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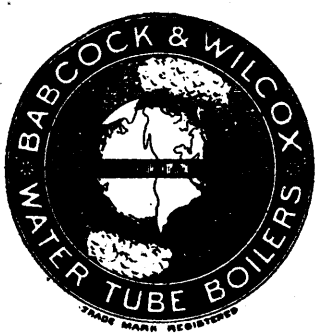
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AND INDUSTRIAL WORLD  
DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

THE MORE COUNTRY PRODUCES THE RICHER IT IS  
AN INDUSTRY THAT MANUFACTURES FOR ITSELF PROSPERS

VOL. 42.

TORONTO, JANUARY 18, 1901.

No. 2



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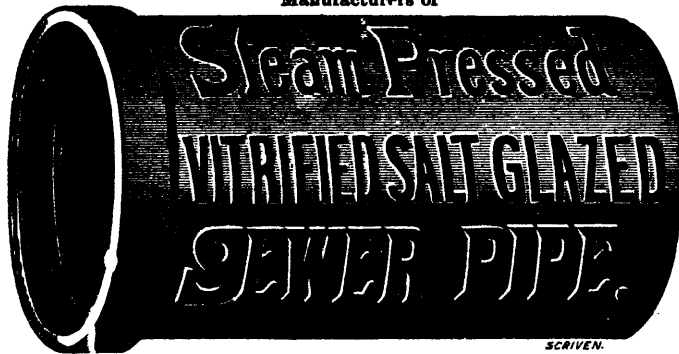
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New Black for Cotton

## Colonial Black

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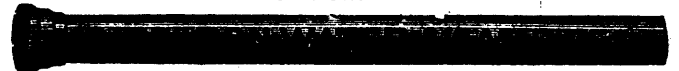
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MESSRS. GOLDIE & McCULLOCH Co., Galt, Ont.

CHATHAM, ONT., November 30, 1898.

DEAR SIRs.—In the spring of 1895 we found it necessary to replace a high speed engine, which we had in our plant with a slow speed one, and we were then advised to purchase a Wheelock, which we did, and we are pleased to say that it is the best engine we ever ran. Very light on fuel, never out of repair, in fact, for 3½ years, she has run 313 days per year and has never cost us a \$5 bill for repairs, in fact we would not part with our Wheelock for any other make on the market, and to any person wishing to purchase an engine we will say that you cannot go astray in a Wheelock, if economy, durability, reliability and general stick-to-itiveness is taken into account as being the salient points of your purchase. Yours truly, THE M. CAMPBELL FANNING MILL CO., OF CHATHAM, LIMITED, W. S. Marshall, Sec.-Treas.

In December, 1900, the same company, in answer to our enquiry about same engine, wrote us as follows:—

GOLDIE & McCULLOCH Co., Galt, Ont.

CHATHAM, ONT., December 13, 1900.

DEAR SIRs.—In reply to yours of 15th. Since writing you November 30, 1898, re our Wheelock engine, we still have to report engine running like a top, apparently as smooth as day it was started. In 3½ years we have not paid for repairs \$1 per year. Yours truly, THE M. CAMPBELL FANNING CO., OF CHATHAM, LIMITED.

The Goldie & McCulloch Co., Limited, - Galt, Ont.

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Canada Tool Works

MANUFACTURERS AND BUILDERS OF

## METAL-WORKING MACHINE TOOLS

—FOR—

Machine Shops,  
Ship Yards, Boiler Shops  
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# PAPER MILL MACHINERY.

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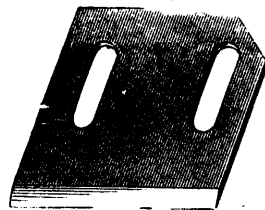
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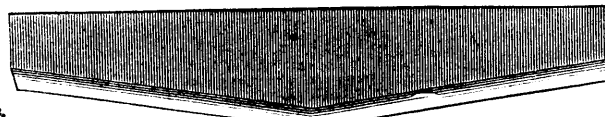
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Description of.....



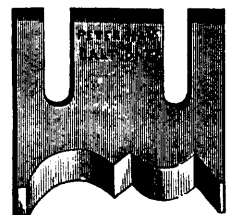
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## CAUSTIG SODA

60% to 77%



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THE BEST EQUIPPED BOILER AND ENGINE WORKS IN CANADA.

We Manufacture—

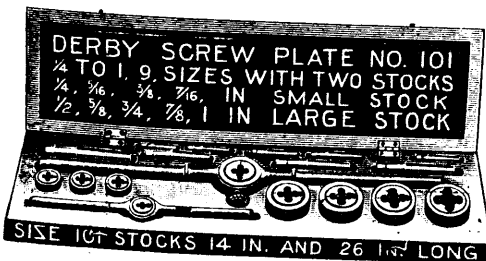
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1/4 TO 1.9 SIZES WITH TWO STOCKS  
1/4, 3/16, 1/8, 3/16, 1/4 IN SMALL STOCK  
1/2, 3/8, 3/4, 7/8, 1 IN LARGE STOCK

SIZE 10T STOCKS 14 IN. AND 26 IN. LONG

BICYCLE SCREW PLATES, REECE  
SCREW PLATES, DERBY SCREW  
PLATES, BLACKSMITH'S STOCKS  
AND DIES, BLACKSMITH'S IM-  
PROVED SCREW PLATES, HAND  
TAPS, MACHINE TAPS, PIPE TAPS,  
EVERY KIND OF TAPS AND DIES.



REECE'S NEW SCREW PLATE  
WITH ADJUSTABLE TAP WRENCH.

SIZE EE. STOCKS 14 AND 26 INCHES LONG

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**Galvanizing**  
DONE FOR THE TRADE.

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INGS and all kinds  
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Manufacturers of

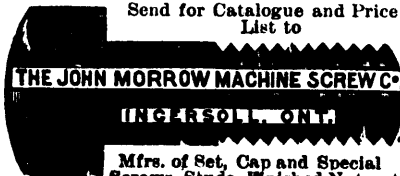
Square and Hexagon

**HOT PRESSED NUTS.**

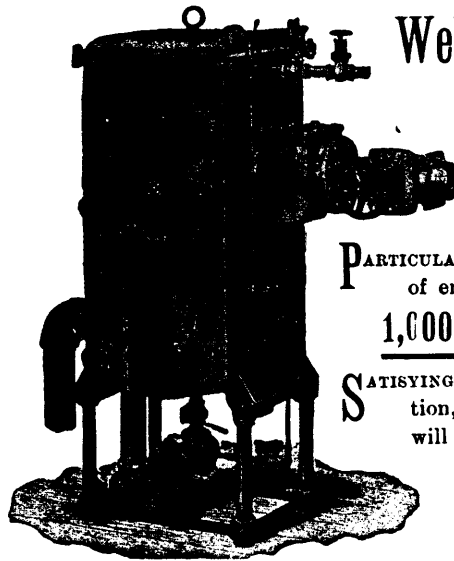
PARIS, - ONT.



Send for Catalogue and Price  
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Screws, Studs, Finished Nuts, etc.



## Webster Feed Water Heater AND PURIFIER

BEFORE PURCHASING ELSEWHERE  
ENTERTAIN A BID FROM US.

