the judge of what taxes on imports are best for the various conditions that are to be satisfied. By "Parliament" is meant the ruling majority in Parliament, which majority usually enacts with little change such tariff measures as the Government introduces. That is, the Government must always be the real Tariff Commission, no matter what group of persons may form the nominal one.

Quite logically, therefore, the Laurier Government appointed some of its own Ministers to the Tariff Commission of 1905, as it had done in the case of the Tariff Commission of 1897. Mr. Fielding, the Finance Minister, was chairman of both these committees of the Cabinet. In the end the duties would have to be so adjusted as to meet his views and the views of his colleagues in office. Why, therefore, waste the time of other Tariff Commissioners for the settlement of imposts that eventually must be fixed in accordance with the Government's sense of their fitness. A permanent Tariff Commission would have its control over Customs duties limited exactly by the same necessities as would an occasional one. If it were an extra-Cabinet body its tariff proposals would have to be acceptable to the Cabinet before they would be recommended to Parliament by the Finance Minister. There seems to be a notion that a Tariff Commission could be constituted and empowered in such a way as to put it on a parallel with the Board of Railway Commissioners. But the latter is practically a court. Its business is to adjudicate in relation to matters for whose settlement the law is supposed to provide. The Board of Railway Commissioners is an administrative and judicial body, carrying out enactments of Parliament, not dictating legislation to Parliament. A commission that should have charge of the tariff might take over the work in reference to that interest both of the Finance Minister and of the Minister of Customs. That would mean no more than to substitute the term "Commissioners" for the term "Ministers." The government of the tariff would, the same as ever, be subject to the will of Parliament.

Those who think it possible and desirable to "take the tariff out of politics" may believe it feasible to establish a Tariff Commission that shall be a more dominant influence in tariff-making than the Government, supported by Parliament. Nobody else does. The tariff must remain in politics, and the men who have the upper hand in politics must have the forming of it. As well say "take politics out of politics" as "take the tariff out of politics," for if the framing of fiscal policy is not part of the business of politics, what is? What is required is the placing of the right men in control of politics. Then the tariff will be arranged in the interest, not of foreigners, but of Canadians.

TO MAKE EMPLOYMENT STEADY.

It is but a short time since Toronto newspapers were printing the lists of skilled mechanics wanted by the leading employers of labor. Men were wanted by the dozen, the score, and the hundred, the aggregate numbering into the thousands. Much of the voluntary immigration was attracted by these reports. It would be a great mistake to curtail all these works at the present time. Employers should endeavor, for their own advantage, as well as for the benefit of their employees, to make employment steady and not spasmodic.—*The Globe*.

The total value of all dutiable goods entered for home consumption into Canada during the nine months of the fiscal year, 1907, was \$152,065,529, upon which \$40,290,171 duties were paid, a total of \$192,355,700; and the imports of free goods in the same nine months were valued at \$105,189,353, the total value of all imports and duties paid thereon amounting to \$297,545,053. Against this large volume of debt incurred in Canada purchasing abroad, we exported goods the produce of Canada during the same nine months to the value \$180,545,306, leaving an unpaid balance of \$136,999,747. This immense indebtedness incurred in our trade with other countries for only three fourths of a year must be paid.

The same condition prevailed last year and the year previous to that, and so on year after year, year after year, until Canada now finds herself "bled white"—use a fanatic phrase of *The Globe*.

The goods which are admitted duty free are usually raw materials or partially manufactured materials to be finished in Canadian workshops; but much of the dutiable goods are of a character that might have been made in Canada, by Canadian labor, or, like wines, tobacco, cigars, silks, satins and similar articles of a luxurious character which the consumer can well afford to pay for.

If the welfare of the people of Canada—the work classes we allude to—were the prime object of the care and solicitude of the government, and if tariff duties were enforced that would afford adequate protection to our manufacturing industries, there would not now be thousands of workmen walking the streets of Toronto in idleness as are now to be seen every day. They would be at work producing such things as are being imported from other lands, affording occupation to foreigners and strangers. A financial and industrial panic is upon Toronto now has soup kitchens at which charity provides cheap food with which pauperized Canadians flock to obtain the wherewithal to sustain life, and the country being drained dry of the hoardings of the people, had laid away their savings for the dark days that are upon us. And all because the food that should be produced into the mouths of Canadians goes to feed the pauper in other lands. Shame! Shame! Shame! Edward Girouard wished that we might have a tariff "as high as Haman's gallows" by which to keep out the products of the pauper labor of other countries to the end that the work might be done at home by Canadian labor—he might with propriety have wished that the ones who have brought about the existing condition of things might feel the halter of pa-

indignation draw tightly around their own throats, and that they might dangle from the gallows of outraged public opinion. How can manufacturers "make employment steady" under the free trade tariff we now have?

"HOLLERING FOR MORE"

The Globe publishes a cartoon entitled "Hollering for more" in which is shown Sir Wilfrid Laurier as a street pie vendor surrounded by a crowd of hungry urchins, representing mechanics, farmers, lumbermen, "clerics" and manufacturers. The manufacturer kid has a slice of pie in his hand and is crying for more favors, while the other kids stand around looking most wistfully and wondering why they cannot share more fully of the feast. The mechanic kid is kicking because of the phenomenal imports of foreign goods into Canada made by the cheap labor of other countries—the benefit of the production of the goods does not come his way as bountifully as it should. The farmer boy wonders why the fruits of his toil are not consumed entirely in the home market instead of having to be transported over land and sea to find sale abroad, the expense of which he has to pay, instead of selling it in the nearby factory town, where the factory workman is hungry and must be fed at least three times a day every day in the year. The lumberman finds that his part of the job consists of chopping the tree from the stump and rolling it into the water, supplying the saw mills and wood working establishments of foreign countries with their raw materials, the product being finished goods upon which duties are charged. He knows that if the tariff were high enough to afford adequate protection, the saw milling and wood-working would be done in Canada, and the excess of production would be sent abroad as fully finished goods instead of the unmanufactured timber as it was cut from the stump. The "clerics" kid shown in the Globe's cartoon is a woe-begone individual supposed to represent the balance of the wage earners of the community who are fast becoming ill fed and out of work because the other kids are being starved at home to the end that the mechanics, farmers, lumbermen, clerics and other workmen of other countries may be fed and fattened at the expense of Canadian industries. Sir Wilfrid is made to say that the manufacturer has "got gall when he's the only one of the lot that gets a share of the pie." His pie is big enough to go around if he would only divide it. Why not divide the pie, Sir Wilfrid? Haman's gallows, alluded to by Edward Gurney, is shown in the background, indicates the height of the tariff wall which, if raised, would make all the boys happy and contented, but the tariff wall against which Sir Wilfrid has his back is a measly little affair that needs building higher. All the kids seem dissatisfied with it.

PROTECTION IN ENGLAND.

While it is loudly and persistently claimed that Great Britain is ultra free trade in all things, such does not seem to be borne out by facts. There are numerous instances in which it can be shown that Britain maintains a decided-

ly protective policy, one of which is the manufacture of tobacco. Chamber's Encyclopaedia in its article on "tobacco," says: "Tobacco, owing to the high rate of duty when in any manufactured form, is mostly imported in the leaf, but small quantities are brought in, chiefly for re-export, in various states of manufacture." No British farmer is allowed to grow tobacco under a penalty of £1,000 fine and one year imprisonment, the exception being in favor of the medical gardens attached to three universities, where the space allowed for the cultivation of tobacco is restricted to an area of only sixteen and a half feet square.

This is rather rough on the vaunted freedom of the British agriculturist, and all the more so when it is remembered that a purely protective duty of 1s. 6d. sterling per pound is levied on manufactured tobacco over and above the revenue duty of 3s. 6d. sterling per pound on leaf tobacco; and that while the leaf must be imported—and it is a commercial offence to produce it in the country—the foreign manufactured article is also absolutely shut out by the exceedingly high duty. All the manufactured tobacco that is consumed in Great Britain must be manufactured there or imported leaf.

THE IRON INDUSTRY IN CANADA.

In the article dealing with the development of the iron industry in Canada, in the last issue of this paper, we omitted to mention that the experiments in the electro-thermic process of smelting iron were the outcome of an investigation made by the Dr. Haanel Commission. The appointment of this committee was, in turn, the result of representations to the Dominion Government by Mr. Louis Simpson, now manager of the Montreal Cotton Co., who took a great interest in the matter.

EDITORIAL NOTES.

The Canadians have pointed out very feelingly that never, under any circumstances, will their forests be devastated in the interests of the American paper markets and that should that threat ever materialize they would protect themselves against it by an export duty on all lumber products equal if not greater than the tariff which the United States should have agreed to forego. In view of this exceedingly common sense and obvious proceeding on the part of our Canadian neighbors we are in some degree compelled to hesitate before we extend our congratulations to the American publishers who have just enjoyed such an exceedingly pleasant and reassuring interview with Mr. Roosevelt.—New York Sun.

The New York Commercial quotes the state report which shows that whereas insurance companies with head office in New York state showed an increase of \$598,493,084 insurance on their books in 1902 over the year previous, the year 1906 showed a loss of \$148,960,393 as compared with 1905. Serious punishment for business immorality!

The Industrial Outlook in Canada for 1908

MANY ANSWERS FROM PROMINENT CANADIAN MANUFACTURERS TO THE QUESTION: "Do You Expect Serious Business Contraction in Canada During 1908 as Compared with 1907?"

An Opinion From President Rolland.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—I have duly received your letter of the 9th inst., informing me that you desire to publish the views of the manufacturers on the expectation of business of 1908 as compared with that of 1907. In answer, I would say that it is a difficult matter to answer so early in the season.

However, I expect that the importation of foreign goods will diminish, especially in the Articles de Luxe. There may be some diminution in the production of our Canadian manufactures, but I believe that if we have a good crop in the North-West this year, everything will improve; because even presently the financial position of the banks has already improved. I remain, gentlemen, Yours very truly,

J. D. ROLLAND,
President, CANADIAN MANUFACTURERS' ASSOCIATION,
Montreal, January 13, 1908.

Extending Sales Staffs.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—In our opinion the amount of railroad building in sight throughout the entire country, with the consequent expenditure distributed among a comparatively small population, should be an immense factor in sustaining general trade. It is a well known fact that the lumber cut throughout the country, from New Brunswick to British Columbia, will be much less this spring than last, owing to the amount of unsold lumber on hand, and this will have a considerable effect upon the mill trade. I believe that conditions are more prosperous throughout the Province of Quebec and East than they are in any other portion of the country. The coal and steel industries in Nova Scotia seem to be on an exceedingly prosperous basis. I also note with interest the prospects for development of the iron business in New Brunswick. We are increasing our sales staff by about 15 per cent. in order to cover the country more thoroughly, and are this year opening branches at Calgary and St. John, N.B., which, I think, is an indication of our confidence in the general conditions and ultimate future of the country.

Yours truly,
THE CANADIAN FAIRBANKS CO., LIMITED,
H. J. FULLER, President.
Montreal, January 9, 1908.

Much Depends on Spring Seeding.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Answering your enquiry would say that business for 1908 is a question that cannot well be solved at present.

Trade is quiet just now, and prospects are not so bright as last year. If the spring opens up favorably, and seeding is quickly done, I think this will cause confidence to return to many who are at present doubtful of the outlook.

I remain, Yours faithfully,
HENRY COCKSHUTT
HARRY COCKSHUTT
Brantford, January 14, 1908.

An Incident in Trade Adjustment.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Under date of January 5 we have your inquiry. Do you expect serious business contraction in Canada during 1908 as compared with 1907?

In reply would say that the question at this time is a difficult one, particularly in a country situated as Canada, covering wide territory and having a comparatively small population, there being so many undeveloped resources, the success of which to the comparatively few manufacturers means a quiet or a busy year. To Eastern manufacturers the settlement of the West means an expenditure by the great railways and a demand for agricultural tools, clothing and supplies, and should the agitation to check the flow of emigration for this spring succeed, business generally, in many lines, will be contracted. This, together with the period of dear money or high rates of interest, will have a tendency to curtail business to some extent.

Should we, however, have a favorable winter and good crop prospects for the spring of 1908, would say that we feel confident the recovery of the volume of trade will be rapid, and the present quietness should be considered only as an incident in trade adjustment.

Yours truly,
JOHN BERTRAM & SONS CO.,
HENRY BERTRAM,
Secretary-Treasurer.
Dundas, January 14, 1908.

Development of Canada Will Continue.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—In replying to your letter of January 9, would say that we do not anticipate any serious general business contraction in Canada during 1908 as compared with 1907. We look to see certain lines of business suffer, but do not believe that the development of the country is going to be seriously affected by the recent financial flurry.

Yours very truly,
THE PACKARD ELECTRIC CO., LIMITED,
R. B. HAMILTON, Managing Director.
St. Catharines, January 14, 1908.

An Attack of "Financialitis."

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—As to our opinion of the condition of the market our belief is (and it is founded on close connection with the hardware trade) that they have very little stock on hand. We are receiving regularly small sort-up orders which shows that the stocks of staple lines is exhausted. We anticipate at an early date a very large volume of business.

The financial stringency does not seem to have affected any of our customers; they have all paid up, and we have not a lame duck on our books. There is plenty of money in the country, but it is not being handed out as freely as the electric power campaign literature has been. Of course, the financial question is one to be solved by the makers of money—the bankers—and as we only understand the manufacture of iron work we are not able to solve the financial question, but we do believe after this very bad attack of "financialitis" is over, business will be stronger and healthier.

Yours truly,
TAYLOR-FORBES CO. LIMITED,
JOHN M. TAYLOR
Guelph, Ont., January 13, 1908.

Railroad Construction Will Help.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Replying to your letter of the 9th inst., asking if it is expected that a serious contraction in business will take place in Canada as compared with 1907, I beg to state that last year was a very special one as every line of manufacturing was running to its fullest capacity. With the railroad construction, which will take place this year, and the enormous development of the country, I do not think the present year will be much behind 1907. At present business is quiet and it usually is so at this time of the year. We have every hope that business will soon be in a very prosperous condition as every indication points that way.

Yours truly,
HAMILTON BRIDGE WORKS CO.,
W. B. CHAMBERLAIN
Hamilton, January 13, 1908.

Usual Business But No High Tension.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—We have your favor of the 9th inst., and we note your enquiry regarding business prospects for the current year; in reply to this we might say that as the check to business was so totally unexpected, we think that in all probability when matters settle down, the conditions will become at least as good as the average. Yet we do not look for that high tension, which has existed for the last two or three years. All things considered, we believe that this is for the best as it will give everybody a chance to settle down to real business, which will be more satisfactory to all concerned.

We are making ready for a good spring trade and will be disappointed if same does not open up as usual.

Yours truly,
THE R. McDougall Co., LIMITED,
WM. J. OLIVER, Sec.-Mgr.
Galt, Ont., January 13, 1908.

Doubt as to Extent of Contraction.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Yours of the 9th inst. received. In reply to your question, we would say that there will no doubt be some contraction in business, but whether it will be serious or not I don't think many people are in a position to say.

Yours truly,
DOMINION TEXTILE CO., LIMITED,
C. B. JORDAN, 2ND VICE-PRESIDENT.
Montreal, January 13, 1908.

Will Be Falling Off in Building Trades.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—In reply to your enquiry of January 9, we may state that as far as the building trade goes we believe there will be a considerable falling off in the building line in most of the large cities. A great deal of speculative work will be curtailed owing to the scarcity of money. We believe also that a great many manufacturers will hold off proposed extensions until the money market becomes easier.

If we are favored with a good crop this year in Ontario and the West, we believe that our country will go ahead and everybody will be on their feet again.

Yours truly,
MILTON PRESSED BRICK CO., LIMITED,
J. S. McCANNELL,
Managing Director.
Milton, Ont., January 10, 1908.

Contraction Good Thing for the Country.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—I am in receipt of your favor of the 8th inst. in which you ask "If I expect serious business contraction in Canada during 1908 as compared with 1907." In April last you asked my opinion on a somewhat similar question and in my reply, dated April 30th, I stated amongst other things that I certainly felt that there was bound to be a decided reaction but that it was rather difficult to tell as to when it would take place and I felt that it would be a wise thing to be prepared for it whenever it did come, which might be at no very distant date. You, of course, know what has happened since.

My present impression is that the country is all right and will gradually work into an easier position, but I am of the opinion, speaking generally, that there is likely to be considerable contraction in many lines of business during 1908 but I do not mean that this will affect all kinds of industry and I believe that the check that has been given will in the end be a very good thing for the country. I cannot give you a more definite reply to your question without going into the details at too great a length.

Yours truly,
THE METALLIC ROOFING CO. OF CANADA, LIMITED,
J. O. THORN, Managing Director.
Toronto, Jan. 9, 1908.

Check in Expansion Not an Unmixed Evil

THE CANADIAN MANUFACTURER,

Dear Sir,—I beg to acknowledge receipt of your favor of the 8th inst., and in reply to your enquiry as to the outlook for business in Canada during the year 1908 as compared with 1907, would say that I do not look for very serious business contraction during this year. It is undoubtedly a fact that the financial conditions of 1907 were responsible, particularly during the last quarter of the year, for a sharp decline in the volume of business generally and a decrease in the demand for manufactured products of all kinds.