PARTICULAR experience for ten years in this department  
of engineering, and the fact that over  
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SATISFYING particulars, embracing details of construc-  
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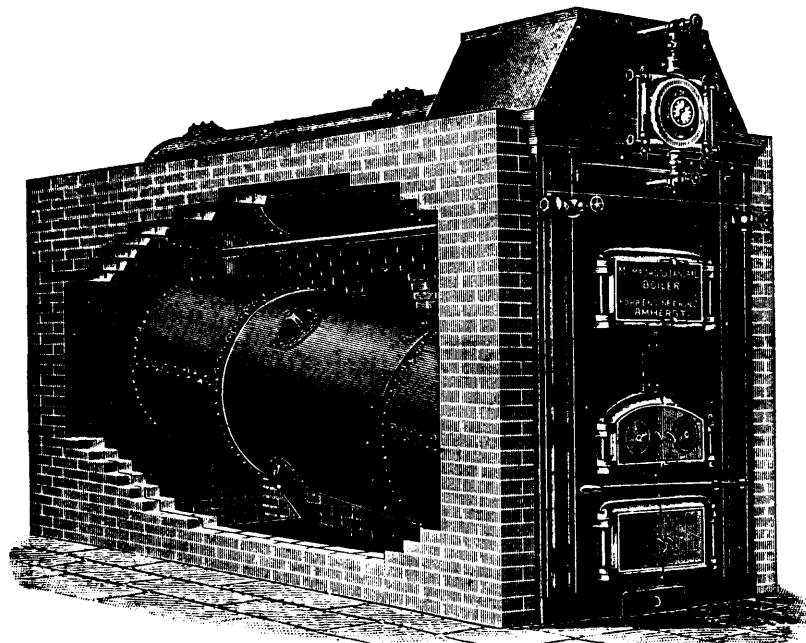
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## THE "MUMFORD" BOILER



Is built for brick casing, or with sheet steel case, as desired by purchaser. Uses 10 to 25  
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**WILL BEAR INVESTIGATION**

Capital Wanted in a Stock Company proposed to be formed to take over the patent right and manufacture in Canada of an article that is in constant demand in every household in the country. The enterprise will bear the closest investigation.

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FOR

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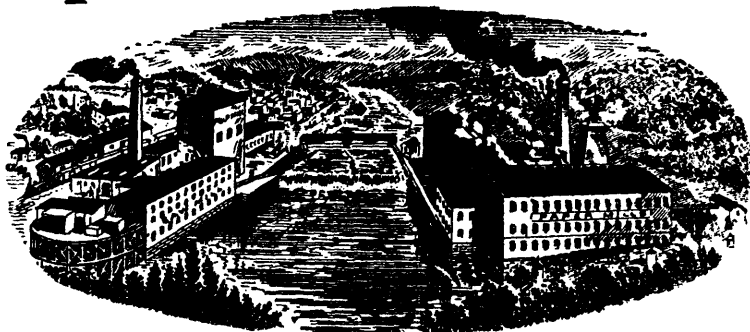
"We replaced two years ago a certain number of your belts that had been in use night and day for fourteen years, which is equal to an ordinary service of twenty-eight years."  
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**SPRUCE, PINE and HARDWOOD (Dressed and  
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"FOR ALL DUTIES"

We invite enquiries from engineers in need of any description of Pumping Machinery. We manufacture over five hundred varieties and sizes of Steam and Power Pumps for stationary and marine purposes. We will be pleased to furnish plans and specifications for any special types. Our Catalogue, giving a good idea of our standard patterns, sent free to all enquirers.

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To anyone requiring a compact, thoroughly reliable engine, especially suited for users of intermittent power, we recommend our Gas and Gasoline Engine. We shall be glad to furnish estimates for Gas or Gasoline operated pumps, electric light plants, etc., etc. Explanatory Booklet free on request.

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AND IMPORTERS  
OF ILLUMINATING  
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## OILS, GREASES

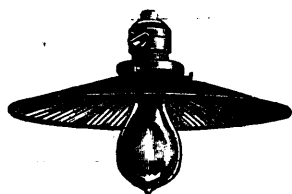
## and SPECIALTIES

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CONSULTING ENGINEER TO  
Temple Bldg., - TORONTO.  
Long Distance Telephone.

TO MANUFACTURERS:—Competent and impartial advice on Industrial Electrical Systems of Lighting, Power Distribution, Heating and Welding, Etc. Plans, Specifications, Tests, Reports, Valuations.



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We Stock a Large Variety of SHADES  
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ALUMINUM, MIRROR, CELLULOID, PAPER, PORCELAIN,  
FOR FACTORY AND OFFICE.

Imperial Lamps and Helios Upton Enclosed Arcs Give BEST LIGHT with LEAST CURRENT  
ELBRIDGE Sparking Dynamos, SAMSON Batteries and IMPERIAL Salts, for Gas or Oil Engines.

Write us about Lighting  
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**JOHN FORMAN, 708 and 710 Craig St., MONTREAL**

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ESTABLISHED IN 1880.

PUBLISHED ON THE FIRST AND THIRD FRIDAYS OF EACH MONTH

## SUBSCRIPTIONS :

CANADA AND UNITED STATES, - - - \$1.00 PER YEAR.  
 ALL OTHER COUNTRIES IN POSTAL UNION, EIGHT SHILLINGS  
 STERLING PER YEAR, INCLUDING POSTAGE.

**The Canadian Manufacturer Publishing Co., Limited.**

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

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J. J. CASSIDY, Editor and Manager

## WHAT WILL THE HARVEST BE?

In the November issue of the *British Empire Review*, Rev. G. M. Grant, Principal of Queen's University, Kingston, Ont., presents a special article bearing upon the Imperial questions which were at issue in the recent general elections in Canada, in which he introduced to his readers the respective leaders and set forth the attitude of the two political parties which were at the time of his writing, presenting their claims to the electorate. Having made brief reference to the political views of both Sir Charles Tupper and Sir Wilfred Laurier, he spoke of the policy of the latter as being, in two respects, more distinctly British and more in accord with Imperial Federation sentiment than that of the former. Enunciating his views, Dr. Grant said:—

I refer, first, to the Fielding preferential tariff in favor of the United Kingdom. This gave a preference of 12½, then of 25, and now of 33½ per cent.; that is, a substantial reduction of our tariff to the extent of one-third on all imports of British manufacture. This is a policy which has in it very great promise. Inaugurating a new era, it may indeed be said to be far reaching. If persevered in it may lead to a Imperial Zollverein. One would have thought that the Conservative party in Canada, which has long prided itself on being the loyal party, would have hailed the inauguration of such a natural pro-British policy and would have claimed that the Liberals had simply stolen some of their thunder. They have taken that attitude with regard to the general tariff under which we now are, as the Liberals have not shown themselves free traders when in office to the extent hoped by their friends and feared by their foes. But with regard to the preference on British goods, the Conservatives have taken up a position of hostility which must be embarrassing to not a few of their followers, who were considered to be nothing if not Imperial Federationists. A bridge, however, has been formed for them, called "mutual preference." The expression sounds reasonable to the ordinary voter, who has no conception of the magnitude of the commerce which Great Britain has built up on free trade lines, and of the delicacy of her complex structure. He is, therefore, easily brought to believe that he has really given away something so very valuable that he ought to get something in return. Indeed, there is a pleasing fiction current to the effect that the Duke of Devonshire and Mr. Chamberlain had practically offered Sir Wilfrid Laurier the

mutual preference aforesaid, on the occasion of the latter's visit to England in 1897, and that he, from a magnanimous consideration of British interests, had rejected the mighty bribe. This fiction has been slain over and over again, but it still comes to life in places where no one has authority to contradict. It is actually believed by people who are not in lunatic asylums.

Our preference, though apparently one-sided, is really beneficial all round, probably more so to Canada than to Britain. This can be shown very easily.

In the first place, it lowers our burden of taxation by lowering the price, not only of British goods, but of all manufactures that compete with British imports. All foreigners must accommodate themselves to the price of the favored competitor or withdraw from our markets. It thus benefits the consumer on a great range of articles, and, of course, everyone is a consumer. It must, however, be pointed out to benighted Englishmen, that, in the opinion of thoroughgoing protectionists, this lessening of taxation is not a gain to us, but a loss. For instance, in 1864, when Mr. Sumner argued in Congress against continuing the Reciprocity Treaty with Canada, he proved to the satisfaction of himself and his hearers that had there been no treaty for the previous ten or twelve years, and had the duties on Canadian articles remained at the old rates for that time, Canada would have paid to the United States revenue over \$16,000,000. This vast sum, he said, "has actually been lost to the United States."

In the next place, Britain is the great market in which we sell almost everything we raise, catch, cut or manufacture. It is the most permanent, most reliable, and hungriest cash market in the world. We are learning its ways, its peculiar tastes, its imperious demands, and the better we learn, the more of our stuff we shall sell there. Steamers now come to us from Belfast, the Clyde, Liverpool, Bristol and London, to carry our products across, but as a rule they have to come in ballast. The Canadian farmer has thus to pay two freights. If cargoes of British goods were brought to Canada, he would have to pay freight only one way. This is as simple and certain as the first sum in addition, that one and one make two. Strange to say, there are numbers of farmers to whom it is by no means certain. Our preferential tariff has already done something to increase the volume of British imports, and it, therefore, benefits our producers as well as our consumers.

In the next place, whether or not the old saw holds good that "trade follows the flag," it is certainly true that people trade rather with friends than with enemies. As a matter of fact, the British people are now more ready to buy articles made in Canada than they were. Formerly they gave the preference to American products. They are beginning now, other things being equal, to give the preference to Canadians. We have proved by deeds, and not merely by singing God Save the Queen, that we desire to get into closer commercial relations with our Mother Country. The Mother is slowly, as is her wont, but surely—responding, along lines on which she can act without abruptly and unnecessarily disturbing her great commercial system. Hence in part the explanation of the increase in our sales in the British market during the last four years. Hence the denunciation of the treaties with Belgium and the Zollverein, a denunciation which had been previously asked for in vain. Hence the recent inscribing of our securities on the preferred list, surely as solid a preference on the one side as a tariff preference is on the other. Sir Richard Cartwright—and we have no better financial authority—says that this one concession by Great Britain will far more than compensate for the addition of seven millions of dollars that have been made to the national debt of Canada in the last four years. Hence, too, the quiet, steady growth in Great Britain of a sentiment to the effect that free trade is not necessarily the last word in national housekeeping, and especially in the policy of a great Imperial power, and that an Imperial customs union is a question worthy to be considered. This

sentiment may yet revolutionize the commercial policy which has been regarded in Britain for more than fifty years as absolutely unquestionable.

But, cries the politician, who is generally in bondage to phrases, Britain gives us nothing in her market that she does not give to our rivals, whereas we do give her a preference. Is that fair, he asks. Yes, it is quite fair, and it would be seen to be so, if he considered two little truths; that while Britain puts us on the same footing as that on which her own home producers and manufacturers stand, we continue to give a very decided preference to Canadians; and again, that there is all the difference in the world between an open and a closed door. If a man gives me a good dinner, it is no hardship, except to the dog in the manger spirit, that he gives as good to my neighbor; whereas if I close my door to him it is no solace to his soul to assure him that the door is closed to all others. If I open my door partially to him, when his is wide open to me, what right have I to claim that he should close his partially to others?

After the abolition of the protective system in Britain, Canada tried hard to get access to the markets of the United States. That seemed indispensable to our existence, and to get it many eminent men were willing to sell their national birthright, without phrases. We tried so hard and so long that our neighbors believed that we were at their mercy. Hence, their Morrill, McKinley and Dingley tariffs, each of which turned out to be not the sweet compulsion to annexation anticipated, but a boomerang of ever increasing power. "The Canadians have nowhere else to go but to our markets," was the language used in the House of Representatives in 1864. "The 'Mother Country,' as they call it, has failed to protect them. The markets there do not suit them and are of no account to them." All that had a measure of truth in it then, as we ruefully confessed. This is certain that, during our efforts to get access to their markets, we were always ready to give them reciprocity in exchange. Why should we not be as ready now with our Mother Country? The markets of Britain are indispensable to us. If we were honest and fair, we would reciprocate with her. Not suddenly, for that would disturb industries which we ourselves have built up; but gradually and along the line we have followed since 1896; step by step, until we are in the position looked forward to by Mr. Chamberlain, when he declared that the necessary condition of any preference in our favor would be practical free trade within the Empire. We are not yet quite prepared to accept this condition, but the time may come sooner than expected.

#### "IN BONDAGE TO PHRASES"—DR. GRANT.

In Dr. G. M. Grant's article published in *The British Empire Review*, in arguing in favor of the tariff Canada now observes in which special preference is shown to British manufacturers, and in advocating a Zollverein by which absolute free trade would prevail between all countries under the British Flag, alluding to those who, while loyal to the flag, believe that each country should have the privilege of raising its revenue by imposts upon imported merchandise, regardless of the source of its origin, but observing a tariff preference towards all other countries under the flag, it is declared that those who thus think are "in bondage to phrases." It seems to us that Dr. Grant uses many phrases and expressions to which he is very evidently in bondage, and which are misleading to those to whom he addresses himself. Thus, speaking with those who differ with him regarding "mutual preference," he declares that while "the expression sounds reasonable to the ordinary voter who has no conception of the magnitude of the commerce which Great Britain has built up on free trade lines:" that "he is easily brought to believe that he has really given away something so

very valuable that he ought to get something in return," which, he says, "is actually believed by people who are not in lunatic asylums." The reason Dr. Grant gives for believing that a very large portion of the people of Canada are unconfined lunatics is that the preference we now show in favor of Britain, "lowers our burden of taxation by lowering the price, not only of British goods, but of all manufactures that compete with British imports." We quite agree with Dr. Grant that since Britain abandoned protection and adopted free trade, the magnitude of her commerce has become almost inconceivable, but it cannot be denied that the foundation of this commercial greatness was laid under a policy of protection before which the Morrill, the McKinley and the Dingley tariff of the United States shrink into insignificance. Protection was the stepping stone by which Britain became mistress of the commercial world.

Another phrase or idea to which Dr. Grant is in bondage is that our burden of taxation, through the tariff, is lowered not only on British goods, but on all manufactures that compete with British imports. The assertion cannot be substantiated, but the contrary can be. In a recent issue of *THE CANADIAN MANUFACTURER* a tabulated statement was given in which a list of some forty manufactures of iron and steel were enumerated, imported into Canada from Great Britain and the United States, the aggregate value of which was more than \$10,000,000. The table showed the value of these imports in detail from the respective countries, the totals showing that of these values more than eighty-seven per cent. came from the United States and less than thirteen per cent. from Great Britain. Now the perspicacity of a lunatic, whether confined in an asylum or not, or even that of the principal of Queen's College, should lead to the conclusion, as Dr. Grant argues to the contrary, that the American sellers of these goods did not accommodate their prices to the prices of the British manufacturer. Will Dr. Grant explain why, of every one hundred dollars worth of these imports, eighty-seven dollars worth came from American workshops and but thirteen dollars from British workshops? It cannot be said of either John Bull or Brother Jonathan that they seek the Canadian market because of the physical health there may be in it for them. Then why did Canadians purchase seven-eighths of their machinery from the country of McKinleyism and exorbitantly high protection, and but one-eighth from their kinsman across the water—from the country of free trade which has a rebate of one-third in the tariff we imposed upon the Yankees? It was not always thus. The fact is, the extent of the burden of our tariff taxation is lowered rather by the developments in the methods of production in the protectionist than in the free trade country. In this instance it was not, as Dr. Grant says it should be, that the American manufacturer, in entering the Canadian market, accommodated the price of his products to that of favored competitor to whom we granted a one-third rebate in duty. The advantages enjoyed by the manufacturers of free trade Britain, plus the preferential tariff, were not sufficient to enable them to successfully compete in Canada, with the manufacturers of the country with the highest tariff in existence, minus the preference.