I am of the opinion that there will be a somewhat lighter demand for goods during the first quarter of this year as compared with last, and that what the stringency in the money market may cause to a limited extent there will probably be a tightness in that direction for sometime longer, and what these conditions last we cannot look for and the volume of business that was in evidence a year ago but notwithstanding this, I do not think that in Canada we shall have any reason to complain.

It must be borne in mind that we have passed through a period of exceptional prosperity, and even though business, as compared with the last few years, be somewhat curtailed, there is still before us what a few years ago would have been considered very prosperous times.

With the large immigration coming into Canada and the developments that are going on throughout the Dominion, the demand for goods of all kinds must of necessity be large, and must be met.

The check in our probably too rapid expansion during the last few years will not be an unmixed evil. I believe that we have good reason to feel forward with confidence.

Very sincerely yours,
CYRUS A. BINGHAM
CANADA SCREW CO.
Hamilton, Jan. 10, 1908.

Expect Good Year, But not up to Last.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—We have your letter of Jan. 9, and in reply beg to state that we do not expect any serious business contraction in Canada, during the coming year. Our business being exclusively copper wire

or electrical work, is quickly affected by any financial disturbance, which may cause new work or extensions by old companies to be postponed, and possibly in some instances abandoned. We expect to do a good business during the coming year, but do not expect it will equal 1907 or 1908.

Yours very truly,
EUGENE F. PHILLIPS ELECTRICAL WORKS, LIMITED,
GEO. H. OLESEN, Secy. Treasurer,
Montreal, Jan. 11, 1908.

No Cause for Alarm.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—In reply to your question in regard to the business outlook I may say that so far as I can judge the outlook for 1908 is fairly good. Conditions generally throughout the Dominion furnish no cause for alarm, and if our people do not lose their heads I do not see any reason why the business of 1908, although perhaps slightly less in volume, should not compare favorably with that of the past year.

Next to cheap and plentiful money, confidence is one of the most important requisites for sound and profitable trade throughout the Dominion. If our people only have confidence in their country and themselves, I see no reason why they should not take heart and go ahead, for after all under normal conditions times are pretty much what the people make them.

Yours very truly,
AMERICAN WATCH CASE CO.,
W. K. McNAUGHT,

Toronto, Jan. 10, 1908.

Much Depends on This Year's Crop.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Your letter of the 9th received, asking for my opinion as to the probable outlook for business in Canada for 1908 as compared with 1907. I do not look for any serious contraction, but, on the other hand, it is not to be expected that there will be anything like the activity manifest during 1908 as has been in evidence during the past two or three years. The reaction, or slowing down, will do good, and is a natural result of the past half dozen years of what might rightly be termed abnormal activity. If 1908 crops are up to, or above the average, general business should show increased activity in the last half of this year and through 1909, but if the crops this year turned out no better than 1907, I am of the opinion that there would be a serious contraction in general trade during 1909.

Yours truly,
THE FROST & WOOD CO., LIMITED,
R. J. WHITE, General Manager
Smith's Falls, Jan. 19, 1908.

Does Not Anticipate Serious Contraction.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Your favor of the 8th inst. is received and in reply would state that we do not anticipate any serious business contraction in Canada during 1908 as compared with 1907. The action of the large railroads of this country in bringing foreign capital into Canada with the object of pushing railroad construction inspires confidence, and we consider speaks well for the continued prosperity of this country. Business with us has shown a marked improvement since the beginning of the New Year, and is about as good as ever.

Yours truly,
A. R. WILLIAMS MACHINERY CO., LIMITED,
A. R. WILLIAMS,
Toronto, Jan. 10, 1908.

Less Business But Safer Business.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—In reply to your enquiry. Do you expect serious business contraction in Canada during 1908 as compared with 1907?

In short, NO. There will be safer business. We have simply taken stock and balanced our books. On the whole we have been pretty safe in our expansion and purchases and there is very little to mark down.

Much of our trouble last year was due to some of our conditions allowed to exist without good reason. Credit is too long and cancellations too frequent.

Another tangible reason for the depression was that many factories prepared by extension to take care of the increased business in sight, but government fiscal arrangements permitted the manufacturers of low wages countries to press a war on Canadian manufacturing and, as in the case of the woolen industry, do a lot of harm.

On page 932 of the monthly report of the Department of Commerce for September, the following figures are given for six months ending September for importations of wool and manufactures of:—1905, \$9,203,792; 1906, \$9,988,165; 1907, \$12,864,211.

This is not inconsistent with the statement that we should not look for continued depression. But one swallow does not make summer, nor one business the trade of the country.

The country's assets are all right, our banks are

well and safely managed, our lands can produce as much next year as in past years, our railways can carry more.

We have health, energy, vitality, ambition and a reasonable amount of good judgment. We have had in earlier years when we were not so strong, problems which might have tested more experienced peoples and in comparison the collective depression of the past few months was more of "bunk-funk" than any real disease.

Yours truly,
TORONTO CARBET CO.,
JAS. P. MURRAY,

Toronto, Jan. 9, 1908.

Last Year Was Phenomenal Year.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Replying to your inquiry of the 9th, we do not expect to have this year anything like the volume of business we had during 1907, which was a phenomenal year, and although there is a depression of trade at the present, we think it is only temporary, and when spring opens up, business will resume to normal proportions, and will equal if not surpass the average volume of business we have had during the past five or six years.

We look forward to a steady growth, and are not at all uneasy about this temporary depression.

Yours truly,
BROWN BOGGS CO.,
W. E. BLANDFORD,

Hamilton, Jan. 11, 1908.

Expects Easier Money But Continued Contraction.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Answering yours of the 9th inst., asking if we expect serious business contraction in Canada during 1908 as compared with 1907, beg to say that as far as the financial stringency is concerned we hope to see very much easier money in the course of another three months, but we are not expecting any very great revival of business until after another crop has been taken off in the West.

There must be no disguising of the fact that factories are running exceedingly light, and after having had a personal conversation with a number of these during the past week have found that their sales are running about one-half what they did a year ago.

The writer knows that many people say this is not a proper way to talk, but there is no use of being optimistic when there is nothing to be optimistic about, and there is no use lying when truth can be told just as well.

We are, Yours respectfully,
THE JOHN MORROW SCREW, LIMITED,
J. A. COULTER, President and Manager,
Ingersoll, Jan. 10, 1908.

Set Back a Result of Extravagance.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Replying to yours of the 9th inst. I do not expect any further serious contraction of business during the coming summer. The present set back is a sort of house cleaning which was required. There was entirely too much extravagance in private living and in the conducting of business. Money was too easily procured and spent with a recklessness which could not last. The cost of production is too high, and until people can reduce their personal requirements to a point at which they can live comfortably on reasonable salaries or wages, I cannot see how things can improve very much.

There has been a tendency lately for people to live by their wits, instead of doing productive work. Too much flocking to cities. It would be much better if our Canadian boys and girls would give more attention to good farming, become good mechanics, or engage in some calling whose object is to produce articles of staple value, instead of crowding the professions, or engaging in work which does not directly tend towards the development of the products of the ground. Don't let that be left to foreigners.

I think there is ample money to meet the legitimate wants of the country, but there has been too many "Get-rich-quick" undertakings gone into and encouraged. Let mining and stock speculation be stopped. Let the savings of the people be invested in things which work for the steady, substantial development of the products of the soil, and the country will recover in a marvellously short time. Canada is a wonderfully rich country, and if the people leave stock gambling, margin buying and selling, etc., alone, and devote their time, money and energy to solid development work, the country will go ahead as fast as can be desired and in a reliable way.

Respectfully,
WM. KENNEDY & SONS, LIMITED,
M. KENNEDY,

Owen Sound, Jan. 11, 1908.

Depends on Crop Outlook in Spring.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Replying to your favor of the 9th inst. asking me if I expect a serious business contraction in Canada during 1908 as compared with 1907.

—My own opinion is that there will be a contraction in business this year over last but the seriousness of it will depend very largely on the outlook in the Canadian West when the spring opens up. If the crop prospects show well I think that by the middle of the year, the demand for Canadian manufacturers will be as great as it was last year. The difficulty with the majority of industrial concerns at present is that they have been straining during the past few years to increase their plants and production to meet the demand and this has resulted in their using their credit up to the limit, so that when the present contraction came on, they were unable to finance the running of their factories. I think that most of the manufacturers feel sufficient confidence in the future to run their factories to their capacity even at present with the idea that there will be a demand for the goods they would thus be enabled to make, but unfortunately they are not in a position to do this on account of the scarcity of money.

I look for a large demand for goods of all kinds within the next six months, and which, when it sets in, should continue.

Yours faithfully,
CANADA GLEF CO.,
LEOYD HARRIS,

Brantford, Jan. 11, 1908.

Less Business Probable—Crops a Factor.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Replying to your favor of the 8th inst., would say that I do not expect that the year 1908 will be as good a year for business as 1907.

If the prospects for good crops are assured early in the season, I think we may look for a substantial improvement in business towards the latter part of 1908.

I remain, Yours faithfully,
KEMP MANUFACTURING CO.,
A. E. KEMP,

Toronto, Jan. 9, 1908.

Expects Less Business.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Answering your enquiry of 8th inst. as to the business outlook for 1908 would say that while we do not consider there will be a serious contraction, still we certainly are of the opinion that the pressure will be substantially modified, all of which we very much regret.

Yours very truly,
DODGE MANUF'G CO.,
C. F. WHIPATON, Manager,
Toronto, Jan. 9, 1908.

Looking for Marked Revival.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Replying to your inquiry of January 9, would say it would be a very great satisfaction to us if we could correctly predict what are the prospects for 1908. It is with us as much a matter of doubt, I fancy, as with other industries. We cannot but feel, however, that there is going to be a very decided and marked revival of business interests in the comparatively near future. The bank reports show a very decided improvement in the financial condition of the country, which with the restoration of confidence that such reports necessarily bring, a fairly good past year's harvest, and the general enterprise of the country, all combine in our judgment to ensure a fair year's business. We feel confident that within the next thirty or sixty days, marked improvements will be manifest. Whether it will equal the activities of the early part of 1907, it is a matter of some doubt, but we believe we shall have a more than average good year.

Yours very truly,
PRATT & LITCHWORTH COMPANY,
O. P. LITCHWORTH, President
Brantford, Ont. Jan. 13, 1908.

Do Not Expect Curtailment.

EDITOR, CANADIAN MANUFACTURER,

Dear Sir,—Answering your enquiry of January 9th, we do not look for any falling off in the volume of business to be done during 1908 as compared with 1907.

We do not think the trade are carrying over heavy stocks, as the demand was brisk until the season was pretty well over, and although there may be a tendency to delay the placing of first orders yet in our opinion, this will quickly adjust itself when the season begins to open up.

In our own business the bookings for the first half of January are quite equal to the corresponding period of 1907, and we do not anticipate any curtailing of output, but on the contrary are looking for an increase over the past year. We are laying all our plans and campaign for a good year, and do not think we will be disappointed.

Yours truly,
THE GALT ART METAL CO., LIMITED,
F. H. HAYTHURST,
Managing Director
Galt, Ont., Jan. 13, 1908.

Prospects Bright in Nova Scotia.

EDITOR, CANADIAN MANUFACTURER.

DEAR SIR.—In reply to your favor of the 9th inst., we cannot see any reason why there should be any serious contraction in the regular lines of business in Canada during 1908 compared with 1907 unless the monetary stringency continues. In any case there will undoubtedly be less speculation, which will be an advantage in some ways, although it may restrict business in some lines.

Yours truly,

ROBB ENGINEERING CO., LIMITED
D. W. ROBB, President

Amherst, N.S., Jan. 13, 1908

Easy Money Will Bring Activity.

EDITOR, CANADIAN MANUFACTURER.

DEAR SIR.—I have your letter of the 8th inst. and in answer to your question, my opinion is that there will be business contraction in Canada this year as compared with 1907. Prosperity was general and expansion large last year. Many old industries increased their plants and many new industries were established. Everything was booming until money became scarce. There is no indication at present that it will be much easier for some time to come. There has followed naturally a curtailment of buying and output. Although prices in some lines have been reduced many manufacturers are short of orders and a few are working on short time. There has been a general steadying down and greater care will be exercised in buying this year. To offset this, immigration can be expected to keep up and the settlement of the West continues, and there will be large expenditure in railroad construction, which, with normal crops, will assist materially in keeping our manufacturers well employed. With easy money we can reasonably look forward to active business as the condition of the country is undoubtedly sound.

Your faithfully,
GOLDIE McCULLOCH CO.
R O McCULLOCH

Galt, Ont., Jan. 16, 1908.

Business Has Begun to Improve.

EDITOR, CANADIAN MANUFACTURER.

DEAR SIR.—Replying to your favor of the 3th inst., would say that our own business has slackened off considerably within the last two months of last year.

We consider this a fair barometer of the conditions of the manufacturers, as they are not in the habit of buying now. Belting when business is slack. Things, however, are beginning to pick up, and as the population in our country is growing, we believe people have the money to buy the necessities; they are also buying mostly Canadian manufactured goods, and at the present time business is picking up and we feel confident that 1908 will not be very far behind 1907, which, to us, was an exceedingly good year.

Yours very truly,

SADLER & HAWORTH
Geo. W. Sadler

Montreal, Jan. 14, 1908.

Imports From Europe a Cause of Stringency.

EDITOR, CANADIAN MANUFACTURER.

DEAR SIR.—In reply to your letter it would seem to me necessary to consider the causes that have conduced to give the Dominion of Canada the trade boom of last year. Those causes would seem to me to have been:

The increase of immigration, combined with the large expenditure made in the North-West on railway extensions, and to these must be added the results of speculative undertakings in certain parts of the Dominion.

Of these three causes the first two are still to be relied upon, the latter has doubtless been eliminated owing to the action of Canadian bankers during the last two or three months. This action has eliminated all inflation out of the trade of the Dominion, and the trade to-day should be and doubtless is in a healthy condition and on a sure foundation.

Therefore the certain continuance of a large immigration next year, combined with a greater earning power of those who came into Canada last year and the year previous, together with the continued immense amounts of money yet to be spent upon railway extensions, should ensure to the Dominion of Canada, if not the boom trade of last year, yet a trade sufficiently good to warrant everyone producing to their utmost.

The dangers, I see, which may influence detrimentally our future trade arises from a possibility, though not a probability, of bad crops this next autumn, and also from a habit which seems to have grown up lately among people in certain quarters, (owing to the difficulty that did exist last year, but which no longer exists in Canada in securing deliveries) of purchasing their requirements in Europe, instead of entrusting their orders to Canadian manufacturers.

I, thinking this matter very carefully over, I cannot but look forward to a reasonably good trade during this year 1908.

I am, yours truly,

MONTREAL COTTON CO.,
LOUIS SIMPSON

Valleyfield, Que., Jan. 13, 1908.

Montreal Builders' Exchange

ELECT OFFICERS AND RECEIVE REPORT—PLAN FOR A LABOR AND INTELLIGENCE BUREAU.

At the annual meeting of the Montreal Builders' Exchange held January 13, the following officers were elected:

President, Thomas Ford.

Vice-president, J. H. Arcand.

Secretary-treasurer, J. H. Lauer.

Executive board, for carpenters T. Charpentier; general contractors, A. F. Byers; plasterers, Jos. Fabien, electrical association, N. Simoneau, painters, W. T. Cassill; plumbers, John A. Eudon; structural iron and steel, D. W. Ross; roofing and fireproofing W. A. Ramsay.

Another member will later be admitted to represent the stone and marble trade.

The annual report of the secretary gave a full account of the proceedings of the year, and showed a very gratifying increase of membership, making the Montreal Exchange to-day the strongest in the Dominion. The financial report showed a balance of \$1,500 to the credit of the Association after meeting all obligations. Owing to the increase in membership and increasing rent of the present rooms it was decided to rent new quarters for the coming year.

THE YEAR'S WORK.

The annual report submitted by the secretary, Mr. Lauer, reviewed the work done by the association during the past year. The following is a brief summary of the progress noted:—

The value of new buildings and repairs for Montreal and suburbs for 1907 totalled \$16,748,135.00.

The membership of the Montreal Builders' Exchange increased 25 per cent.

During the year not a single strike occurred in building and construction in Montreal.

The Builders' Exchange were allotted one representative on the corporation of the new Technical School for Montreal.

The Builders' Exchange were consulted by the Provincial Government with respect to "Compensation for accidents to workmen." There is reason to believe that the basis advocated by the secretary and others, namely, a fixed sum in definite relation to the victim's earning capacity at the time of the accident, and not to exceed three year's average wages, nor the capital sum of \$2,500.00, will be ultimately adopted in the new legislation.

The first annual builders' and contractors exhibition held from August 20 to 23, was a decided success.