Surely the bondage to phrases and ideas under which Dr. Grant suffers, is also a bandage over his eyes which prevents him from distinguishing things no farther away than the length of his nose.

## GIVE MONTREAL A CHANCE.

At the annual meeting of the Canadian Manufacturers' Association held in Toronto last August, Mr. Ballantine, a Montreal member, extended a very hearty invitation to the Association to hold its next annual convention in that city. Since then considerable enthusiasm has been developed among Montreal manufacturers in behalf of the Association, a result of which has been the organization of a Montreal branch, and a formal extension of Mr. Ballantine's invitation for the convention of next August to assemble in that city. It is to be hoped that this determination may be arrived at for reasons too numerous to mention at this time. Montreal manufacturers have always been generous in their support of the Association, rivaling even Toronto in the matter of membership; and it is certain that the Association would never have acquired the influence it has always wielded at Ottawa had it not been for the co-operation of the Montreal contingent. Considering these facts it is somewhat noticeable that Montreal manufacturers have never been invited to any great extent to become office-bearers and participate in the management of the affairs of the Association, and it is to be hoped that under the new order of things, the honors and responsibilities may be more evenly divided. There can be no good reason why the annual meetings of the Association should not be held alternately in the larger cities of the different provinces, nor why the manufacturers in the different provinces should not participate in the management of the Association.

During the last ten years the Association has not dealt ungenerously with its Toronto contingent in the matter of honors. Regarding the honor of being President, Mr. W. K. McNaught occupied that position two years—1891-2: Mr. A. E. Kemp two years—1895-96: Mr. J. F. Ellis three years—1898-99, 1900, and Mr. P. W. Ellis one year—to August, 1901, the interim terms being occupied by Mr. John Bertram, of Dundas, Ont., in 1893, Mr. W. H. Law, of Peterborough, in 1894, and Mr. D. W. Karn, of Woodstock, in 1897. During these terms four Toronto members filled the presidential chair eight years, and all other Canadian members three years.

As regards the vice-presidency, Toronto has fared even better, Mr. P. W. Ellis having been either second or first vice-president in 1891-92-93-98-99 and 1900. Six times in ten years. Other Toronto vice-presidents were Mr. J. P. Murray in 1895, Mr. J. F. Ellis in 1896-97, and Mr. R. E. Menzie in 1899 and 1900. All the balance of Canada supplied vice-presidents as follows: Mr. John Bertram in 1891; Mr. W. H. Law in 1894, and Mr. D. W. Karn in 1896, each of whom succeeded to the presidency in the next succeeding years. Mr. G. E. Drummond, of Montreal, was first vice-president in 1894, the only member elected to the office during the decade, who resided outside Ontario. In the same year Mr. Wm. Chap'in, of St. Catharines, was second vice-president; and Mr. James Kendrey, of Peterborough, was second vice-president in 1895 and 1897, and first vice-president in 1898.

Under the recent by-laws there were two standing committees—the Executive and the Tariff Committees, and during the ten years under consideration, no other than Toronto members were ever chairman of either of them.

## THE METRIC SYSTEM.

"The Metric System of Weights and Measures" is the title of an exceedingly handy little book prepared by A. D. Risteen of the Hartford Steam Boiler Inspection and Insurance Company. The object of the publication as stated in the preface by President Allen of that company, being as follows:

The metric system of weights and measures is used so universally in foreign books and periodicals, that much time is consumed, and no little annoyance incurred by the American reader, in translating these units into their English and American equivalents, by the aid of any of the reduction tables that have yet been published. It therefore occurred to the undersigned that a handy pocket volume, for facilitating comparisons of this kind, might be acceptable to engineers and scientific workers generally.

It contains 196 pages, of which the first 36 are devoted to a brief history of the metric system, and to an explanation of the use of the tables that follow. The remaining pages consist of tables in which the English and metric units are compared with each other. The arrangement and general design of the tables will be best understood by selecting a particular table for description; for they are all arranged in accordance with the same general plan. If the book be opened at pages 48 and 49, for example, we find that both of these pages are occupied by the table for reducing meters to feet. On the left-hand page the table begins with 1 meter equals 3.281 feet, 2 meters equal 6.562 feet, 3 meters equal 9.843 feet, and so on up to 50 meters equal 164.042 feet, which is the last entry on the page. Looking across to the right-hand page, we see that this page begins with 51 meters equal 167.323 feet, 52 meters equal 170.604 feet, and so on up to 100 meters, the last entry on the page being 100 meters equal 328.084 feet. By opening the book once, at pages 48 and 49, we therefore have before us the value of every number of meters from 1 up to 100, expressed in feet, to three places of decimals. If we now turn over one leaf, so as to open the book at pages 50 and 51, we find a complementary table for reducing feet to meters. Thus the left-hand page begins with 1 foot equals 0.3048 meter, 2 feet equal 0.6096 meter, and so on, just as before, up to 50 feet equal 15.2400 meters; and the right-hand page begins with 51 feet equal 15.5448 meters, 52 feet equal 15.8496 meters, etc., up to 100 feet equal 30.4800 meters. These two pages therefore show at a glance the value of every number of feet, from 1 up to 100, expressed in meters, to four places of decimals. All of the other tables are arranged, as we have said, on precisely this same plan, so that it is not necessary to say more about the details of the separate pages. In every case there are two pages giving the English values of the first one hundred multiples of some particular metric unit, and immediately following these there are two pages devoted to the inverse operation of expressing the first one hundred multiples of the corresponding English unit, in metric equivalents. The tables are grouped in the following way: First come tables of long measure, in which we find a comparison of the units used in measuring length, such as the inch, foot, yard, mile, centimeter, meter and kilometer. Then come the tables that contain the units that are used in measuring areas, such as square inches, square acres, miles, and the like. Next we find the units that are used in expressing the cubical contents of boxes, tanks, etc., such as cubic inches, cubic feet and cubic yards. After this we come to units that are used in the measurement of fluids, such as fluid ounces, and British and American quarts and gallons. Next come the analogous units that are used in dry measure—the dry quart and the bushel. These are followed by the units, such as the ounce, gramme and ton, that are used in the estimation of weight. Lastly, there are upwards of forty pages devoted to miscellaneous units, such as heat units, foot pounds, horse power, pounds per square inch, etc., and the tables close with a comparison of Centigrade and

Fahrenheit thermometer scales. It is believed that this systematic arrangement of the tables will contribute greatly to the convenience of using the volume, as, after one has become a little familiar with it, it can be opened readily at any table that may be desired. A very full index has also been provided, so that no one should have the least difficulty in finding quickly anything that the book contains.

The volume is convenient in size for the pocket, and for general reference.

### ONTARIO IRON MINES.

The Iron Trade Review publishes an article by Mr. D. E. Woodbridge having reference to the iron mines in the Lake Superior region in which the explorations for ore on the Canadian side are alluded to. The writer says:

It would now appear that the most inviting field for exploration in the Lake Superior country is north of the lake in Canada. So far, with but few exceptions, the explorations carried on there have not been satisfactory, and many bitter disappointments have been met during the year by explorers in Canadian fields. As a general thing the ores found there are undesirable, for one reason or another. They may be titaniferous, some are thin blankets, some are much mixed, and some are otherwise unfit for the purposes wanted. The vast extent of the undeveloped and almost unexplored territory north of Lake Superior, from the vicinity of the Sault on the east to the Rainy Lake district on the west, is such as to make any predictions as to the future of this territory absurd, and to recall the proverb, that "fools rush in where angels fear to tread." There have been two or three explorations in this area that have arrived, so to speak. These are the now noted Helen and neighboring deposits of the Michipicoten range, and the Atikokan region, one near the east end and the other clear to the west of the ore-bearing district. The known deposits of both these ranges are now in the hands of strong parties, the Michipicoten under the almost complete control of Mr. F. H. Clergue and his associates, the Atikokan under option to an American steel company and almost sure to be taken by it in the early spring.

The Helen mine is no isolated deposit. The range of which it is the most westerly opening and outcrop is traced by the Clergue interests for some fifty miles, and various ore bodies are known to exist upon it. While the ore of the Helen is a brown, that of the Josephine, the only other deposit that has been explored to any considerable extent, is a fine red ore, much like many of the Vermilion ores in appearance. It is believed to run better in iron and lower in phosphorus than Helen, which is not entirely satisfactory. Since the commencement of shipments from the Helen it has sent out about 62,000 tons, almost exactly the quantity shipped by the Vermilion range during its first year. The management has installed an overhead conveyor system and runs its ore to a large Gates crusher, and thence twelve miles down hill to a dock built by it during the summer. The dock is a new departure from all lake precedents, and further trial of it will be necessary to show its advantages for the work. The expectations of the management are that the mine will mine and ship next year not less than 600,000 tons, and it may reach this figure.

At the Atikokan there has been little work done during the year, enough to show a large body of magnetic ore of a high grade. This ore is exceedingly hard and dense, and runs very high in iron and so low in phosphorus as to be valuable. There is a sharply rising hill, some miles long, and averaging about 300 to 500 feet wide. On the top of this the ore outcropped in three parallel lenses, one about 40 feet wide, the others narrower. At the point where a tunnel has been driven through the ridge this is about 150 feet high. The tunnel has shown these three ore lenses to be continuous at least to the level of the surrounding ground, and to be persistent to that depth in their dip and quality. The formation

is such that a very considerable depth is probable. As to the full extent of the range nothing is definitely known, but there are not wanting indications that it is quite important. A leading American steel company has bonded the property and is now arranging to begin explorations on a more ambitious scale, and will install crushers. The projected Ontario and Rainy River railway runs at the base of the outcrop, crossing the Atikokan river at this point.

Nearly 100 miles east of this deposit are the explorations of the Mattawin range, where the Ontario Government has been drilling with a diamond bit for months. Nearly 2,000 feet of cores have been taken out. Common report is that the ore is of a very valuable grade, but the indications are that the facts are exaggerated. There are a number of locations at this point, where the ore is exposed, in both hematite and magnetites, but unless the present result is of a very different character from that of some years ago in deposits are not of great importance.

There are known to be large iron ore showings in Hunter's Island, and along the Seine river, all in Western Ontario, near the Minnesota state line, but these have not been sufficiently tested to show any great value. On the north shore of Lake Superior, close to Thunder Bay, there was early in the year some excitement over ore finds there, but the result of the explorations has been meagre, up to date. There are reported discoveries along the east side of Nipigon river and lake, and it is unquestionable that the outcroppings there are strong.

### EDITORIAL NOTES.

It is reported that the Irving Umbrella Co., Toronto, are in receipt of a rush order from the British Government for some twenty-five thousand of their best water-proof umbrellas for use in Cape Colony, South Africa, to keep out De Wet.

The Canadian method of computing sterling exchange is, to say the least, quite antiquated. When we say sterling exchange is sold at "9½" it means \$1.85 2-3, or about 1.5 per cent. discount. The "9½" is the percentage of premium on the pound, according to coinage previous to 1832, when it equalled \$1.44 4-9. At that date the dollar was reduced so that a pound equalled \$1.84 4-9, or 9 per cent. advance on the old par. The English sovereigns of the present coinage are worth \$1.86 2-3, or 9½ per cent. advance on the former value of the pound, and that is how the value of exchange is still calculated in Canada. Since 1874, when Congress fixed the custom house value of a sovereign at \$1.86 65-100, exchange in the United States has been calculated in its actual value, not in a percentage on the old par.

Parliament will be asked to grant legislation for the construction of a railway from a point at or near Pyramid Harbor, on the Lynn Canal, or from a point on or near the international boundary between Canada and the United States of America in the vicinity of the Lynn Canal, thence through the Chilkat Pass, and thence by way of the Dalton Trail to a point at or near Fort Selkirk, on the Yukon River, in the Northwest Territories; also to build and operate tramways and to construct and maintain stage or other routes between such points as may be desirable between the points referred to.

The Ontario Legislature is called to meet for the transaction of business on Wednesday, February 6, the same day as that on which the Dominion Parliament meets.

United States Consul Winter reports from Annaberg, November 27, 1900, as follows:—

Germany exports to Canada about six times as much as she imports from that country. On the whole, however, German products are gradually losing ground in British North America. The commercial balance in the principal articles of German exports to Canada for 1899-1900 stands as follows:

Products.	1899.	1900.
	Pounds.	Pounds.
Raw sugar.....	66,782,766	44,717,885
Woolen goods.....	419,755	368,388
Ceruse.....	2,932,238	1,717,383
Railroad axles and wheels.....	3,465,631	3,904,346
Porcelain ware.....	277,817	569,668
Toys.....	249,579	758,264
Cotton and wool hosiery.....	273,590	190,033

At a recent meeting of the New England Cotton Manufacturers' Association one of the speakers dwelt upon the growing scarcity of mill labor as beyond doubt the most serious danger confronting the manufacturers of that section of the country, especially in view of the increasing competition of the southern States. He said:—"A report of a high official in Quebec, recently published, states that the Canadian people are returning from the New England States in large numbers for permanent residence, releasing mortgages on their property, or buying and settling on new lands, and that twice as many have returned to Canada the past year as have left for the States. We are drawing from the shores of the Mediterranean people to fill up the vacancies in our mills. To what extent this can be done I do not know, but it is a well-known fact that our native help and our Canadian employees are rapidly vanishing from our mills. In Massachusetts this is particularly noticeable; the restriction laws for minors and children, the general use of double roving and high creels on ring spinning frames, shut off a class of small help who were formerly employed in considerable numbers throughout the mills." As is well known, a large percentage of the skilled labor employed in these great steam and water power manufacturing industries of Massachusetts and the other New England States has been for many years Canadian, and the steady drift of rural population into these great hives of industry one of the most prevailing conditions throughout eastern Canada. To reverse the movement from the farm to the factory, with its attendant town or city life, has proved one of the most difficult problems under modern industrial conditions, and experience has shown that the balance of material advantage has to swing very decidedly in the direction of the farm before the city man will be attracted to it. The significance, therefore, of the movement above referred to is an unequalled tribute to the condition of the country under the present Government.

The Hartford Steam Boiler Inspection and Insurance Co. publishes a little book explaining the metric system, and containing a very extensive and complete series of tables for facilitating the comparison of metric measures of all kinds with those now in use in the United States. This little book has been received everywhere with great favor. The price charged for it is intended to merely cover the cost of typesetting, paper and binding. For the edition, which is bound substantially in leather, with red edges, \$1.25. A special edition on bond paper, with gilt edges, \$1.50. Orders should be addressed to the home office of the company at Hartford, Conn.