Decision of Hon. Justice St. Pierre on October 6, vindicated the right of contractors to make trade agreements jointly and to enforce penalties on defaulting members.

A system of uniform electrical inspection under the auspices of a bureau established by the Canadian Fire Underwriters Association has been established, becoming operative January 2, 1908. Mr. James R. Bennett has been appointed first chief inspector.

A meeting of delegates from Winnipeg and points eastward was held at Toronto in September and laid foundations for the organization of a National Canadian Federation of Builders. This will be followed up with national conventions to formulate

practical measures for the benefit of the building trades. Mr. J. H. Lauer was appointed general secretary.

THE COMING YEAR.

The indefiniteness of the form now used by architects in preparing contracts is a long standing complaint and has frequently resulted in loss to contractors. Progress has been made in the direction of organizing the 28 Builders Exchanges of the Dominion with a view to securing the adoption of a universal contract form. This matter was referred to the incoming executive with a recommendation for a conference with the architects.

Another plan that received the approval of the meeting will result in the Builders Exchange becoming a labor and intelligence bureau for the use of members.

It was decided that upon the application of any three members of the Exchange the secretary should be authorized to advertise in the city papers for skilled mechanics the men to apply at the Exchange office, and be distributed by him according to the applications received by contractors. In addition, it was proposed that cards be furnished to members of the Exchange and filled out with the names of their men. Each member should have a copy of a card to be used for recording on the cards remarks regarding the men's habits and abilities, the reasons for their dismissal, etc., these records to be kept at the Exchange office. If the members co-operate, this plan should be of great value to employers.

HOW THE GAS ENGINE WORKS.

Nothing could be simpler than the working of a gas engine. "You see, when the piston comes up and compresses a lump of gas, a spark jumps in and touches it off and the engine gives a poke, which turns the crank shaft around. Then the piston comes back and chases out the burned gas and takes in a fresh charge as it goes back; then it comes up and the load gets a spark and the piston is blown back and the crank shaft gets another poke, just as before. Every time a spark is let in the engine gets a poke, and gives it to the crank shaft, you see. It's perfectly simple and simply perfect."—Life.

RECORD PIG IRON OUTPUT.

The Dominion Iron & Steel Co., Sydney, which near the close of the year succeeded in making a new record in connection with its blast furnace operations, now announces that it has done even better at the beginning of 1908. This was accomplished in the first week of the new year, when in one day the output of the four furnaces totalled 1,027 for twenty-four hours' continuous operation. This is about twenty-five tons better than the previous record.

Messrs. F. C. Patterson, W. H. Hayes and H. J. Horan have been appointed a commission to administer the telephone system of Manitoba, which the Government of that province recently bought from the Bell Telephone Company.

Smoke Prevention in Large Cities

CONCLUSIONS REACHED BY A COMMITTEE OF MANUFACTURERS, AT SYRACUSE, N. Y.

An important contribution to the literature of smoke prevention in cities has been made by a committee of the Chamber of Commerce of Syracuse, N. Y., a committee noteworthy for the representative character of its membership. John A. Mathews, Crucible Steel Company of America, is chairman, and his associates are John H. Barr, Smith Premier Typewriter Company; W. H. Blauvelt, Semet-Solvay Company; Carleton A. Chase, Syracuse Chilled Plow Company; William Kent, Syracuse University; J. D. Pennock, Solvay Process Company, and John E. Sweet, Straight Line Engine Company. The committee says that it has corresponded with or interviewed the smoke inspectors of several cities where smoke betterment measures have been enforced, and has corresponded with 100 firms representing diverse industries; also with leading makers of smoke preventing devices. Individual members of the committee have investigated the workings of smoke ordinances in Detroit, Cleveland, Chicago and Milwaukee. While the complexity of the problem is recognized, the committee finds that good progress has been made in various cities in abating smoke, and it believes as good or better results can be attained in Syracuse. It does not have great expectations of drastic ordinances, but considers that the enforcement of ordinances must be rendered unnecessary by the hearty cooperation of steam users. Cleveland is cited as an example of a city in which no real results were accomplished until the manufacturers themselves took hold of the matter. Now arrests and fines are the exception. The point is made that when it can be demonstrated that economies may be effected by improved methods of firing the enforcement of an anti-smoke ordinance becomes a voluntary act of self-interest on the part of the manufacturer.

THE MOVEMENT IN VARIOUS CITIES.

The introductory portions of the report are devoted to a discussion of the legality of the present smoke ordinance in Syracuse, a reference to government work on smoke betterment, a summation of the damage done by smoke, and a consideration of the coals available in Syracuse and of other local conditions. Some interesting data appear in the summing up of results attained in other cities. In Rochester 66 stokers representing five different types have been installed, and over 100 devices classified as automatic steam jets, air blasts and draft regulators. In St. Louis 550 boiler plants have been equipped with steam jets and air blast devices, 264 have down draft furnaces, 50 have special firebrick arches and 19 have automatic stokers. At 74 plants electric power is used and 26 burn smokeless fuel. The small proportion of mechanical stokers and the large proportion of down draft furnaces is marked in St. Louis. In Detroit the opposite tendency is noticed, a relatively large number of mechanical stokers and the replacement of steam

jets and similar devices originally installed, by the more expensive and more efficient mechanical devices.

In giving the results of its inquiries among 100 manufacturers, hotels and business firms in Rochester, Cleveland, Detroit, Chicago and Milwaukee, over half of whom replied, the committee says:

Only two replies seemed to indicate that the writers were in any degree dissatisfied with their efforts or results. The plants covered installations of from one to 34 boilers. Twelve stated that they were normally operating above rated capacity. When asked to what extent they considered that they had lessened smoke, 46 out of 52 stated 75 per cent. or more, 6 stated between 50 and 75 per cent. A saving in labor was reported by 25; no saving in labor by 23, the latter including for the most part small plants. As regards repairs 19 reported a saving, and 24 reported no saving; a few reported repairs increased. A saving in fuel was reported by 29, no saving by 14; none reported increased coal consumption. It was stated by 20 that cheaper coal could be used, while 16 had made no change in their fuel. As regards the gross cost of steam since installing smoke preventing devices, 20 report a decrease, 10 report no saving, while 11 were doubtful.

The two questions which gave us the most valued information were prompted by a desire to know just how the manufacturers and other erstwhile offenders felt about it. The first of these questions was: "Do you consider that in making this installation of a smoke preventing device, you have made a sacrifice to public sentiment?"

To this question 32 replied No, and of 10 who said Yes, only five were using mechanical stokers.

The other question was: "Do you consider that the good accomplished in smoke abatement is worth the cost to manufacturers, hotels, etc.?"

Thirty-two said Yes, two said No, and six were in doubt. We consider this very strong evidence that the manufacturers themselves do not consider that they have been oppressed.

EXPERIENCE WITH VARIOUS DEVICES.

The committee gives extracts from letters of smoke inspectors in several cities relative to the merits of various devices. From these the following are taken:

One says: "Inclined grates in wide and long settings are not liable to feed evenly, unless the attendance is good and coal as near nonclinking as possible is used. Some underfeed stokers are very good for the prevention of smoke, but make a local heat which is liable to burn and bag the boilers. They are efficient in coal consumption. For small plants, where there is no room to install stokers, automatic steam jets might be properly installed and maintained. I do not favor steam jets (especially home-made) where some mechanical apparatus can be installed."

Another inspector reports: "We have secured good results from automatic stokers, down draft furnaces, various forms of steam and air blast devices and fire brick arches, when properly installed and with due regard to the individual plant requirements. However, the greatest aid to the solution of the problem we believe to be sufficient boiler capacity to avoid crowding and careful and skillful firing."

From another's experience we learn: "A certain stoker will do well in one plant, when it will not in another. Take, for example, a flour mill or any factory where the load is nearly always the same and the boilers working not more than 25 per cent over their rating, the Murphy, the Detroit, the underfeeds and several chain grates will all be practically smokeless if properly handled. Where the load is fluctuating, such as in railroad work, the underfeeds do best work. I know of no other stoker that will respond so quickly to change of load. For small plants the steam jets and air admission doors do very good work, but I do not recommend them, as they are only makeshifts and are not economical, but of course we cannot refuse them so long as they prevent smoke."

From another source we are informed: "The best plants in this city are plants operated with chain grate stokers, but in cases where the load is apt to fluctuate very much some of the other stokers, such as the Murphy type or the underfeed type, give the best results. With reference to small plants there are a number of automatic steam jet devices on the market which give good results in abating smoke when they are properly handled and kept in good working order."

CONDITIONS OF COMPLETE COMBUSTION.

The sections of the report discussing the principles of combustion and the causes of smoke contain some familiar matter. The difference between the process involved in the use of coke or anthracite coal and that which attends the use of bituminous coal with its 22 to 35 per cent. of volatile hydrocarbons is explained, and the conditions indicated under which complete combustion of the hydrocarbons can be effected. These are stated thus:

(1) A temperature sufficiently high, about 670 degrees C. (1240 degrees F.), to bring about instant ignition of the gases; (2) A sufficient supply of air, preferably heated, to combine with the carbon and hydrogen of the gases, but not a large excess of same; (3) A good mixture of the air and hydrocarbons. Unless these conditions are strictly observed only partial combustion will take place and carbon will separate according to the reaction of air upon methane, ethylene and acetylene, which are the principal gases evolved.

The committee adds:

Carbon, soot or smoke, thus formed, can be burned with very great difficulty; its formation must be prevented. This

is possible by increasing very largely the amount of firebrick in the furnace, which by its incandescence from heat stored up and a sufficient supply of air, will burn the gases without precipitating free carbon.

To the inexperienced, heavy masses of black smoke indicate a large loss of fuel. The loss, however, is not as great as it would seem. At a large boiler plant in this vicinity careful tests of the carbon in smoky waste gases were made, which showed that the plant was losing not more than 1 per cent. of the fuel value of the coal in the smoke itself, but at the same time the unburned gases may have caused great loss.

DEVICES FOR SMOKE PREVENTION.

In discussing the remedy for smoke, the report takes up in order proper hand firing, steam jets, down draft furnaces and mechanical stokers. While in American cities most dependence is put upon mechanical devices, the opposite is true in Great Britain and on the Continent, where much attention is given to the proper hand firing, schools being maintained in some places for the instruction of firemen. The Prussian Government makes an annual appropriation for such instruction. At some length the report explains the methods resorted to abroad for securing more efficient firing. Particular attention is called to the work of an organization of steam users in Hamburg, Germany. The membership has increased from 60 in 1902 to 150, with 420 boilers under the society's control. The society has an expert staff, which tests boilers as they are brought under its control and sends firemen instructors to give proper directions for remedying bad firing. It is suggested that similar societies in the cities in the United States would accomplish great good.

Concerning steam jets the report says that while their cost is low compared with stokers, they effect economy in coal consumption only to the extent to which they more perfectly burn the gases by the admission of neither too little nor too much air to meet the varying requirements of the fire.

Down draft furnaces are described at some length, the principle being that of passing the volatile hydrocarbons through the green fuel before reaching the combustion zone.

Mechanical stokers are taken up under four classes, namely, the forwardly inclined grate, the V-shaped grate, the underfeed stoker and the chain grate. Chain grates are not recommended for coking coals containing less than 30 per cent. volatile matter. The fact is emphasized that in order to prevent smoke it is quite as necessary to maintain the proper conditions for good combustion with stokers as without them.

RAILROAD SMOKE.

The suggested solution of the problem of railroad smoke is insistence on the use of smokeless fuel by shifting and yard engines, permitting through engines to make some smoke. Three smokeless fuels are available in Syracuse, namely anthracite, coke and briquettes. Suggestions are made for the training of firemen in the use of light and frequent firing, also as to the use of mechanical devices, the standardization of grades of coal and its delivery in uniform sizes.

HANDLING OF DEVICES.

Emphasis is laid on the necessity of properly operating mechanical devices. The St. Louis smoke inspector's office notes that the greatest aids to the solution of the smoke problem are sufficient boiler capacity to avoid crowding, and skillful and careful firing. Too many owners think that once a mechanical stoker or other device is installed, it should take care of itself. Cleveland reports that very much of the trouble still noticed is due to the failure of the men to operate the devices properly.

Some interesting data are taken from the report of the Syracuse committee's representative at the convention of smoke inspectors in Milwaukee in June, 1907. The following extracts are given:

Many discussions were held on the general subject of smoke abatement, the means of abating it, and the success that has been reached in different cities. There was no question at all as to the practicability of getting rid of all the smoke from steam boiler furnaces except occasional puffs of light smoke during the cleaning of fires, provided the necessary conditions of furnace, draft and careful firing were obtainable. It was acknowledged unanimously that practically complete smoke suppression can be obtained with any one of a great number of different devices. It was stated by several of the inspectors that many concerns that had put in automatic stokers only after threats of prosecution, were now very well pleased that they had put them in, on account of the great saving of fuel that had resulted.

The chief complaint of the smoke inspectors is that the boiler owners employ fireman at low wages and of a low grade of intelligence, that these firemen, while perfectly able to suppress smoke when they are being watched, fail to suppress it as soon as they think no one is watching. The statement that the most effective way for suppressing smoke in such cases is a rigid enforcement of the law and the firing of such firemen, or their employers, was strongly applauded. The visiting members were taken to see several plants in Milwaukee, where automatic stokers and down-draft furnaces were used, in which the smoke suppression was practically complete.

There is no difference of opinion among the smoke inspectors and their engineers as to the means by which smoke could be prevented, such as a proper design of furnace and stokers, the driving of them at a rate not beyond the maximum capacity for which they are designed, the use of means for thoroughly mixing hot air with the gases of combustion, the large combustion chambers, and finally the intelligent and careful operation of the furnaces.

ECONOMY FROM SMOKE ABATEMENT

The committee says that with proper application of smoke preventing devices the manufacturer can always rely upon increased economy in the use of fuel, the amount of improvement depending largely upon the degree of badness of the previous conditions. Manufacturers at first averse to making changes which would prevent smoke have become thoroughly converted to the advantages of such effort. Some suggestions as to methods are made by the committee as follows:

If the plant is large enough to war-

rant the installation of mechanical stokers and coal handling equipment the owner can greatly reduce the quantity of smoke emitted and at the same time effect a considerable saving over hand-firing. A fair return on the investment for mechanical stokers can be reasonably expected with such a plant.

In small plants, consisting of but one or two boilers, cheaper installations such as the various steam jet devices may prove effective in reduction of the volume of smoke, but it is not to be expected that these devices will result in any considerable economy of fuel; on the other hand, unless properly operated, they are quite apt to increase the cost of operation.

Plants of moderate capacity, too small to make the installation of mechanical stokers advisable, may quite effectively reduce the formation of smoke, and with good economy, by the use of down-draft furnaces. This is particularly the case when the fuel is of a favorable quality, the draft is good and the demand for steam is such that the boilers are not necessarily forced at times much beyond the normal capacity.

The cost of installation of any of the smoke preventing appliances is, of course, more of a burden in case of an existing plant than in the erection of a new one.

Under the local conditions at the present time the cheaper grades of anthracite coal may be substituted for bituminous coal at small additional cost of operation and little cost for equipment in plants of small or moderate capacity, provided there is sufficient draft.

The various furnaces known as Dutch ovens are applicable when there is room in front of the boilers to install them, and, if properly fired, they will produce good results as to economy of coal and reduction of smoke through good combustion. The initial cost of installing these is somewhat less than for down-draft furnaces, but they, with average skill on the part of the fireman, will probably not be quite so satisfactory a remedy for smoke as the down-draft furnace. Where the Dutch oven is not applicable, long passages under firebrick arches are helpful.

Any method of reducing smoke through obtaining better combustion promises economy of fuel, whether due to special appliances or more skillful firing. In some cases a bonus to the fireman has produced good results, but owing to the weakness of human nature the permanent effectiveness of such measures is a somewhat doubtful quantity. Continuous indicators of the percentage of carbonic acid in the chimney gases have been used as a means of determining such a bonus, and in large plants these devices have produced good results.

THE COMMITTEE'S RECOMMENDATIONS.

The committee concludes its excellent and thorough discussion of the subject by making the following recommendations:

"1.—The purchaser should put the burden of responsibility upon the firm installing the device. The difficulty of proper selection is very much increased by the fact that probably all devices can point to some successful installations, but each device must be adapted to the conditions existing in the plant

In which it is to be used. Sometimes the mere changing of a fuel, for example, from a noncoking to coking coal, causes a previously successful arrangement to become an entire failure. Many patentees and manufacturers of smoke preventing devices, in their anxiety to make a sale, entirely fail to properly study the conditions at the plant of the proposed purchaser, with the result that the device is a failure and the prospective purchaser becomes disgusted with the whole subject of smoke prevention. For the protection of the would-be purchaser, it is necessary that the burden of responsibility should be put squarely and fully upon the firm installing the device, and no prospective purchaser should permit an installation unless he is satisfied that the representative of the manufacturer has thoroughly studied all the conditions at the plant which may effect the success of the device; and when once installed, he should see that all claims as to economy and smokelessness are fully substantiated.