The exhibit of railway ties in the Canadian forestry exhibit at Paris may lead to a new trade being opened up between Canada and the Continent. Ties made of oak have long been those chiefly used in Europe, but in recent years various systems of chemical treatment have been invented which have doubled the life of the ordinary "sleepers," and all kinds of coniferous woods are now being used all over Europe as they have long been used without such treatment in America. Either hewn or sawn ties would now find a ready and profitable market in Europe, especially if shipped in cargo lots or as part of a mixed cargo made up of lumber or other forest products. The European railway "sleeper" is not of the same dimensions as that in ordinary use in Canada, and intending exporters of either hewn or sawn ties should be in possession of the exact dimensions used in the district for which the material to be exported is intended. These can readily be obtained from the various railway companies or from importers in Europe. The average length of the French "sleeper," for instance, is 2.70 metres, or nearly nine feet. Eastern Canada could for many years to come supply tamarac and spruce ties to the whole of western Europe.—Commercial Intelligence.

It is a matter of interest to every manufacturer in Canada, and to every one who may be in any way interested in a Canadian patent, to learn the result of the case recently decided in the Supreme Court of Canada upholding the validity of the Jones stoker patents, in which judgment for damages and costs was awarded against the American Stoker Co., who had placed some of their stokers in Canadian mills. The matter is more fully alluded to in another page, in an article having reference to "The Jones Underfeed Mechanical Stoker."

THE CANADIAN MANUFACTURER is in receipt of an enquiry from a firm of consulting engineers and machinery merchants doing business in both Port Elizabeth and Johannesburg, South Africa, for addresses of manufacturers of wind mills and wind engines, pumps of all kinds and hay presses. "If you want further information ask for it."

Application will be made to the Dominion Parliament for authority to construct a railway from Toronto to Georgian Bay, and for the following, among other, powers:—To construct, own, operate and maintain wharves, docks, piers, landing places, warehouses and elevators in connection therewith, and to acquire, own and operate steamers, barges, ferries and other vessels in connection with such railway and tramway, and for the purpose of navigating the great inland lakes of Ontario and the French River, with power to erect bridges over any rivers and streams necessary for the undertaking; also to connect with and enter into running arrangements over any and all railways situated within a distance of three miles from any portion of said railway; also to acquire, own and operate mines and exercise mining rights and privileges, and to establish smelting and other works in connection therewith, and also to acquire and use water power and erect and operate electrical works, for use and transmission of electrical power and the operation of the said railway, and for other purposes; and to carry on lumbering, milling, transportation and forwarding business, together with such other powers and privileges as may be necessary for the attainment of the above objects.



The Minister of Trade and Commerce has appointed Mr. Arthur D. Campbell as Canadian Commercial agent in the Argentine Republic and Uruguay, to succeed Mr. D. M. Rennie, who resigned on account of ill-health. Mr. Campbell formerly resided at Paris, Ont., but for fifteen years he has been engaged in business in Central America. He will make Buenos Ayres his headquarters.

The City Solicitor and City Commissioner, of Toronto, have reported upon the possibility of enforcing the placing of fire escapes on high buildings. The report states that the by-law provides for fire escapes on factories, hotels, boarding houses, warehouses, lodging houses, theatres, music halls, opera houses and other public buildings over three stories high, but that the Ontario statutes took out of the city's hands the enforcement of the law with respect to factories and hotels.

Some idea of the important plans which Mr. F. H. Clergue, of Sault Ste. Marie, and his associates have in contemplation may be gathered from announcements which appear in the Canada Gazette. It is intended to apply at the coming session of Parliament for an act to incorporate the Clergue Iron & Nickel Steel Co. of Canada, for the following purposes:—The manufacture of iron, steel and nickel, and dealing in these articles; to acquire and operate coal, iron, nickel and other mines, timber limits and other sources of fuel supply; to acquire, construct and operate furnaces, foundries, rolling mills and other machinery, appliances and works for the treatment of ores and metals under all forms; the manufacture of charcoal and by-products, and the dealing in wood and the products thereof; the manufacture of coke and by-products; to carry on the business of engineers and contractors for the manufacture and building of iron and steel railway and highway bridges, cars and locomotives, buildings and other structures; to build, own and operate ships, tramways, telegraph and telephone lines, piers and wharves; to acquire patent rights, water powers and lands, with power to build, construct and equip sidings and spur lines to and from the mining properties, works, yards and wharves of the company, to connect with any other line or lines of railway built or to be built, and such other powers under the railway act as may be necessary, and for other purposes. The operations of the company will be carried on at or near Sault Ste. Marie, and at or near the city of Quebec.

Canada will have 19,761 square feet of space at the Glasgow Exhibition, being 8,961 feet in the main building and 10,800 feet in the Canadian building. The Government has decided to grant free space to exhibitors from this country, and to give free transportation of their goods from the port of landing to Glasgow and return. Where the manufacturer has no representative at Glasgow, the Government will install his goods for him. W. D. Scott, the Commissioner, will shortly consult with the manufacturers at Montreal, Toronto and elsewhere.

Because of Canadian tariff preference for Britain we catch it in the neck from Italy in the following manner:—

The Italian "Bollettino di Legislazione Doganale" for the

September quarter contains a circular dated July 27 last, notifying Italian customs officers that the general tariff is to be applied in future to goods of Canadian origin imported into Italy, and that Canadian ships are to be excluded from the privileges in respect of navigation accorded conventionally to vessels of other nationalities.

"One of the last works of the late Michael G. Mullhall was the preparation of a careful and detailed analysis of the conditions, tendencies and prospects of British foreign trade. It presented," said the New York Tribune, "a most impressive view of the magnitude of that trade, together with some particularly significant considerations alike for those who think Great Britain's industrial and commercial supremacy is doomed, and for those who think that it is secure for unmeasured future time. Imports of merchandise into Great Britain, including both food for domestic consumption and material for manufacturing and re-exportation, are steadily increasing at a great rate. The increase has been five-fold in the last forty years, or 12½ per cent. a year. At the present time imported merchandise averages more than a ton a year for each inhabitant of the United Kingdom. This includes something more than half of the food supply of the United Kingdom, the cost of such imports amounting to about £5, \$24.33 a year for each inhabitant. The cost of imported food is, however, decreasing, having fallen twenty per cent. in the last twenty years and being now £20 10s., or \$60.83 a ton. Most of this food, Mr. Mullhall reckoned, could be produced in the United Kingdom, but at much greater cost, and therefore to the detriment of the working classes."

The design of anchor with which we are all so familiar has with but slight variation done service from time immemorial, and it seems strange that at this late day there should be any marked change proposed in the manner of making a vessel fast. A very radical change has been proposed, however, in the Langston mooring device which was recently given a public test in New York harbor. Its form is that of a saucer-like disk, on the concave side of which are forged lugs to hold the shackles and rings for attaching the chain. Between the lugs is a hole an inch and a half in diameter, and it is by the direction of a strong stream through this hole, against the river bottom, on which the convex surface of the saucer rests, that the device is sunk to any desired depth. These moorings may be made of any required size, but it is not contemplated that any conditions could ever demand a disk of greater magnitude than twenty-four inches in diameter, and none larger than that has been made. The ten-inch disk, which was the size used at the test, could almost be stored away in an overcoat pocket. The fluke anchors, which are the kind commonly in use, weigh thousands of pounds. The tests made were eminently satisfactory. The disk can be sunk in a few minutes to a depth which will hold any vessel of ordinary size, while if it is given little more time in the sinking operation, it can be sent to a depth from which it could not be pulled by the greatest of the marine monsters. When it is desired to pull the disk in, it is done in the same manner in which it was sunk.—The Patent Record.

## CAPTAINS OF INDUSTRY.

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

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

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

A meeting of the directors of the Keewatin Power Co. was held in Ottawa when it was decided to proceed at once with the erection of a pulp mill having a capacity of 100 tons of pulp and 150 tons of paper daily. The company controls immense water privileges in New Ontario. Mr. Fuller of Hamilton, is President, and the other directors are: Messrs. Wm. Gibson, ex-M.P., Beamsville; Alex. Fraser, Ottawa; and A. MacLaren, Buckingham.

The Victoria Lumber & Mfg. Co., Victoria, B.C., will make extensive improvements to their saw mill at Chemainus. They will erect three dry kilns with a capacity of \$20,000 feet each, build three large storage warehouses, and install planing mill machinery and a shingle mill plant at an estimated cost of \$100,000.

Woodstock, N.B., has offered a bonus of ten per cent. of the cost of a pulp mill, the bonus not to exceed \$50,000.

A shingle mill will be built near Parry Sound, Ont., by Laurie Bros.

The Badger Brass Mfg. Co., Kenosha, Wis., have just installed a No. 1 Special Cross Oil Filter purchased from the Burt Mfg. Co., Akron, Ohio.

The Canadian Rand Drill Co., Sherbrooke, Que., manufacturers of rock drills and compressed air machinery, have increased their factory to 199x84 feet. Ample railroad connections are provided and the machinery is all up-to-date.

Messrs. Rhodes, Curry & Co., Amherst, N.S., have sent us their calendar for 1901. Printed in colors at the top is a reproduction of a painting by Rieger, and the printing is in good, clear type, which can be seen across

an ordinary sized office. The firm manufacture dimension timber, dressed lumber, laths, doors, sashes, cast iron columns, sash weights, etc. They carry a large stock of red cedar, whitewood, basswood, pitch, pine, oak, etc.

Messrs. Charles Burrell, Weymouth, N.S., B. F. Pearson, Halifax, N.S., W. H. Rowley, Ottawa, Geo. McAvity, St. John, N.B., and associates, will be incorporated as the Lancaster Pulp & Paper Co., and will build a sulphite and paper mill at Musquash. They have purchased the Knight lumber property in St. John, N.B., and 36,000 acres at Musquash at a cost of \$100,000.

We have received a very beautiful calendar from the A. R. Williams Machinery Co., Toronto, who are manufacturers and importers of machinery. They supply full outfits for machine shops, railroad shops, foundries, planing mills, furniture factories, saw, shingle and lathe mills, elevators, etc. They carry full lines in stock of engines and boilers, wood-working machinery, dynamos, motors, shafting, belting, band saws, forges, brass goods, and supplies of every description.

The Canadian General Electric Co., Peterborough, Ont., will apply by supplementary letters patent for power to acquire, hold, pledge or otherwise dispose of shares in other companies or corporations and in respect thereof exercise the rights, powers and privileges, which any holder might have or exercise, and otherwise extending the powers of the company.

A wood working factory will be erected at Bridgewater, N.S., by Wm. A. Robertson, Sydney, C.B. He will make a specialty of

doors and sashes. Among the new machinery to be installed will be a moulding machine, buzz planer, turning lathe, band saw and saw table, and an engine for power purposes.

The Queenston, Niagara & Port Dalhousie Electric Co., has been incorporated with a capital stock of \$40,000, to build an electric railway from Queenston to St. Catharines, via Niagara and Port Dalhousie. The provisional directors include G. J. Gibson, Niagara, Ont., R. B. Hamilton, and Wm. McCabe, both of Toronto.

The Canada Cold Storage Co., Montreal, has applied for incorporation with a capital stock of \$1,000,000. The applicants include E. H. Barchard, W. F. Robinson and A. R. Holden, all of Montreal.

The Southerland Innes Co., Chatham, Ont., are constructing a plant at Castleford, Ont., for the manufacture of cooperage stock. The mill will consist of a boiler house with 230 h.p. capacity; saw mill and hoop works, driven by a 75 h.p. engine; stave and heading department, with 100 h.p. boiler capacity; dry kiln 125x18 feet. The capacity of the stave department will be 40,000 daily, the sawmill 20,000 feet of lumber, and the hoop works 50,000 per day.

A deposit of iron pyrites has been opened on the line of the Ontario & Rainy River Railway, which is very massive, and is said to carry a very high percentage of sulphur. The deposit is owned by the Davis Chemical Co., New York city.

William Lancaster, a prominent paper manufacturer of Romiley, Eng., is making a tour of the pulp making districts of Canada, and may make some contracts before returning to England. Supplies were formerly bought from Holland and Norway, but the recent advertising that Canada has received, has aroused the manufacturing interests of England.

The Dominion Cordage & Mfg. Co., Peterborough, Ont., has been incorporated with a capital stock of \$400,000. The provisional directors include Adam Hall and Jos. Armstrong, both of Peterborough, Ont., and J. A. Bennett, of Otonabee, Ont.

The Hamilton Facing Mill Co., Hamilton, Ont., manufacturers of foundry facings and supplies, have sent us their calendar for 1901, on the top of which is the head of a Neapolitan girl printed in colors and on the bottom is the calendar. Between is the name of the company, who inform us they have just completed their tenth and most successful year.

## INGERSOLL-SERGEANT Rock Drills

FOR MINES, TUNNELS AND QUARRIES

## PISTON INLET Air Compressors

STRAIGHT LINE  
 DUPLEX and  
 COMPOUND.

FOR ALL DUTIES.

... COMPLETE MINE EQUIPMENT ...

JAMES COOPER MANUF'G CO., Limited, - 299 St. James St., Montreal.

Other Offices - - - ROSSLAND, B.O. RAT PORTAGE, ONT. HALIFAX, N.S.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



John Munro, Midland, Ont., is erecting a new planing mill.

The Barnhill mill near St. John, N.B., will be rebuilt by John E. Moore and Wm. Rivers, of that city.

It is stated that the Canada Cotton Co., Montreal, will erect a large factory at Shawinigan Falls.

The Ontario Wind Engine & Pump Co., Toronto, have received a contract from the British Government for four irrigation plants. They have received former order and have shipped several outfits to Cyprus, India and other countries.

The Atlas Cement Co., Northampton, Pa., are now using eight Cross Oil Filters purchased from the Burt Mfg. Co., Akron, Ohio.

The Clergue Iron & Nickel Steel Co., Sault Ste. Marie, Ont., has applied for incorporation to manufacture iron, steel, and to operate coal, iron nickel and other mines, to erect furnaces, foundries, rolling mills, and to manufacture iron and steel, railway and highway bridges, cars, locomotives, etc. The operations of the company to be carried on at or near Sault Ste. Marie, Ont., and at or near the city of Quebec.

The Ottawa & Hull Power & Mfg. Co., Hull, Que., has applied for incorporation,

to manufacture pulp, paper, etc., to manufacture woolen and cotton goods, to develop water power and electricity, etc. The applicants include W. C. Edwards, Rockland, Ont., and J. C. Edwards, R. G. C. Edwards and R. L. Blackburn, of Ottawa.

The Anderson Furniture Co., Woodstock, Ont., recently purchased 20,000 acres of timber land in Muskoka district, and have removed their sawmill to that place.

It is stated that a company will be formed to be called the Lighting & Power Co., of Montreal, with a capital stock of \$25,000,000, to take over all the lighting and power companies of Montreal, which include the Chambly Mfg. Co., Royal Electric Co., Montreal Gas Co., and Lachine Rapids Hydraulic & Land Co.

The Flint & Walling Mfg. Co., Kendallville, Ind., have sent us their calendar for 1901, which shows a very beautiful farm where the Flint & Walling Star wind mills are used. The company also manufacture iron pumps and cylinders, tubular well tools, hydrants, and machinery supplies.

The B. F. Sturtevant Co., Boston, Mass., was recently in receipt of a letter from the Enterprise Foundry Co., Sackville, N.B., which contained this interesting evidence of the endurance of one of their blowers. We have had one of your No. 6

noiseless blowers in use for twenty-eight years with entire satisfaction, but the blast wheel is now apparently worn out and the left side piece is broken. If we had this left side piece and the blast wheel as shown in your circular it would make the blower all right. Can you furnish this for the No. 6 blower which you were selling in 1872? This blower is driven by two belts, but we fear we have been driving it at too high a speed.