"2.—Plans for new steam plants should be submitted to some competent authority for approval. In order that the intending purchaser may have the greatest possible protection and may be saved the disappointment and expense of a failure (and there would be sure to be some expense incurred in the trial of an unsuccessful apparatus, no matter how broad might be the guarantee of the maker), prospective purchasers should submit the plans for the installation to some competent engineering authority for approval. Such expert should not be connected with the selling interests of any stoker manufacturer and should be free from hobbies, and should have no commercial interests and affiliations apt to influence his judgment. The conditions necessary to make such devices successful are well known to those making a specialty of this work, and a capable steam engineer, if familiar with the conditions existing at the plant, should be able to advise the prospective purchaser to his material advantage as to the probable success of the proposed smoke preventing device, as well as regarding all details of style of boiler setting, size and height of stack and grate areas.

"3.—Success in smoke prevention can only be attained through the hearty co-operation of coal users themselves. Very many installations for the prevention of smoke are successful at first, when everything is new and when the apparatus is operated as intended, but if the owner loses interest the subordinates quickly follow, and very soon the smoke is as bad as before. Like all other additions to a plant intended to increase economy or to improve conditions, the devices for preventing smoke add some complication to the original plant and require intelligent control. So it is of the utmost importance that the owner should insist upon the apparatus receiving proper attention and upon carrying out of the principles and conditions necessary for success.

"A clear sky and a city free from smoke can only be obtained by a friendly and hearty co-operation of all steam producers to abide by the ordinance, the stronger helping the weaker by example, suggestion and encouragement. This would seem to indicate as desirable an association of all steam producers similar to that formed in

Hamburg, which meets regularly for the consideration of questions relating to the economical production of steam without smoke. All new devices for smoke prevention are thoroughly investigated by the association and two thoroughly experienced firemen are employed to visit the various plants owned by members of the association to educate the firemen in proper methods of firing and to otherwise produce economical conditions, particularly as to carbonic acid content and temperature of waste flue gases."

The Lindsay Belt Transmitter

One of the great causes of waste in factories and mills is the loss of power entailed by the running of pulleys, belting, etc., when the machine they connect to shafting is not working.

The friction clutch has long been recognized as a great money saver, owing to the saving of power effected by disconnecting belting, etc., when machinery was not in operation.

The cost of the friction clutch has, however, been a consideration and many machinists

point touches the shaft. The base also carries the belt shifter.

It is a principle recognized by all mechanics that a belt should not, in fact cannot, be shifted unless it is in motion. In order to do this friction circles shown at right side of figure 2, and as E-D in figure 1, have been attached. These are bolted to arms of pulleys and are operated by cam G, in figure 1. Turning cam G, which is done by workman as shown in figure 3, or by lever directly under shaft, lever 1 in figure 2, moves dead pulley B, horizontally on sleeve and engages the friction circles, thus starting the dead pulley in motion. These friction circles need only be in operation for the short time necessary to shift belting, which is done by lever 2, in figure 2. The cam then releases itself and dead pulley rests idle on quilled sleeve.

An excellent illustration of the method of operation is shown by figure 3, showing gang power feed rip saw equipped with Lindsay transmitter. This takes eight inch double ply belt and runs 6,000 feet per minute under perfect control of operator while standing at his machine by simple pull of lever.

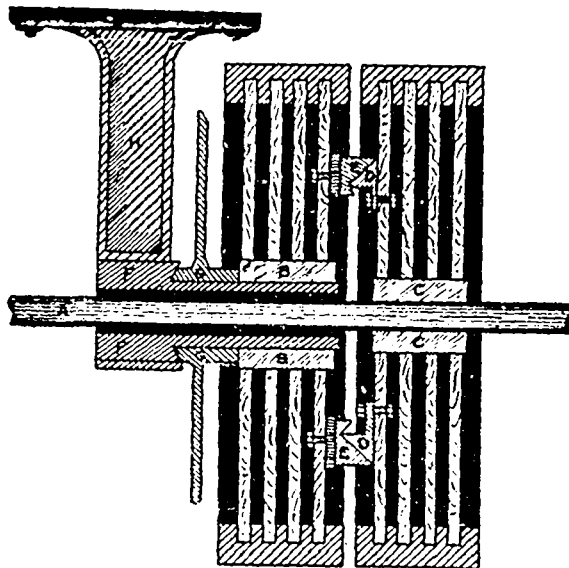


FIG. 1. INTERIOR MECHANISM OF TRANSMITTERS AND PULLEYS.

A. Line shaft on which Live Pulley C is mounted, B. Dead Pulley mounted upon quill sleeve F, suspended clear of shaft A by base H, E and D Friction Circles bolted to arms of Pulleys B, and C. G. Cam with extended arms mounted upon quill sleeve F, which by operating Lever 1 as shown on Fig. 1, moves dead pulley B horizontally on sleeve F and engages Friction Circles E, and D, and starts belt in motion, which is then shifted to Live Pulley C by operating Lever 2 as shown on Fig. 1, when Cam again becomes released and Dead Pulley stands idle on quill sleeve F. NOTE: Heavy line between shaft A, and quill sleeve F, is open space.

and others have sought to perfect a mechanism which would do this work without as great expense for installation. Manufacturers will, therefore, be much interested in knowing that a Canadian, Mr. A. J. Lindsay of Toronto, has not only invented but has had in operation in several factories a belt transmitter which fully serves the end sought at about half the cost of the average friction clutch.

The Lindsay Transmitter consists of two narrow pulleys instead of the wide pulley ordinarily used in driving pulley from main shaft. As shown in figure 1, of the illustrations herewith one of these is live pulley direct connected to main shaft. The dead pulley is mounted on a quilled sleeve which is part of the base. The base is connected to ceiling. The quilled sleeve suspends the pulley so that neither sleeve nor pulley at any

When the machine is not in operation and the belt is on the dead pulley there is no possibility of the belting or the machine being started by carelessness of workman. The belt, being completely severed from the power, cannot be started unless lever is used to connect the dead with live pulley. One advantage of this is that there is no possibility of injury to workman by the machine starting, as it sometimes does when loose pulley system alone is used.

It is now slightly more than a year and a half since Mr. Lindsay completed this invention and made first installation. The first transmitter installed has been in continuous service in Toronto and has been a success in every way.

Since the Lindsay transmitter was offered to the trade many of them have been installed in factories and mills throughout Ontario and

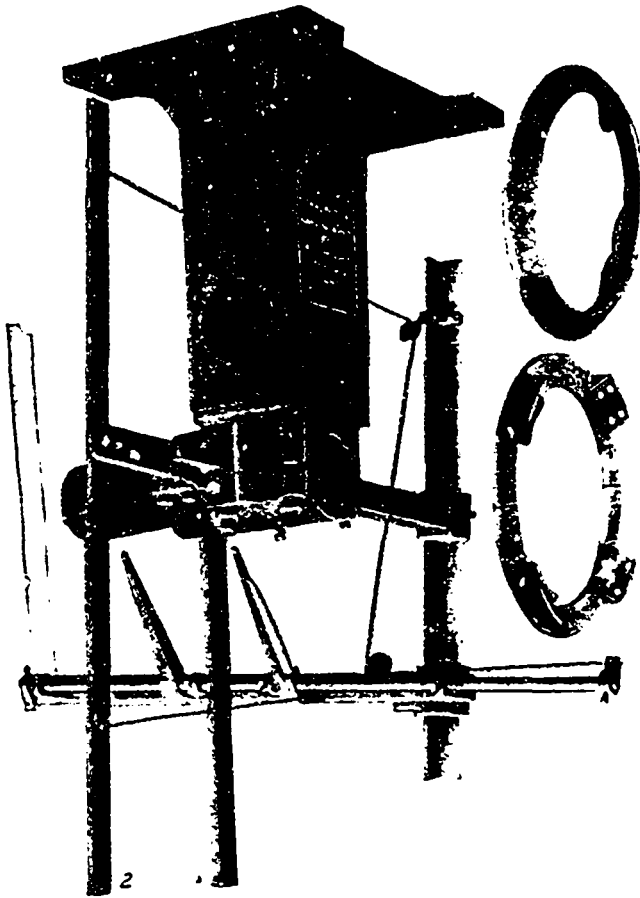


FIG. 2. LINDSAY TRANSMITTER SHOWING FRICTION CIRCLES FOR PULLEYS AND CHAIN CONNECTION BETWEEN LEVER AND SHIFTER BAR.

are in constant service. These have all been sold subject to approval after thirty days and in no case has there been complaint or refusal of acceptance.

Co., Limited, Smith's Falls, Ont. In the foreground is a dainty young woman, sitting on a rail fence, throwing an apple to her husband as he turns the corner of a hayfield.

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.

HAMILTON FACING MILLS CALENDAR.—One of the most artistic calendars we have seen this year is that sent out by the Hamilton Facing Mill Co., Limited, Hamilton. The feature of it is 1088½, in reproduction of a painting entitled "Household Cares" by the Dutch artist Thijsen. The painting represents a Dutch housewife tending her geraniums in a humble home and the picture is such a delightful one that many will want to frame it after the calendar year is ended.

MORRIS MACHINE WORKS CALENDAR.—The central feature of the calendar issued by the Morris Machine Works, Baldwinsville, N.Y., is a 15x10 in. reproduction of a painting "Tacking Ship Off Shore" by Wm. A. Norton. It portrays a full rigged ship "coming about" on the long tack, off the low, rocky coast of Ireland. The scene is one of rare interest and beauty and the calendar would be a pleasing addition to the business office of a manufacturer, no matter how luxuriously it may be furnished.

FROST & WOODS CALENDAR.—Many farmer's homes throughout Canada will be brightened by the calendar sent out by the Frost & Woods

on a No. 8 Frost & Woods reaper. In the other field a No. 3 Frost & Woods harvester is gathering golden grain.

RHODES, CURRY & CO.'S CALENDAR.—This is practically the same as the calendar sent out last year by this firm. The feature of the design is a view of the firm's works at Amherst, N.S., and a list of the lines made by them. As the calendar pad is 40x16 inches the figures can readily be read across a room or shop.—Rhodes, Curry & Co., Amherst, N.S.

F. H. HOPKINS & CO.'S CALENDAR.—This calendar is clearly intended for use by men who do business in large premises. Each date covers an area of ten square inches, each page of the calendar being 34x24 inches. It is one that will be particularly valuable for use in the lines of industry this firm appeals to: contractors, miners, and railway shops. F. H. Hopkins & Co., Montreal.

THE CANADIAN FAIRBANKS CALENDAR.—The calendar sent out by this concern is a practical one. Each page is 27x20 inches square, of which two-thirds is devoted to the calendar for a month, the remaining space being information regarding lines sold by this concern. The January pad is devoted to machine tools, February to steamfitters' tools and to packing for all purposes; March to machine shop and factory supplies; April to railway and contractors' supplies; May to suction gas plants; June to scales; July to valves, pipe and fittings; August to scales; September to power transmission appliances; October to gas line engines; November to small tools; December to wood-working machinery. This calendar is one that will be appreciated in every factory or mill to which it is sent. The Canadian Fairbanks Co., Montreal.



FIG. 3. LINDSAY TRANSMITTER IN OPERATION.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

MADE AN AUTOMOBILE OUT OF SAND.

Art expresses itself in many ways and with a great diversity of raw material. None of these are more surprising or picturesque than the sand figures which attract the

and received by the City Treasurer alone; to make the Audit Department independent of the City Treasurer's department, and to have a chartered accountant look into the bookkeeping methods of the various departments and

Legislation Committee—Chas. King, S. R. Wickett, W. D. Beardmore, C. G. Marlatt, L. J. Breithaupt, Geo. C. H. Lang, A. R. Clarke and Hon. E. J. Davis.

Inspection and Arbitration Committee—L. J. Breithaupt, S. R. Wickett, J. J. Lamb, John Welsh, A. O. Beardmore, R. M. Beal and Chas. King.

Transportation Committee—J. C. Breithaupt, C. G. Marlatt, S. R. Wickett, John Sinclair, J. J. Lamb, W. D. Beardmore, R. M. Beal, Chas. King and Geo. C. H. Lang.

Representative to Council—S. R. Wickett.

THERE IS NO CAR SHORTAGE.

Railroads of the United States and Canada have 206,800 freight cars in excess of business demands according to the car service committee of the American Railway Association, while shortages exist on only a few roads. The idle cars aggregate nearly 16 per cent. of all the cars used in this country and Canada, and represent a total value of \$124,050,000.

There has been a strong effort to keep freight car equipment in service. It has been found impossible to do so as there is not enough traffic and no prospect that there will be an immediate improvement such as to make it possible. It will probably be a long time before you again hear of a car shortage. Some of the roads are building side tracks in order to store their idle cars. It is discouraging, but we, who are in close touch with the situation, have appreciated for some time that it could not be escaped.

The Imperial Paper Mills and the Northern Sulphite Mills, Sturgeon Falls, may be purchased by a number of American publishers, who, owing to the scarcity of paper, are considering the advisability of taking over the Canadian plant which is recognized to be the finest on the American continent, and which is worth in the neighborhood of \$5,000,000.

Mr. W. W. Cox has retired from the management of Whitman & Barnes, one of the oldest manufacturing concerns in St. Catharines, Ont. Mr. W. J. Elliott has been appointed to succeed Mr. Cox as manager.

John T. Farmer, Montreal, is installing two duplex power pumps built by Glenfield & Kennedy, Limited, Kilmarnock, Scotland, in the Ottawa Waterworks for the Chaudiere Machine & Foundry Co., Ottawa, also a Green Fuel Economizer for the New West shops of the Canadian Northern Railway Co. at Ft. Rouge, Winnipeg.

The J. C. McLaren Belting Co., Montreal, held the annual convention of their salesmen a few days ago, representatives being present from all their branches. Several daily sessions were held, concluding with a banquet at the Place Viger, Montreal. The general manager, Mr. F. A. Johnson, presided. In his response to the toast of the firm he stated that the progress made during the year had been more than satisfactory and, despite all adverse circumstances, he looked for a satisfactory year during 1908.

The exhibition buildings, Victoria, B.C., were destroyed by fire, December 27. Loss about \$15,000.



AN UNIQUE AUTOMOBILE ADVERTISING JOSEPH DIXON CRUCIBLE CO.

attention of visitors to Atlantic City. During the recent Street Railway Convention many unique representations were made. The illustration shows one of the best, an automobile design, together with an advertisement and an invitation, all modeled from sand by some genius for the Joseph Dixon Crucible Co. of Jersey City.

Municipal Undertakings at Toronto

Many important proposals were included in the inaugural address of Mayor Oliver of Toronto. Among them were the following:

To enter into negotiations with the Toronto Electric Light Company, with a view to acquiring its plant on fair and reasonable terms, if possible; if this cannot be done, to proceed with the construction of a duplicate plant.

To further the progress of the construction of the tunnel under the bay; to examine into the Medical Health Officer's recommendation of a filtration plant; to consider the advisability of enlarging the present reservoir capacity.

To arrive at a definite conclusion with reference to the construction of a trunk sewer.

To stir up the railway companies on the viaduct and Union Station questions, and if they do not take immediate action in the matter to urge the Dominion Railway Commissioners to deal with them.

To take up the question of street railway extensions and decide as to routes.

To reorganize the Works Department in order that the City Engineer may be relieved from the details of his office and be free to give his whole attention to the engineering problems of his department.

To have all civic moneys payable to

report with a view to their improvement.

To outline a comprehensive park scheme, which will include the linking together of the various parks of the city by a system of well kept driveways and to consider the advisability of the appointment of an independent Parks Commission.

To make a new contract with the Bell Telephone Company for a limited term of years, or to establish an independent telephone system.

To memorialize the Dominion Government to compel the various railway companies doing business in Ontario and Quebec to reduce their fares on all lines within the limits of these Provinces to two cents per mile.

A SMALLER LEATHER OUTPUT.

The production of leather in Canada during 1907 decreased fully 50 per cent. over 1906, according to Mr. G. P. Beal, the retiring chairman of the Tanners' Section of the Toronto Board of Trade. The reason for this and the sudden change in values which had taken place, he attributed to the financial stringency and to the partial failure of the Northwest crops curtailing the purchasing power of the consumer. At the present time stocks of leather in the hands of dealers and cutters are smaller probably than at any time in the past. In respect to the future, with 300,000 immigrants added to the population, he regarded the outlook as being favorable. The following officers were elected:

- Chairman, Minsel O. Beardmore.
- Vice-Chairman, George McQuay.
- Secretary-Treasurer, F. G. Morley.
- Executive—J. C. Breithaupt, S. R. Wickett, W. D. Beardmore, C. G. Marlatt, Geo. P. Beal, R. M. Beal, Geo. C. H. Lang, Geo. McQuay, Hon. E. J. Davis and Chas. King.

Simple Devices for Controlling Temperatures in Brick Kilns.*

By PROF. M. B. BAKER, ONTARIO SCHOOL OF MINING, KINGSTON.

I have had the pleasure of being present at your last two conventions held in Hamilton, and Toronto, respectively, and as I had addressed you at each, I had hoped to escape



PROF. M. B. BAKER, B.Sc., ONTARIO SCHOOL OF MINING, KINGSTON.

this time, but the persistence of your very energetic secretary, could not be turned aside by any other answer than "Yes." I am, therefore, with you once more.

Since our last meeting in Toronto, my report on "Clays and the Clay Industry of Ontario" has appeared as Part II. of the Report of the Bureau of Mines, for the year 1906. I hope you have all received a copy of it, and that it has been of some small benefit to you in your very important work. I say important because recent statistics show that clay products represent almost one fifth of the total output of our mineral industries.

In Great Britain and on the Continent, in all cities of reasonable size, the building regulations demand fire-proof structures, the result is that all structures of any pretension, are built of iron, with clay products, or re-inforced concrete. We have only to look about in this country to see that we are rapidly copying the old land, and it is not difficult to see what an important part brick, tile, hollow-blocks, and the various kinds of terra-cotta, lumber and terra-cotta itself, will play in all our structures in the very near future. All these and other classes of clay products are now manufactured by members of your association, and you are to be congratulated in establishing these conventions, and having men as members who will come here and frankly tell their brother members the results of their experiments, and the secrets of improving the qualities, and increasing the value of their products.

In selecting a subject on which to address you to-day, I must confess I had some difficulty, for you have many difficulties to contend with. I have observed, however, that burning is one of your chief sources of

*Address delivered before the Canadian Clay Products' Manufacturers' Association at Ottawa.

trouble, and I will endeavor, therefore, to give you two simple methods of controlling the temperatures necessary for good brick-making.

Most brick makers are able to burn a first grade article, if they can attend personally to the burning, but to have a large output means that the owner cannot always be present to look after the burning himself. If I am able then to bring to your attention, a method by which, having secured one good burn, you can always repeat it, I will feel well satisfied that I have done you a service.

I would, therefore, call your attention first to the use of the Seger cones, as a means of regulating and controlling the temperature of your kiln, and I might add here that this method is used extensively in the old country, particularly in Germany, and is also considerably used by the brick makers of the United States.

Those cones, a few of which I have here before you, are of such a composition that



GEORGE CRAIN, MEMBER EXECUTIVE OF CANADIAN CLAY PRODUCTS MANUFACTURERS' ASSOCIATION

each will fuse at a certain definite temperature, and a series has been made which will be suitable to all kilns, and to all classes of clay since they range from 1,700° to 3,200° Fahrenheit.

The following table of cone numbers with their respective melting points will show you how complete is the series:

Cone No.	Degrees Fahrenheit	Cone No.	Degrees Fahrenheit	Cone No.	Degrees Fahrenheit
010	1742	02	2030	8	2374
..	..	01	2066	9	2390
09	1778	1	2102	10	2426
08	1811	2	2138	11	2462
07	1850	3	2174	12	2498
06	1886	4	2210	13	2534
05	1922	5	2246	14	2570
04	1958	6	2282	15	2606
03	1994	7	2318		

You all know that no matter how completely you dry your bricks they will still give off more moisture in "water smoking" and this is not all the water yet, for at a tem-

perature of at least 750°F. the clay is decomposed, it being a hydrated compound and this water is driven off. This all causes considerable shrinkage, and I shall have occasion to refer to this fact later in this address.

After this point is reached the heat is gradually raised to about 1,750 degrees when the particles of clay commence to fuse and by so softening, they knit or weld together and when cooled again they retain their hard and consolidated form. Each clay has its proper fusion point and this must not be seriously overstepped or the bricks will fuse one to another and you have as a result a large mass of bricks fused into an inseparable lump—you have all seen such cases.

To use these cones then, you fill your kiln in the ordinary way, whether "up-draft" or "down-draft" kilns, and at different parts of the kiln you place, say four of these cones on a damp brick, or other piece of clay, so that they will stand erect, placing the cones in view of the "peep-holes," so that they can be seen from the outside. You now burn your kiln in the ordinary way, paying a little more attention so as to secure a good burn. When drawing the kiln, note carefully the condition of the cones, some will be fused down flat, some only bent over, and one or more will be standing quite erect as when put in—the cone with the lowest number left standing erect represents the temperature your clay requires for good brick.

Suppose, for example, you used the following numbers, 010, 09, 08, 07, 06 and after burning a kiln to your satisfaction, you had 010, 09, 08 fused down, 07 bent over, and 06 quite erect. This will indicate that the cone 07 is your proper temperature for good hard brick. By reference to the table you see that this is 1850°F.



JAMES CORNHILL, 2ND VICE-PRESIDENT OF CANADIAN CLAY PRODUCTS MANUFACTURERS' ASSOCIATION

In future kilns then you place cones 07, 06, in various parts of the kiln in view of the "peep-holes," and after water-smoking you can raise the temperature till you see

WHAT'S IN A NAME?

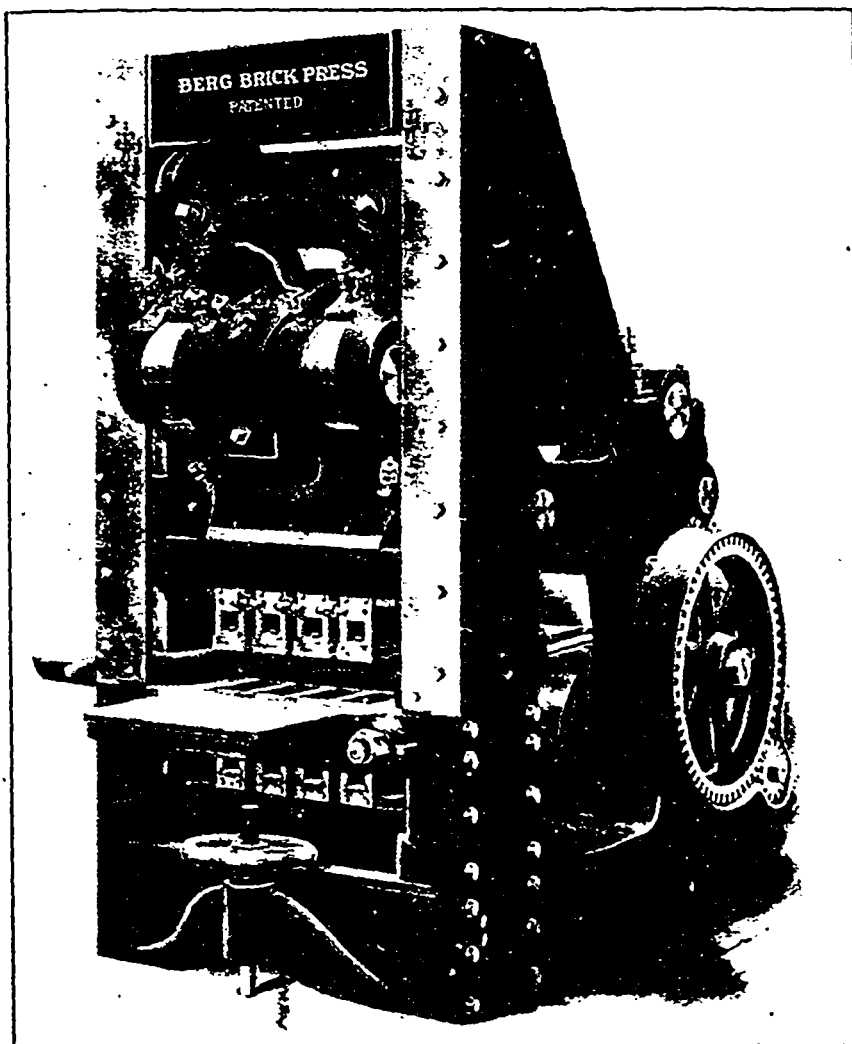
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Improved Berg Brick Press.

Cut Gearing, and many other steps forward in Improvements, and built of the Highest Grade of Material and Workmanship. Fully Guaranteed as to its Success.

Manufactured by its inventor in Toronto, Canada, exclusively. Also all equipments for Pressed Brick Plants to make Sand-Lime Brick, Sand-Cement Brick, Shale Brick, Clay Brick and Fire Brick. Correspondence solicited.

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THE BERG PRESS EXCELS
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THE BERG PRESS
Gives THREE Distinct Pressures:
Result is,
No Granulated Centers.

THE BERG PRESS
HAS ALL WORKING PARTS ABOVE
Clay Line

THE BERG PRESS
is fitted with "THE BERG PATENTED
MOLD BOX"—the DELIGHT of brick
makers, and which many OTHERS
have tried to IMITATE.

All Sizes and Shapes
Can be Made.
Molds Can be Changed in a
Few Minutes,
Owing to the
SIMPLE
MECHANICAL
CONSTRUCTION.

09 bend over, then control your fires till 07 bends over, this is your proper temperature. Hold the fires at this point, not allowing them to fuse cone 06, and you may thus repeat your good burn as often as you wish.

These cones are very cheap, costing only one cent each, and may be had from Prof.



WILLIAM MCCREDIE, MEMBER EXECUTIVE OF THE CANADIAN CLAY PRODUCTS MANUFACTURERS' ASSOCIATION

Edward Orton, of Ohio State University, Columbus, Ohio. You would not need the whole series, only numbers from 010 to 02 as given in the above list, for all of our Ontario clays are found to fuse at less than 2,000°F.

The second method of controlling the temperature in brick kilns has to do with shrinkage. It was pointed out above that the loss of water during water-smoking, and the further loss of water at a temperature of about 750° by de-hydration of the clay itself, was accompanied by a shrinkage of the bricks. This is not all the shrinkage, however, for when the temperature has reached about 1750° and the clay particles commence to fuse and knit or weld together, there is a further shrinkage, but not so much.

All this shrinkage then, causes a settling of the brick in the kilns and it is by controlling or regulating this settling that the character of the burn is also regulated. This method, however, is confined to down-draft kilns, and is accomplished as follows.

A hole is made through the top of the kiln large enough to allow a quarter or half inch iron rod to pass. This rod is stood on end so that its inner end rests on the top bricks inside the kiln, a careful burn is then made in the usual way, and as the bricks shrink, the iron rod sinks through the hole, the operator goes up every hour or longer interval as he may choose, and with a file makes a mark on the iron rod, even with the top of the hole. This method is continued till a good kiln has been burned, and this rod is then kept, and for each succeeding burn the rod is similarly placed in the kiln and the fires are hastened or dampened as may be required to allow the rod to sink to its proper mark for each hour,

or such longer period as the operator may have originally chosen.

This latter method seems rather unscientific and crude, but it is an ordinary mechanical device that any of you can use without any difficulty, and without any expense, it is easily used, and it is self-explanatory. I have seen it used, and the quality of brick turned out was exceptionally good.

There are many other and more scientific methods of controlling temperatures, but you are to have a paper in these from Mr. Lovejoy, of Columbus, Ohio. It is a strange coincidence that we should both select the same subject, but it is only an evidence of the importance of this point in your industry. I have arranged with Mr. Lovejoy not to trespass on his territory, as I am sure he can treat it much better than I, and I have therefore confined my remarks to these two simple methods that any of you can use.

Your secretary has asked me to say a few words on the "flashing" of white, or buff-colored goods. This, as many of you know, consists of red flashes or streaks on buff



DAVID MARTIN, THAMESVILLE, ONT., MEMBER EXECUTIVE OF THE CANADIAN CLAY PRODUCTS MANUFACTURERS' ASSOCIATION

brick or tile. It is due to some of the iron in the original clay, having become oxidized, and ferric oxide produces the red color in all bricks.

Even the clays from which white goods are burned in Ontario, contain as much as 5 per cent. of iron in nature. And this iron is only prevented from burning to the red oxide, by the large percentage of lime in these same clays, which cause the iron to burn to the buff colored ferrous carbonate instead of to red ferric oxide. If, however, anything should happen to cause a little of the iron to burn to the oxide, we will have a red flash or streak produced on the otherwise buff product. While the fires are up and the kiln is going well, there is no danger, as the doors are closed most of the time, many burners even "mudding" them over, so there is no direct supply of oxygen to oxidize the brick, but the trouble occurs in cooling stages of brick burning.

After the kiln has been burned, it is closed

up and allowed to cool for a few days, but as it cools the bricks and the air too within the kiln contract and tend to leave a vacuum within the kiln, fresh air from outside must now come in to occupy this space, and this fresh cool air, coming in contact with the still hot brick will in many cases oxidize the bricks nearest the inlet, which will be down through the chimneys and up through the floor flues of the kiln, because the heated air still inside the kiln will occupy the upper parts of it, tending to leave the space at the bottom of the kiln unoccupied. So the cool air does not enter through the fire holes and up to the dome of the kiln, but it passes down the chimneys and in through the flues into the bottom part of the kiln.

You will notice that I said the cool fresh air meets the hot brick and oxidizes them, so that you see heat is necessary for this reaction. If, therefore, we can cool the bricks to such a point that they cannot oxidize, and can do this without letting them come in contact with fresh air, we will have solved the question.

The best method that I can suggest for doing this is to keep one or two fires going for the first two days of cooling, this will keep a small draft through the kiln in the regular way, and up the chimneys, thereby preventing the cool air from entering by the opposite route. In the meantime the kiln is cooling down to such a point, that the bricks will not oxidize even when the fresh air is admitted.

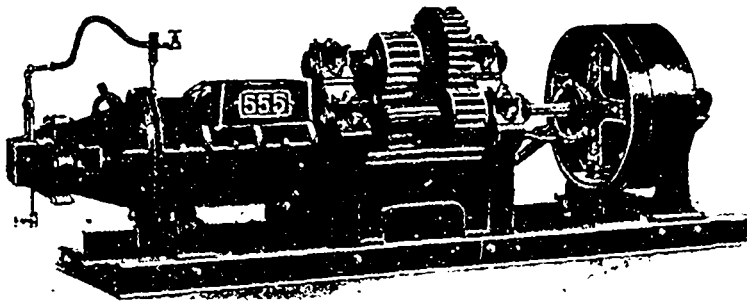
For burning red goods, the opposite condition is necessary. That is, you may admit as much fresh air in cooling as you wish so long as the cooling is not done so rapidly as to chill the bricks and cause them to "shake" or crack by too sudden contractions.



OLIVER BAIRD, PARKHILL, ONT., MEMBER EXECUTIVE OF THE CANADIAN CLAY PRODUCTS MANUFACTURERS' ASSOCIATION

but the direct admission of fresh air is not to be avoided here as it must be in burning white or buff products.

If there are any points that I have touched upon, that are not clear to you, I shall be glad to try to explain them to you more fully.

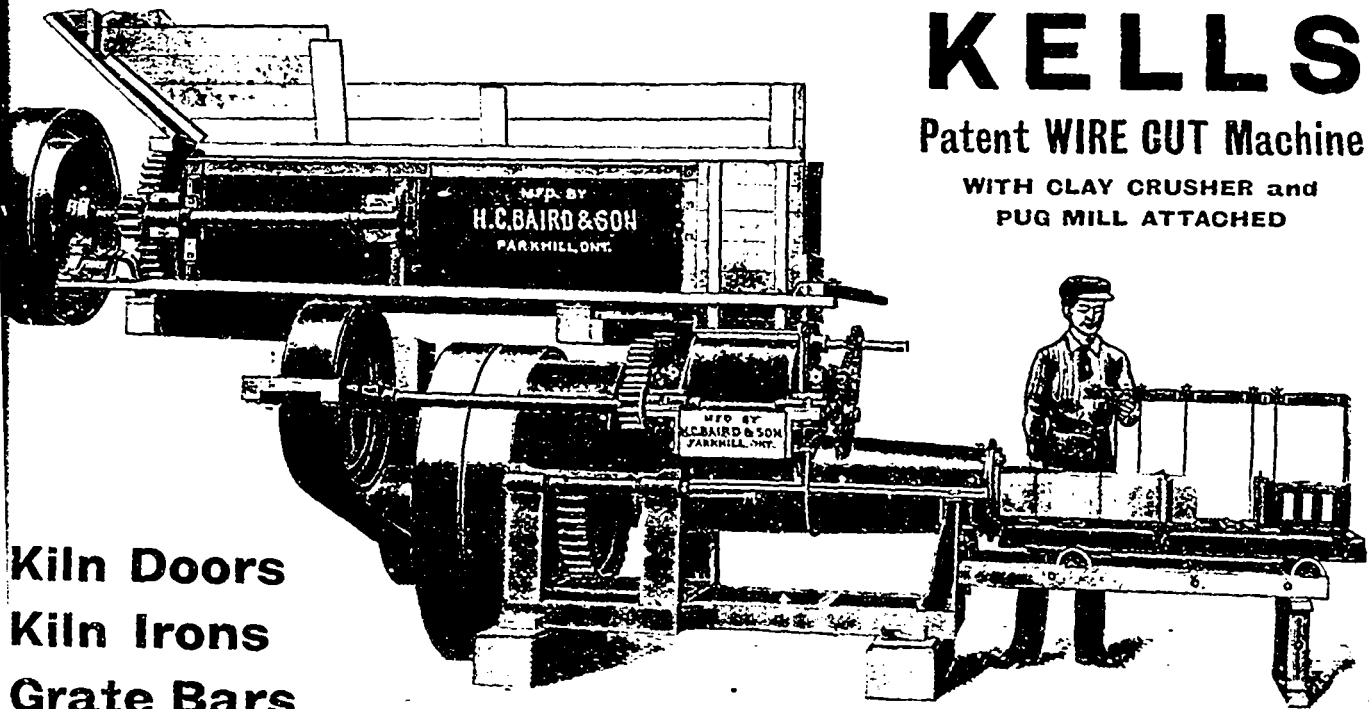


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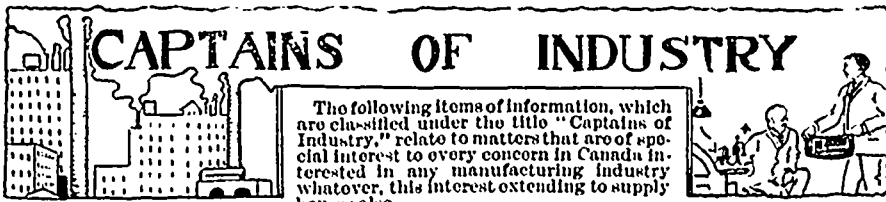
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Grate Bars**

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

The B. Greening Wire Co., Hamilton, Ont., have been incorporated with a capital of \$750,000 to manufacture metals, machinery, tools, wire, etc. The provisional directors include S. O. Greening, H. B. Greening and R. H. Merriman, Hamilton, Ont.

The ratepayers of Port Hope, Ont., voted favorably on a by-law authorizing the town council to proceed with the erection of municipal lighting plant.

The Pigeon River Lumber Co. have applied to Port Arthur, Ont., for 50,000 h.p. electrical energy to be used in the operation of large pulp mills they purpose erecting.

The ratepayers of Campbellford, Ont., have carried a by-law to build a \$60,000 power plant at Middle Falls. The contract for the dam has been let to Brown & Aylmer, and Bogue & Buchanan, of Peterboro, will erect the power-house.

The Department of Marine and Fisheries, Ottawa, will shortly call for tenders for the construction of a new ice-breaker for use between Prince Edward Island and the mainland. The estimated cost is \$600,000, and the specifications will call for one of the most powerful ships of this class ever built.

The Ivanhoe Cobalt Silver Mining Co., Ottawa, have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include J. C. Campbell, A. M. Sutherland, Ottawa, and A. Chaput, Montreal.

The Frank H. Fleece Co., Toronto, intend erecting two reinforced concrete factories in that city, for the manufacture of gum. A site has been secured on Sterling Road, and about \$65,000 will be spent on the new buildings.

Almost the entire plant of the Cobalt Concentrators at the Nipissing Mill were supplied by Canadian manufacturers. 50 out of 51 machines required coming from this source. The plant when completed, will be capable of treating 100 tons of ore a day.

The Mitchell Woolen Co., Mitchell, Ont., have been incorporated with a capital of \$50,000, to manufacture woolen and cotton goods, etc. The provisional directors include J. F. Duffon, J. H. Waterhouse and A. J. Brown, Mitchell, Ont.

The Lewis Varais's Co., Toronto, have been incorporated with a capital of \$10,000, to manufacture goods, wares and merchandise. The provisional directors include W. W. Dunlop, W. H. Hunter and H. T. Lewis, Toronto.

Representatives of the Canadian Smelting & Refining Co., Toronto, recently visited Saulte Ste. Marie, Ont., for the purpose of making arrangements for the erection of a mammoth smelting plant at that town.

The Lincoln Silver Mining Co., Cobalt, Ont., have been incorporated with a capital of \$300,000, to carry on a mining, milling and reduction business. The provisional directors include D. McMillan, P. O'Brien and J. Kennedy, Cobalt, Ont.

The Falls City Lumber Co., Niagara Falls, Ont., have been incorporated with a capital of \$40,000, to manufacture lumber, timber, etc. The provisional directors include J. Wilson, W. Wilson and R. P. Slater, Niagara Falls, Ont.

Lakes Lumbering, Limited, Toronto, have been incorporated with a capital of \$40,000, to manufacture lumber, timber, etc. The provisional directors include F. C. Amesley, G. Ruel and R. H. M. Temple, Toronto.

Reliable Bedding Co., Weston Ont., have been incorporated with a capital of \$100,000, to manufacture furniture, railway fixtures and appliances, etc. The provisional directors include T. T. Milliken, J. F. Johnston, Weston, Ont., and G. Collins, Trenton, Ont.

The capital of the Weston Shoe Co., Weston, Ont., has been increased from \$40,000 to \$100,000.

The Ham & Nott Mfg. Co., Brantford, Ont., will enlarge their factory this spring at a cost of about \$40,000. They have abandoned the idea of establishing a branch at Ottawa.

The A. J. Small Co. are considering the erection of a theatre in Ottawa at a cost of about \$200,000.

The Dominion Car & Transmission Co. will erect new car shops and freight shed at Hamilton, Ont., this spring.

The Bissell Carpet Sweeper Co. have purchased a site at Niagara Falls, Ont., and will erect a factory there, removing their works from Toronto.

The Assessment Commissioner of Toronto has recommended that the city lease to the Don Foundry Co., 120 feet of land at Ashbridge's Marsh, at \$150 per year and taxes for 21 years.

The Laidlaw-Watson Shoe Co., Aylmer, Ont., are considering removing their factory to Toronto.

The Jessop Prospecting & Mining Co. will remove their head office from Toronto to Cobalt, Ont.

The new building being erected in Brantford, Ont., for the Standard Bank is almost completed.

The Collier-Cunningham Co., Peterboro, Ont., have purchased machinery for the equipment of their new factory where they will manufacture electric irons and all kinds of electrical heating apparatus.

The post office at DeCewsville, Ont., was destroyed by fire January 3.

The planing mill of Wm. Scaife, Port

Credit, Ont., was destroyed by fire January 3. Loss about \$2,500.

The cash and door factory of the Rathbun Co., Deseronto, Ont., resumed operations on January 11, having been closed down for repairs since December 23.

The ratepayers of Meaford, Ont., voted favorably on a by-law to grant a bonus of \$10,000 to the Seaman, Kent Co.

The congregation of St. Helen's Church, Toronto, will erect a new edifice at a cost of about \$50,000.

Geo. Henry, Toronto, has contracted to have the addition to the Toronto post office completed by October. The cost will be about \$20,000.

The ratepayers of Goderich, Ont., voted favorably on a by-law to loan \$30,000 to the Doty Engine Works Co., for the building of a boiler factory.

The Central School, Kincardine, Ont., will be improved at a cost of about \$8,500.

A new town hall will be erected in Meaford Ont., at a cost of about \$15,000.

The Ontario Iron & Steel Co., Welland, Ont., are erecting a large addition to their new plant.

The large coal shed of Bradfield Bros. & Co., Morrisburg, Ont., was destroyed by fire January 3.

The ratepayers of Hespeler, Ont., voted favorably on a by-law to raise \$12,000 for the extension of a pipe line for fire protection.

The waterworks, Sarnia, Ont., will be extended at a cost of about \$6,000.

A sanitary system will be installed in the schools of Waterloo, Ont.

A by-law has been passed in Waterloo, Ont., to raise \$12,000 for road improvements.

A subway will be constructed under the tracks of the Michigan Central Railway at St. Thomas, Ont., at a cost of about \$18,000.

The Dart Union Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture iron, bronze, metals, etc. The provisional directors include E. M. Dart, J. B. Goff and J. M. Goff, Providence, R.I.

The ratepayers of Goderich, Ont., voted favorably on a by-law to transfer the guarantee of the bonds, amounting to \$150,000 of the Maitland River Power Co. to the Ontario West Shore Railway Co.

The ratepayers of Guelph, Ont., voted favorably on a by-law to raise \$125,000 to remodel the waterworks and bring water from springs about four miles from the city instead of direct from the River Speed, as at present.

The St. Lawrence Lumber & Mining Co., Cornwall, Ont., have been incorporated with a capital of \$50,000, to manufacture lumber, timber, ores, metals, etc. The provisional directors include W. R. Hitchcock, Cornwall, Ont., G. W. Minkler, and G. A. Chaves, Massena, N.Y.

A new post office will shortly be erected at Whitby, Ont.

The Warner-Gibson Co. are starting a new factory at Welland, Ont., They will manufacture agricultural implements of various kinds.

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SMALL DIAMETER WHEELS AND AXLES FOR CONTRACTORS. CAR WHEELS.

CASTINGS OF ALL KINDS

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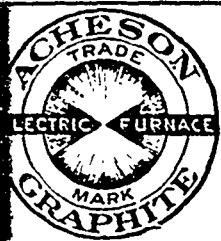
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straightened and cut to length.

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Special Castings and all kinds of Flexible and Flange Pipe
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The ratepayers of Gananoque, Ont., voted favorably on a by-law, authorizing the town to issue \$10,000 of debentures to complete and pay for debts contracted for electric light works.

The Berlin Steel Go-Cart Co., Berlin, Ont., have been incorporated with a capital of \$100,000, to manufacture carriages, go-carts, sleighs, etc. The provisional directors include F. M. Hoffman, N. Roos and H. S. LaGrange, Berlin, Ont.

An up-to-date waterworks is being considered for Markdale, Ont.

An addition, 104x15 feet, three stories high, will be erected to the Loretto Convent, Stratford, Ont.

The International Fence Co., London, Ont., have been incorporated with a capital of \$300,000, to manufacture iron, wire, wire fencing, gates, etc. The provisional directors include F. W. McLaren, C. B. Hillier and E. Meredith, London, Ont.

E. A. Johnson, county clerk, L'Orignal, Ont., will receive tenders until January 21 for the construction of an iron highway bridge over the Big Castor River, 125 feet span.

The Board of Control, Toronto, invite tenders up to January 28 for a 15,000,000 and 6,000,000 Imperial gallon, triple-expansion vertical engine for the main and high level pumping stations.

The Capital Construction Co., Ottawa, have been incorporated with a capital of \$95,000, to carry on a general contracting and constructing business. The provisional directors include W. C. Perkins, H. H. Williams, Ottawa, and W. N. Cornell, Massena, N.Y.

The surveyors of the proposed extension of the St. Mary's and Western Ontario branch of the Canadian Pacific Railway have completed the survey as far as Exeter, Ont..

The Mount McKay and Kakabeka Falls Railway Co., Port Arthur, Ont., will apply to the Legislative Assembly of Ontario for power to build on either the north or south side of the Kaministiquia River.

The Canada Southern Oil & Gas Co., Tilbury, Ont., have been incorporated with a capital of \$100,000, to manufacture oil, gas, minerals, etc. The provisional directors include J. A. Tremblay, B. B. Yeoman and H. Callwood, Tilbury, Ont.

The large curling rink at Peterboro, Ont., was destroyed by fire recently. Loss about \$12,000.

The Hastings Telephone Co. will extend their line to Roslin, Ont.

The Crossen Car Mfg. Co., Cobourg, Ont., have delivered a first-class passenger coach to the Central Ontario Railway Co., and are shipping several box cars to the International Railway Co.

The Northern Foundry & Machine Co., Sault Ste. Marie, Ont., have been incorporated with a capital of \$50,000, to manufacture iron, steel, metal, etc. The provisional directors include J. N. Kendall, J. N. Neil and P. Young, Sault Ste. Marie, Ont.

The Reg. N. Boxer Co., New Toronto, Ont., have been incorporated with a capital of

\$250,000, to manufacture wood pulp, wall papers, colors, glue, etc. The provisional directors include S. S. Boxer, R. N. Boxer and H. Watson, Montreal.

The city council, Port Arthur, Ont., are considering the proposition of the Kaministiquia Power Co., to supply 200 h.p. electric energy at \$25 per horse power per year.

The Canadian Pacific Railway Co. will add 200 feet to their freight shed at Owen Sound, Ont.

The opera house, Brantford, Ont., was damaged by fire January 10. Loss about \$15,000.

The Farmers' Bank of Canada have opened a branch at Springford, near Otterville, Ont.

The ratepayers of Niagara Falls, Ont., voted favorably on a by-law to raise \$23,000 for additional schools.

The Master Soap Specialty Co., Toronto, have been incorporated with a capital of \$150,000, to manufacture soap, vending machines, etc. The provisional directors include F. T. Strangways, W. J. Marks and S. Windsor, Tottenham, Ont.

The Bank of Ottawa will apply for an increase of capital from \$3,000,000 to \$5,000,000.

The skating and curling rink owned by Wm. Hall, Elora, Ont., was destroyed by fire recently. Loss about \$7,500.

The Canada Foundry Co., Toronto, have received an order from the J. D. McArthur Co., railway contractors, Winnipeg, Man., for a switching locomotive and three mogul locomotives.

Among the firms who have ordered pumps from the Smart-Turner Machine Co., Limited, Hamilton, are the Guelph Waterworks Dept., the Regal Skirt Co., Hamilton; A. Knowles, London, Ont.; D. Aitchison & Co., Hamilton; The Canada Wire Goods Co., Hamilton; the King Radiator Co., Toronto; E. D. Smith, Winona, Ont.; A.D.K. Servos, McNab, Ont.; Normal School, North Bay.

The Smart Turner Machine Co., Hamilton, Ont., are installing one of their hand power travelling cranes in the haulage engine house, Bankhead Coal Co., Bankhead, Alta.

The Canadian Pacific Railway have just placed a large order for cars with the Dominion Car & Foundry Co. The management on Saturday afternoon closed a contract with the Montreal Car & Foundry Co. for 400 composite steel and wood freight and ballast cars. The contract for the steel required for these cars has been given to the Nova Scotia Steel & Coal Co. of New Glasgow.

A Methodist Church in Toronto was destroyed by fire a few days ago and the trustees have accepted the invitation of Fisher Bros. to use the second story of their picture frame factory for some time.

The Warner-Gibson Co. expect to start manufacturing agricultural implements in Welland, Ont., shortly. Machinery will soon be installed.

A joint meeting of the creditors and shareholders of the Canadian McVicker Co. will be held on Friday, January 24.

The Toronto & Belleville Rolling Mills, Limited, Belleville, Ont., have assigned.

The Jenking Brass Mfg. Co., Montreal, have been incorporated with a capital of \$350,000, to manufacture brass castings, and electrical fixtures, etc. The charter members include H. L. Jenking, A. Ma and W. Young, Montreal.

The National Snuff Co., Montreal, have been incorporated with a capital of \$500,000 to manufacture tobacco, snuff, etc. The charter members include D. C. Patter-W. J. Brennan and O. S. Ferrault, Montreal.

The Hosmer Mines, Limited, Montreal, have been incorporated with a capital of \$500,000, to carry on a mining, milling and reduction business. The charter members include David McNicol, W. R. Baker and A. D. MacTeir, Montreal.

The large departmental store of A. Lar Montreal, was destroyed by fire January Loss about \$150,000.

The convent at Rimouski, Quebec, destroyed by fire recently. Loss about \$150,000.

The Roman Catholic Church at Lach. Que., will be rebuilt and enlarged at a cost of about \$80,000.

The Robb Engineering Co., Amherst, N.S. have been awarded the contract for placing three new boilers in the Montreal waterworks.

J. Barsalou et Cie, Limited, Montreal, have been incorporated with a capital of \$175,000, to manufacture soaps, and perfumes, glycerine, medicines, oils, etc. The charter members include H. Barsalou, E. Barsalou and J. L. Cowan, Montreal.

The Mineral Development Co., Montreal, have been incorporated with a capital of \$25,000, to carry on a mining, milling and reduction business. The provisional directors include A. C. Calder, J. Jenkins and C. Jette, Montreal.

The Grand Trunk Pacific Co. have awarded a contract to Foley Bros. & Larsen of Paul, Quebec, for the construction of 120 miles from a point six miles east of Edmonton, Alta., to Wolfe Creek, 120 miles west of Edmonton. The contract amounts to several million dollars.

Garneau, Limited, Quebec, Quebec, have been incorporated with a capital of \$1,000,000 to manufacture dry goods, clothing, etc. The charter members include E. B. Garneau, J. G. Garneau and L. N. Dorion, Quebec.

Cole's Automatic Brick Mfg., Montreal, have been incorporated with a capital of \$100,000, to manufacture brick, etc. The charter members include J. Scott, E. and A. R. Oughtred, Montreal.

The D. Morrice Co., Montreal, have been incorporated with a capital of \$400,000 to manufacture cotton and textile goods, etc. The charter members include D. Morrice, W. J. Morrice and D. Morrice, Jr., Montreal.

The electrical work for the grand harbor for the Montreal Harbor, including signals and telephone systems, is being done by the Standard Construction Co., Montreal. The motors are being supplied by Allis-Chalmers-Bullock Limited.

The new electric pump at Magog, Quebec, now in operation. About two miles of water mains will be laid in the spring to connect

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Made in Square, Oval, "D" Shaped, Hexagon, Octagon and other sections, besides round.
 The most convenient and economical solution of thousands of mechanical and structural difficulties.
 Sizes from 1/4" to 5 1/2" O. D., ranging in thickness from 22 ga. to 1/2" wall, kept in stock.
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the waterworks system. The system including pumps, mains and concrete reservoir, has been installed by the Standard Construction Co., Montreal.

Kings Asbestos Mines, Thetford, Que., have installed three twenty-four inch search-light projectors to provide for the operation of the mines by night as well as day. The Standard Construction Co., Montreal, made the installation.

The premises of Lockerby & McComb, manufacturers of tarred paper, 65 Shannon St., Montreal were destroyed by fire on the 6th, inst. Loss was covered by insurance. Arrangements were made at once to handle orders until new plant can be installed.

On the 7th, inst., power was turned on in the works of the Lakefield Portland Cement Co., Lakefield, Ont. Electric motors and transformers for 4,000 h.p. were installed by the Standard Construction Co., Montreal.

The Londonderry Iron & Mining Co., Londonderry, N.S., purpose developing power at Nixteaux Falls, to operate their mines.

A Children's Hospital will be erected in Halifax, N.S.

Mr. Frank Stanfield has purchased the plant of the Truro Foundry & Machine Co., Truro, N.S.

The Cape Breton Prospecting Co., Sydney, N.S., will install a new steam plant.

Two electric pumps will be required in connection with the installation of a water system at Dominion, N.S. The estimated cost is \$26,000.

The Nepisiguit Lumber Co., Bathurst, N.B., have been incorporated with a capital of \$100,000, to manufacture lumber, timber, pulp, shingles, laths, posts, etc. The provisional directors include H. B. Curran, Bathurst, N.B., A. T. Trueman and F. E. Sayre, St. John, N.B.

The Public Works Department, Fredericton, N.B., invite tenders up to February for stone abutments for steel bridge over the Black River.

The Dominion Government will extend the wharf at St. John, N.B., at a cost of about \$300,000.

The Simeon Jones Co., St. John, N.B., will erect an extension to their brewery.

The Van-Bergh Electrical & Mfg. Co., Winnipeg, Man., have been incorporated with a capital of \$250,000, to manufacture dynamos, motors, electrical instruments, etc. The provisional directors include W. McMillan, J. Dodson and J. MacKenzie, Winnipeg, Man.

The Fort Alexander Lumber & Mfg. Co., Winnipeg, Man., have been incorporated with a capital of \$100,000, to manufacture lumber, pulp, doors, etc. The provisional directors include W. F. Hepburn, St. Thomas, Ont., R. A. White and P. M. Swenson, Minneapolis, Minn.

A Winnipeg despatch to the New York Commercial, says that the fire insurance carried in Western Canada was smaller last year than for five years—owing to reduction in building operations and decrease in mercantile stocks.

The Dominion Equipment & Supply Co.,

Winnipeg, Man., have been incorporated with a capital of \$100,000, to manufacture lumber, timber, iron, brass, steel, wool, hemp, oil, glass, paints, etc. The provisional directors include D. F. Coyle, E. R. Dowdall and J. A. Coyle, Winnipeg, Man.

The Minnedosa Power Co., Minnedosa, Man., have been granted the right to construct a dam across the Little Saskatchewan River at its outlet at Clear Lake, with the object of maintaining a high-water mark and supplying this town with power for electric light and other purposes.

The Bell Telephone Co. have offered to sell out their Manitoba telephone system to the Government for \$4,000,000. The Government have sent out expert engineers to look over the Bell Telephone company's plant and to set a valuation upon it. It is understood that the Government will not, under any consideration pay anything like \$4,000,000, but might, if the experts warrant it, pay \$3,000,000 to \$3,500,000 for the company's plant and equipment in the province.

The premises of the Dufferin Hotel, Carberry, Man., were destroyed by fire recently.

A by-law has been passed in Prince Albert, Sask., to raise \$50,000 for the extension of the light and waterworks systems and extra fire-fighting equipment.

The Dominion Match Co. purpose erecting a new factory at Calgary, Alta.

During 1907 building permits in Calgary, Alta., amounted to \$2,000,000.

The Union Bank at Claresholm, Alta., has been considerably enlarged and improved.

At a recent meeting of the council, Calgary, Alta., the proposed agreement with the Calgary Power & Transmission Co. was discussed and a decision was reached whereby that company will supply all the electric current, power and energy required by the municipality for five years from date.

A new power station is to be installed in Edmonton, Alta., requiring six miles of transmission lines at 10,000 volt, 3 wire 3 phase, 60 cycle, spacing of poles 125 feet, of wires, 24 inches. The system will include nine incandescent circuits and two arc light circuits, and a power circuit.

The congregation of Knox Church, Lethbridge, Alta., will erect a new church.

Septic tanks and filter beds will be added to the sewerage plant, Edmonton, Alta.

The Imperial Oil Co., Winnipeg, Man., are considering the erection of a warehouse in Saskatoon, Sask.

The Sawyer & Massey Co., Hamilton, Ont. will erect an office and warehouse in Saskatoon, Sask., at a cost of about \$130,000.

G. M. Seaman, Lethbridge, Alta., intends erecting a three story brick business blocks in that town.

The International Harvester Co. will erect a large distributing warehouse in Lethbridge, Alta., immediately.

The warehouse of the Canadian Northern Railway Co. at Humboldt, Sask., was destroyed by fire recently. Loss about \$5,000.

The ratepayers of Prince Albert, Sask.,

voted favorably on a by-law to raise \$500 for the extension of the light and waterworks system and extra fire fighting equipment.

The Royal Bank of Canada have moved into their new premises in Edmonton, Alta.

An extension will be erected to the Vancouver, B.C.

The civic water committee, Vancouver, B.C., have decided to call for tenders for building and laying of four miles of concrete pipe from the Seymour Creek to the Canyon.

A jail will be erected in Revelstoke, B.C. The tender of O. W. Abrahamson for \$100,000 was accepted.

A complete sewerage system will be installed in Revelstoke, B.C., at a cost of about \$90,000.

Public Works Engineer, Victoria, B.C., extended the time for accepting tenders for the superstructure metal for swing bridge over north arm of Fraser River, to Jan. 31.

At the coming session of Parliament application will again be made to incorporate the Southern British Columbia Railway Co., Victoria, B.C. This company propose building a line from a point six miles east of Kelowna, on the main line Canadian Pacific Railway, thence running south-east through Grand Prairie and Salmon River valleys to the east line of Township Range 11, west of sixth meridian.

The Pigeon Fertilizer Co. of Nova Scotia will erect a plant in Vancouver, B.C.

The Bakeries Co., Victoria, B.C., will erect a new building at a cost of about \$9,300.

Vancouver, B.C., ratepayers voted January 9, on money by-laws aggregating \$1,068,800. Over a million dollars was available with which to build permanent bridges in the city. For new schools, \$130,000 is required; \$28,800 for school offices and storerooms; addition to general hospital, \$130,000; to assist a permanent annual exhibit, \$50,000. In addition to these, the city still on its hands \$445,000 of unsold debentures based on the three by-laws that received assent of the ratepayers last summer, namely: sewer by-law, \$300,000; macadam roads, \$100,000; additions to schools, \$150,000. The by-laws approved by the ratepayers totalled \$1,500,000. Two were rejected: \$28,000 for school offices and storerooms; \$50,000 for exhibition. Those carried were: for three steel bridges, \$1,120,000; for schools, \$130,000; opening, grading, macadamizing streets, \$50,000; addition to general hospital, \$130,000.

A. Grossman, Vancouver, B.C., will erect an office building at a cost of about \$75,000.

The Victoria Machinery Depot, Victoria, B.C., have been awarded the contract for repairing the Canadian Pacific Lake steamer "Tartar". The price is \$100,000.

The Canadian Fish & Cold Storage Co. recently incorporated in Vancouver, B.C., with a capital of \$1,500,000, will erect a large cold storage plant in Prince Rupert, B.C., this spring. The cost will be about \$250,000.

The Royal Bank of Canada have opened a new branch in Vancouver, B.C.

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THE recollection of their quality, of their superiority in workmanship, of their uniform burn, of their long life—all these things remain long after the price has been forgotten.

Write us about your requirements.

PENNSYLVANIA FIRE BRICK COMPANY
BEECH CREEK, PA., U.S.A.

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From April 1st, '05 to March 31st, '06	- - - -	1,314,414 Net Tons.
From April 1st, '06 to March 31st, '07	- - - -	1,922,591 Net Tons.
First six months from April, 1907 to November 1st, 1907	- - - -	1,307,001 Net Tons.
1st Half November, 1907	- - - -	150,832 Net Tons

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FACTORIES IN OHIO

TORONTO, CANADA

J. M. Mulhall has been appointed liquidator for the Canada Stove Co., Ottawa.

A London, England, despatch says that Harnsworth, the big London publisher, is negotiating with the Waterous Co., of Brantford, Ont., for machinery for manufacturing wood pulp.

The Grand Trunk Railway Co. have greatly reduced the staffs in their shops at Point St. Charles, Ottawa, London.

The Dominion Heating & Ventilating Co., Hespeler, Ont., have secured judgment against the Amalgamated Oil Co., of London for \$1351.

The Wilson Lumber Co., have issued writ against the Canadian Shipbuilding Co. for \$1,974.

The Fairchild Co., Ltd., Winnipeg have been succeeded by The John Deere Plow Co., Ltd.

Vancouver may have a tin plate industry in the near future. R. Jenkins, Morrisburg, has been negotiating with the council of Vancouver, and a \$150,000 plant may be built in the spring.

PERSONALS.

Mr. H. E. Jory of Barrie, was elected president and Mr. Howard Gover of Orillia, secretary of the Life Underwriters Association of Ontario, on Monday.

Mr. W. G. Kent has succeeded Mr. E. Dunnick as manager of the Canadian branch of the Armstrong Cork Co., at Montreal.

Robert W. Hunt & Co., inspecting and consulting engineers, have decided to establish a branch office and chemical laboratory in St. Louis, Mo. This representation will be under the charge of Mr. Charles W. Gennett, Jr., This gentleman graduated with the degree of mechanical engineer from Cornell University in 1898, following which he was employed in the drafting room of the Baldwin Locomotive Works, and later in the inspecting and testing department of the Southern Railway Co. During the latter part of his connection with that organization he was in charge of their inspection work in Pittsburg and the West. Since then and up to the time of entering the service of Robert W. Hunt & Co., he has been the western sales agent of the Atha Steel Casting Co., with headquarters in Chicago.

BE THOROUGH.

Governor Hughes, of New York, pleads for thoroughness, he says:

"We have learned that nothing can be accomplished in a haphazard way. We have learned in industrial pursuits that we must have skillful or technical training, so that a man will know what is worth while. We must also learn that the business of government is not to be conducted in a haphazard way; that men are not to be put in office simply for the purpose of drawing their salaries or being agreeable to their friends, so that they can grant a special favor and then put up a bluff at the next election.

"We are to learn that the business of the government and the business of the States demands the best service that the State can procure, in order that the work shall be well and faithfully done, just as well and faithfully

done as it is done in the bank or in the factory, or upon the farm, and that the most careful attention must be given to little things, the little things of life which spell perfection when they are done in a proper manner.

"It means the absence of shiftlessness. It means making everything count for the State."—Graphite.

FAILURES IN CANADA FOR SIX YEARS.

The total number of commercial failures in Canada as reported to Bradstreet's, with assets and liabilities for the past six years, are as follows:—

	Number.	Assets.	Liabilities.
1907.. ..	1368	\$5,265,998	\$11,767,897
1906.....	1239	4,301,466	9,596,393
1905.. ..	1430	6,583,191	13,879,700
1904.. ..	1177	4,136,618	10,018,299
1903.....	959	3,890,237	8,383,767
1902.....	1096	3,601,162	8,345,365

NEW ENGINEERING COMPANY.

A new electrical engineering company has lately been established under the name of the Eastern Electrical Engineering Co., with offices at 76 78 Victoria Square, Montreal. J. D. Lachapelle is manager of the new concern and L. J. Coutine, superintendent. Besides being agents for the Pelaphone Oil Engine the Eastern Electrical Engineering Co. take contracts for the installation of complete power plants, interior illuminations, motor testing and repairing of all kinds of electrical machinery.

Examination of Commercial Starches

From Journal Society of Chemical Industry.

The usual method of comparing starches by boiling equal weights of the samples with equal volumes of water, and, after cooling, grading the resulting pastes according to the stiffness as determined by the sense of touch, is not very reliable. Measurements of the viscosity of weaker starch solutions may also be used, and it has been found that the most regular results are obtained by pouring the starch, suspended in 25 parts of cold water, into 225 parts of boiling water, after which it should be brought to the boil and boiled for one minute, the solution being allowed to stand over night in a stoppered bottle.

Owing to the variable viscosity of the solutions made in this way, and to other difficulties inherent to the process, the following method has been devised which gives very reliable and consistent results. Solutions of starch made in the cold with the help of caustic soda are free from many of the defects which exist in the boiling method. Two hundred and thirty parts cold water are placed in a wash-bottle, and the weighed quantity of starch is washed with this water into a graduated flask, and shaken till an even suspension results. Fifteen parts of a 10 per cent. caustic soda solution are then quickly run in from a burette, the flask filled with cold water up to the mark, and shaken continuously till the solution begins to thicken. The solution is generally ready for use in a couple of hours, but it is safer to let it stand over night, when all starches will have reached a stationary condition. The volumes of water and caustic soda must be accurately measured.

The strength of the caustic solution used must be always the same, and must be determined by titration, as very small differences in the strength seriously affect the results. The solutions compared must be at the same temperature. These solutions have two interesting properties:—(1) A solution obtained by diluting a stronger one has a much lower viscosity than one made up directly at the lower strength; (2) when a solution is warmed its viscosity falls regularly, but does not rise again on cooling. The starch solutions made, as above, with caustic soda, remain stable for several days.

A Fireproofing Compound

By BETA NAPHTHOL, in Textile World Record.

Textile fabrics cannot be rendered fireproof without leaving the fireproofing composition on the fibres; although many attempts have been made to change the nature of the fibre substances, and leave it non-combustible, all efforts have been in vain. The best that can be done is to treat the fabrics with some substance which of itself is non-inflammable, and which protects the fibre substance in such a manner that it will not burst into flame when fire is near.

The following formula for a fireproofing compound for textiles has been found to prevent the fabric from bursting into flames when a treated and dried piece of lace curtain material was suspended over an alcohol lamp; the only result was that the fabric became charred and disintegrated.

No. 1.

Sulphate of ammonia	8 lbs
Borax	2 lbs
Boric acid	3 lbs
Carbonate of ammonia	2 lbs
Dextrine	5 ozs
Water	to make 15 gals

The material to be "proofed" is simply immersed in the solution until thoroughly saturated, then squeezed and dried. This quantity of solution is sufficient to treat 100 pounds of textiles.

Another, though similar, solution is prepared as follows:

No. 2.

Sulphate of ammonia	15 lbs
Borax	3 lbs
Boric acid	3 lbs
Water	to make 15 gals

The material is simply immersed until saturated, then lifted, squeezed and dried.

A starch for sizing purposes may be made according to the following formula, and the starch may be replaced by either flour, sago, dextrine or other similar substance.

Starch	55 lbs
Tungstate of soda	27 ½ lbs
Borax	17 ½ lbs

100 lbs

For use, this compound is made into starch or size of proper consistency, and applied to yarns or fabrics in the usual manner, and dried.

Of course, no fireproofing compound that can be applied to textiles can be permanent, because after once washing, they will be removed, and must be replaced by fresh applications.

These solutions, properly applied to timber for mill construction, will retard inflammation in exactly the same manner as for fabrics.

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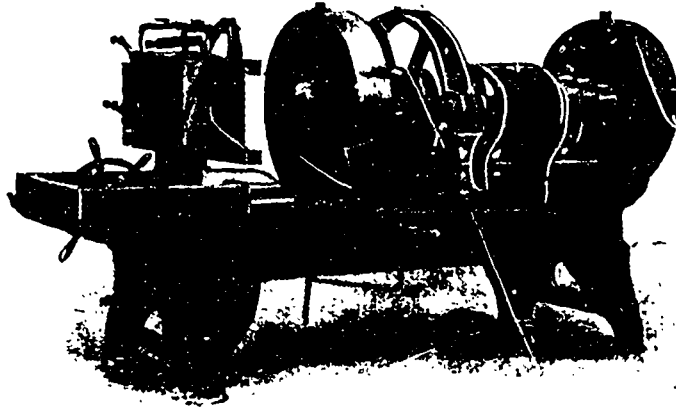
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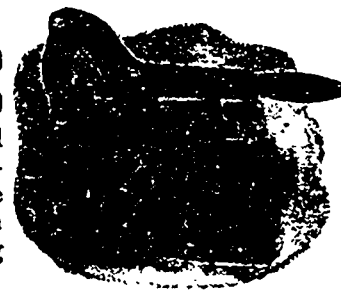
Cuts an absolutely perfect thread on any pipe from 1½ in. to 6 in. It does the work with one cut and does it quicker and cleaner than any other machine in America.

Weights 4,300 lbs. and is so rigid that a wavy thread is an impossibility.

This machine will save its price for you by doing more work every day and doing it better than the old machine you now have in stock.

It is fitted with the
**BORDEN PATENT SOLID
ADJUSTABLE DIE HEAD**

Everywhere recognized to be the most easily operated as well as the most perfect mechanism on any pipe threading machine in the world.



By this head any degree of accuracy may be obtained simply by the adjustment of an adjusting screw upon which the operating lever rests. Any variation may be obtained to suit any make of fitting, whether standard or not.

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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.

Electric Drive in Model Lumber Plant

By C. J. BULL, in the Wood Worker.

The interest awakened among mill men in the use of electricity for transmitting power for saw mills, prompts me to tell about a plant which it has been my pleasure to see in operation, wherein the idea of direct-connection motor to driving shaft is carried out most completely, and as the mill has been in successful operation for about four years, and is therefore not an experiment, it may be of especial interest.

Although as a class mill men do not go into ecstasies over beautiful scenery, I doubt if the most prosaic lumberjack could suppress an exclamation of delight over the picturesque location, within the Cumberland mountains of Kentucky, of the extensive plant of the Stearns Lumber Co., Stearns, Ky. The buildings have all been constructed with a view to ample work room and permitting expansion. In the power house one finds a large automatic twin engine, directly connected to an alternating generator of ample proportions to furnish all the power for saw and planing mill, machine shop, and the company's mines, which are located several miles away, also the lights of the town—every house, business and private, is lighted by electricity. The refuse of the mills and the mines is used as fuel, all mill refuse being fed to furnaces automatically.

On first entering the lower mill floor, the entire absence of shafting, pulleys and belting is most striking. One would hardly realize being beneath a saw mill, were it not for the familiar song of the saw overhead. Only one line shaft is used, located in the wing of the mill and driving the lath mill. On the mill floor proper a 9-ft. double-cutting band mill, a 6-ft. slab re-saw, eight-saw equalizer, 3½-in. band rip saw, a jump cut-off saw, conveyors, live rolls, etc., are all direct connected, as is also the large "hog" for chewing up refuse. The edger and log haul-up are belted from the motor. Shotgun feed, nigger, kickers and trips are operated by steam. It is indeed a neat and most effective equipment, and the advantages are apparent at every hand when one watches the mill in operation.

The ease by which any machine may be stopped and started independently in case of a little mishap, or again, if any department should become blocked during the day—say the lath mill—or some lumber to be re-edged or trimmed, a couple of hours' run at night on that particular machine leaves everything clear for the morning. Or, the clean-up man at night can run the conveyors helping to feed the furnaces, instead of leaving large heaps of refuse to be moved in the morning and over-running into the dusthouse, to be re-handled. But the principal advantage, in my estimation, is in installing the machines.

There is no need of placing a machine to accommodate the structure, no cutting away of braces, weakening the building, no need of an intricate net of belting, no twist belting, nor hot boxes caused by misalignment of shafting. And the reduction of friction load is no small item.

One more point which appeals to me in favor of direct-connected electric drive. The greatest objection to a ground-floor mill or factory has always been the difficulty of belting the machines properly without endangering the employes. The electric transmission overcomes this. While I am not familiar with the probable cost of such an equipment, the difference in building, shafting, pulleys and belts, ought to go a long way towards paying for "the new way." And, besides, there is no firmer foundation for machinery than concrete imbedded in solid mother earth.

With all these advantages it is but natural for the practical man to ask, wherein may the possible trouble be anticipated? Past experience has taught that where motors were chosen too light for the work intended, they would burn out. While all motors will stand a large percentage of overload, it is not policy to try running up to the capacity. The Stearns Lumber Co. has run a number of motors all these years, which have never given the least trouble, while some which were too light (the company was a pioneer and had to blaze its own trail) did burn out, but when replaced by heavier ones, all trouble ceased.

In the planing mill much the same policy of placing each machine independently of the other, is carried out. Same in the machine shop, which is also the repair shop for the railroad. In this shop is a steam engine, located so that in case of a breakdown of the power plant, repair work will not be hampered. The aggregate power of all the motors in use by this concern is about 5,200 h.p., and that the respective department heads are enthusiastic about electricity as a transmitting power for mills, is easily understood, and their share in bringing about success in a departure where there was none to pattern after, is so great that it really deserves especial mention.

Progress of Aluminum Industry

From Engineering and Mining Journal.

The production of aluminum is forging rapidly ahead and the vision of the prophets that this metal in the comparatively near future will become of common industrial importance is growing clearer and clearer. Several companies are preparing for the aluminum business in the United States, and when the Bradley patents expire in February, 1909, there will be a battle royal between the Aluminum Company of Am-

erica and its new competitors. The older company will occupy the superior position because of its prestige, experience and large capacity for production but the price for the metal will inevitably come down. An expert in the aluminum industry, in whom we have great confidence, foresees that aluminum will be produced eventually by the hundreds of thousands of tons yearly. He considers that a large figure may be expected in the not very distant future. Indeed, the one hundred thousand mark may be passed inside of five years.

If we consider the statistics of production in 1906 this estimate does not appear unduly extravagant. In that year the production of the United States and Canada was considerably upward of seven thousand metric tons; the production of the world was 18,325 metric tons, which was more than twice as great as in 1904. The production has been, indeed, increasing by leaps and bounds. The Aluminum Company of America undertook the installation of new equipment and plant in 1905 which was only partially completed in 1906, was pointed out in "The Aluminum Industry," Vol. XV, however, that this account the increase in production in 1907 and 1908 will be very marked and by the end of 1908 the production of aluminum in the United States will make a significant comparison with production of copper, taking into consideration the relative bulks of the metals.

In the meanwhile a great expansion in production is going on in Europe. As the Heroult patents expired, four aluminum plants have been started in Europe. The Aluminum Corporation has just been formed in England and will have its works going by the end of this year. This company expects to have 12,000 h.p. available for use in 1909. The new works of the Aluminum Company, at Loch Lomond, are being rapidly pushed forward by company originally started works on the Caledonian canal, using the water came down the celebrated Falls of Foyers. The demand for aluminum has made it necessary to provide a greater source of supply. The works are on the borders of Argyll and Inverness. The reservoir is 1,000 feet above the sea level and about five miles distant, the country draining into the reservoir being about 55 square miles in area, and inasmuch as the yearly rainfall is about 100 inches, an ideal amount of the water supply is obtained. The cost of these works will be \$2,500,000, and the construction will not be completed before 1909. The continent of Europe there is a large exhibition of interest in the production of aluminum.

However, although there is some promise of a remarkable increase in output during the next five years, although it is inevitable that the price for the metal will eventually come down to lower figures, there is no reason

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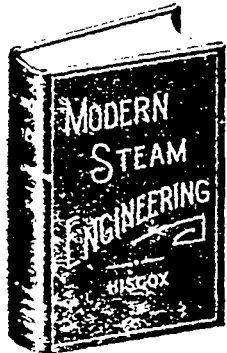
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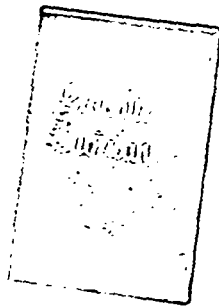
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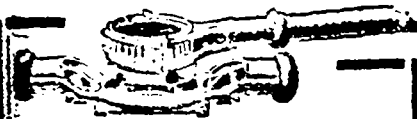
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anticipate a decline in the very near future, the present demand being so largely in excess of the supply in spite of the large increase in the latter which has already materialized.

Impurities Carried by Steam to the Dye-Bath

From the Textile Recorder.

Both scientist and practical man for some time now have been puzzling their heads over the question whether chemical and other impurities can be carried along by steam to scouring and dye-baths and other vessels, and the many circumstances entering into the question make the problem not very easy of solution. It is another case of frequent divergence between theory and practice, and the different elements of possibility and probability arise. On one side it is argued that foreign substances must remain in the boiler as a result of the fine state of division of the watery particles in steam, and as a proof of this theory resort is had to fluorescein, which, being but slightly soluble in water and in effect a solid, would be taken from the boiler with the steam, supposing that steam were capable of carrying foreign substances along with it. In carrying out the experiment, fluorescein is put into a boiler, and the steam is condensed after having been carried some distance. Fluorescein, even when used in only small quantities, gives an intense greenish fluorescence to the water, and if it were carried with the steam, condensed water from the latter should have some color. The experiment results, however, in perfectly clear condensed water, while the water in the boiler is found to be as strongly colored as originally. This proves that the fluorescein has remained behind in the boiler, and that it has not been decomposed in spite of the boiling process. To properly carry out the experiment it must be seen that the evaporation is equal and universal, and that no water is forced out from the boiler with the steam. When the boiler water has been made to blow off with the steam, the condensed water has been found to possess a strong alkali reaction. It is interesting to note that a recent writer has been unable to find the slightest alkaline reaction, even with such a delicate reagent as phenolphthalein, on testing distilled water from Cornwall boilers, the feed water of which had been treated with soda to prevent scale formation.

The fluorescein test is as satisfactory as can be conveniently applied, and it clearly demonstrates the truth of the theorist's assertion that steam is incapable of carrying along with it foreign substances, so that the answer to the question propounded must, from a point of pure theory, be in the negative. But in spite of the sarcastic outburst of a noted theorist, who once wrote that it was only the ludicrous profundity of a noodle which said, "It's true in theory, but not in practice," the reverse state of things is frequently shown in practice. With defective building in the boiler, overloading with water, or any other irregularity in the construction or working of the boiler, a possibility of water being carried along with the steam comes into play, and with the water, of course, goes any substance that it may contain. For this reason boiler accessories to be used for steam

generating for dyeing purposes, wet or dry steaming or such work, should be built strictly according to plan, and special precautions should be taken to ensure that the boiler has sufficient steam space to allow the steam to be blown off quietly without due forcing. Another recommendation, which is also valuable for the sake of its economy, is that a superheater should be used in order to obtain a perfect state of vapor. Referring again to the treatment of feed water with soda mentioned above, it is well to mention a certain danger which always exists, not only for dyeing. If the baths are boiled with open steam pipes, but for finishing. This is, that a complete change of shade may result in the dye if any irregularity should arise as a result of soda being introduced into the bath with boiler water. This is, of course, a much more important consideration in the case of fancy shades than of dark shades, as the latter are not appreciably affected by a small quantity of alkaline water.

Naturally, the manner in which the water is treated with soda has a material bearing upon the question. If, for instance, the soda solution is permitted to trickle on the surface of the water, the steam will carry out the falling drops almost to a certainty, and the result is most unsatisfactory. By far the better plan is to put the soda into the feed water, and allow the water to settle before letting it into the boiler, and it is a surprising thing that this method is not made more use of than apparently is the case. A water-purifying machine can also be used with advantage. One of these machines, if it works well, as the majority of them do, will keep alkali from the bath and at the same time prevent formation of scale in the boiler, the waste products being retained by the apparatus. Recently the barytamine process has been in general use as an alternative to the soda-lime method, as it possesses among its advantages that of an absence of scum on the boiler water and a corresponding diminution of the danger of impurities getting into the bath. In order to avoid the undesirable changes of shade and spots and clouds in dyed goods, brought about by the presence of soda and other impurities in the bath, it is well to heat the bath by a closed-coil. This, at any rate, is a good recommendation to make when fancy shades are concerned, but in the case of dark shades it may be deemed unnecessary and not worth the extra steam and time required. Acid might be added to the bath for its neutralising effect. The bath, however, is not diluted by the closed pipe—dilution takes place especially when a number of baths are boiling at the same time and the pressure on is low. Dilution is a thing to be avoided with more than ordinary care in the dyeing of union goods, because here short baths are essential.

The Melting Points of Metals

From Kullow's German Trade Review.

The determinations of the melting-points of metals offer certain difficulties. When we possess a sufficient bulk of the metal, we melt it in a crucible. This may be done in an indifferent atmosphere or under a layer of some flux which prevents access of the air. The

lumps of metal will always have condensed upon them, however, practical operations, and the crucible method is therefore, on the whole, the best, provided that we can avoid contamination with the materials of the crucible and other substances. The temperature is determined by dipping an electric thermometer or a thermo-couple, protected by a tube of fireclay into the metal. The temperature is kept constant about the melting and freezing points, which can thus easily be determined. When we have only small masses of the metal or alloy for our disposal, the task is more difficult. Berthelot proposed to fix a short line of wire of the respective metal between two platinum wires, and bring it near the ends of the thermo-couple, possible in an electric or other furnace. The observer had then to wait for the melting of the wire, and simultaneously to read off the momentary temperature. As this is not easily done, Holborn and Day have placed the piece of wire in question between the two wires of the thermo-junction. When the test-metal melts, the thermo-current is momentarily interrupted, the galvanometer swings back, and the exact temperature is thus marked. But Holborn and Day did not deceive themselves as to the objections to the method. Working in a reducing atmosphere the thermo-couple exposed to the contaminating influence of carbon monoxide generated in the carbon furnace usually employed, the sudden deflection of the galvanometer is easily overlooked, moreover, because the head of the molten wire immediately closes the circuit again. This bead on the thermo-junction, so that the coil has to be shortened after each test. An ingenious bead method which Holborn determined the melting point of platinum has been explained in our column. Another simple method—a modification of the Berthelot method—has recently been worked out by Richard Loeb, Berlin; it is described in the "Zeitschrift für Elektrochemie" of August 30. It returns to the idea of Berthelot, keeps the thermo-junction and the test-wire circuit entirely separate. The operations are carried out in an electrically-heated crucible, into which are lowered the leads of the thermo-couple and close to them the platinum leads between which the test-wire is stretched. This wire should not be too short, at least 5 millimetres in length, and the molten metal drops off and does not form a bead, which would unite the terminals. The circuit of the thermo-couple and the platinum wires further contains a battery and an electromagnet. The armature strikes against a bell which is to say, it is simply a bell which is normally closed, and which is interrupted when the wire melts. The observer keeps his eye on the scale of the meter of the thermo-couple, and reads a reading when the bell sounds. This observation is hence not so tedious as with the other methods in which the momentary deflection of the galvanometer has to be waited for. The crucible may be charged with fluxes or with different gases, and may be placed in a metallic bath; the platinum leads may be encased in a tube of fireclay, though there is nothing very special about Loeb's method, it certainly appears to simplify the determination considerably.

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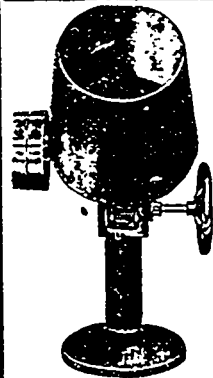
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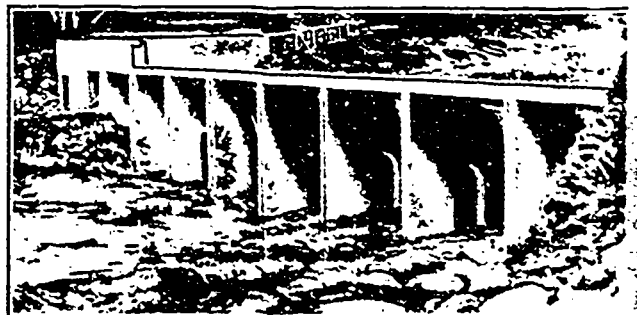
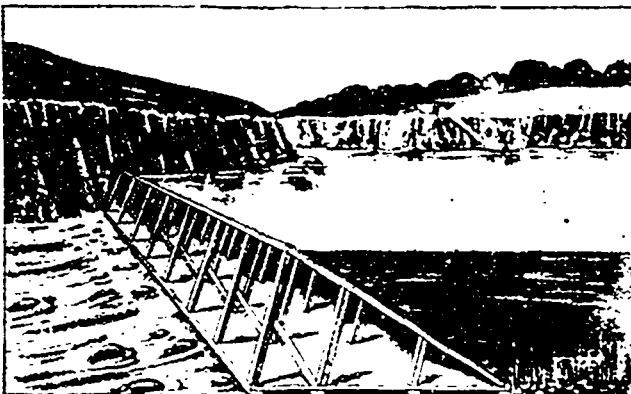
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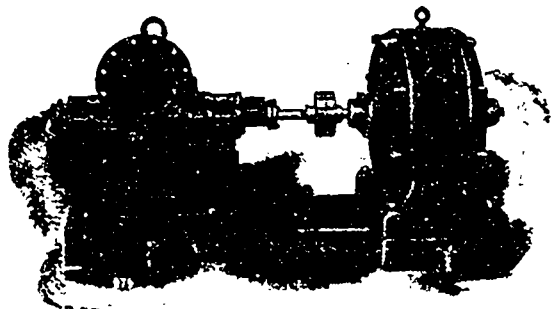
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