The first annual meeting of the Central Ontario Power Co., whose head office is at Peterborough, was held in Toronto last week at which the following officers were elected: President, Hon. Richard Harcourt, M.P.P.; first vice-president, Eugene Coste, M.E.; second vice-president, James Kendrey, M.P.; managing director, J. Alex. Culverwell, Elec. Eng. The shareholders present and represented were prominent gentlemen from Cobourg, Peterborough, Lindsay, Toronto, Winnipeg, Perth, Iroquois, Galt, St. Catharines, Welland and New York State. Important business was transacted in connection with the commencement of operations. This company are the proprietors of the recently completed water power plant at Burleigh Falls, Ont.

A large pulp mill will be erected at Chaudiere Falls by the Canadian Electric Light Co., Quebec city.

# Transfer Ornaments, AMERICAN MADE.

TRADE MARKS, DECORATIONS, NAME PLATES, ETC.

## For HARDWARE, BICYCLES, VEHICLES, POTTERY, FURNITURE, etc.

Sketches and samples submitted free of charge. Being American manufacturers enables us to make prompt delivery. Write us.

# THE MEYERCORD CO., Inc., —MAIN OFFICE—

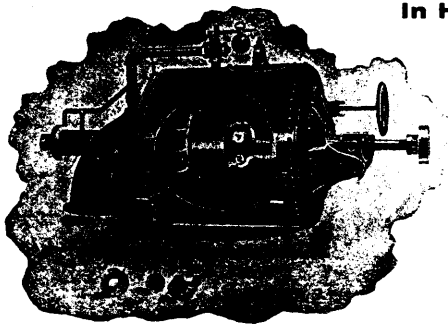
CHAMBER OF COMMERCE, - CHICAGO,

Canadian Travelling Representative,  
CHAS. H. JAGGER, Hamilton, Ont.

Largest Makers in the World of Guaranteed Decalcomania Transfers.

## THE Crocker Patent Turbine

In Horizontal Setting, with Quarter Turn Elbow.



Where the nature of the location will permit its use this type has many advantages. It is very suitable for direct connection to dynamos, and many are in operation in this class of service.

Notice how complete and compact this arrangement is, and how easily it may be installed. Can you use anything of this kind? Your inquiries will receive prompt attention.

**W**ATER POWERS examined and Reports made. Estimates submitted for Complete Equipments.

**The JENCKES MACHINE CO.,**  
42 Lansdowne St., Sherbrooke, Que.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

The gross receipts of the Toronto Street Railway Company for the year 1900, according to the returns made to the City Treasurer, were \$1,482,892.70, which is \$162,843 more than the receipts for 1899, while the city's share advanced \$15,703. The receipts for the month of December just ended were \$129,910, which is \$10,000 more than for December, 1899. Following are the figures given out by the City Treasurer:

	Gross Receipts.	Per centage.
Dec., 1900.....	\$129,910.12	\$10,392.81
Dec., 1899.....	119,931.13	9,594.49
Dec., 1898.....	108,924.65	8,713.97
Dec., 1897.....	99,336.55	7,946.92
Dec., 1896.....	84,310.38	6,744.83
Dec., 1895.....	84,265.42	6,741.23
Nov., 1900.....	128,132.13	10,250.57
Total percentage, 1900.....	127,128.10	
Total percentage, 1899.....	111,425.66	
Gross receipts, 1900.....	1,482,892.70	
Gross receipts, 1899.....	1,320,049.13	

Rhodes, Curry & Co., Amherst, N.S., finding the power plant in their car works too small for their rapidly growing business, are adding a 150 horse power Mumford standard boiler built by the Robb Engineering Co., of that city.

The American Cereal Co., a large American concern, are locating a branch of their establishment in Peterborough, Ont., for the manufacture of cereal foods. They will erect mills of 7,000 barrels capacity. The town has already granted the company certain privileges, exemption, etc.

The Kinleith Paper Co., St. Catharines, Ont., of which Mr. Edward Finlay is managing director, has issued a circular to the trade in which they inform their friends

that their new mill is now about ready to start operations. They have installed a paper machine of ten tons daily capacity of the most modern type, and all their other machinery is of the latest improved design for the manufacture of the higher grades of machine finished and super-called lithographic, book-print and writing paper and specialties. With their modern equipment and excellent facilities they are well prepared for handling large orders with promptness. They say that the grades of paper which they specialize have in the past been largely supplied by imported goods, but this will no longer be necessary. Mr. F. A. Ritchie, of the well-known firm of Ritchie & Ramsay, Toronto, manufacturers of surface coated papers, cardboard, etc., is president of the Kinleith Paper Co.

The box factory of the C. Beck Mfg. Co., Toronto, will be enlarged and the most modern machinery and labor-saving devices installed.

A saw mill is being erected at Meductic, N.B., by S. C. Wiggins. It will be equipped with shingle and lathe machines.

Wm. Stuckey, Grand Valley, Ont., will erect a sash and door factory, planing mill and shingle mill at Day Mills, Algoma.

Messrs. Armstrong & Morrison have sold the Vancouver, B.C., Iron Works for \$200,000 to T. H. Davies & Co., Honolulu, who will double the capacity of the works and spend \$150,000 in new machinery and buildings.

Two money by-laws have been passed by the ratepayers of Parry Sound, Ont., one for \$29,500, for the purchase of an electric light plant and the extension and improve-

ment of the water works system, and the other for \$2,500 for the construction of a steel bridge across Sequin River.

Angus, Que., will erect a bridge at Lafloites to cost \$8,000.

A steel bridge will be built at Victoria, B.C., at a cost of \$45,000.

R. Strathy will erect a wire fence factory at Owen Sound, Ont., which will be 120 feet long and two storeys high, and cost about \$200,000.

Additions are to be erected to the saw and planing mills of D. G. Cooper, Collingwood, Ont.

W. R. Thompson, Teeswater, Ont., will erect a mill for the manufacture of maple rollers. He has recently purchased eighty acres of timber land in Bruce county.

The Farmers' Milling Co's mill and elevator at Saskatchewan, N.W.T., was destroyed by fire January 6. Loss about \$25,000.

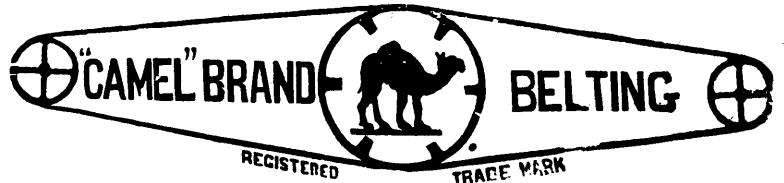
The reports of the Northern Ontario exploration parties, which are now being received by the Ontario Department of Crown Lands, give encouraging statements of the existence of spruce north of the height of land. It has been known for some time that there was some pulpwood in this region, but the reports of the surveyors have shown that with the exception of comparatively small burnt areas in places, the spruce extends in a dense mass all the way to James Bay. As the latter is approached, however, the trees become smaller. The discovery is heralded as an omen of future great paper and pulp industries in the northland, and as establishing still further our claim to possessing the greatest amount of raw material for paper of any country in the world.

# W. A. FLEMING & CO.,

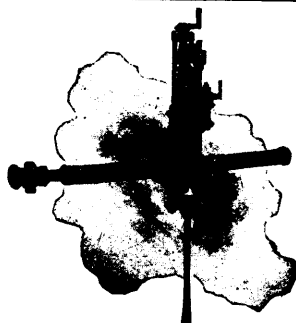
## MILL SUPPLIES

## CAMEL BRAND BELTING

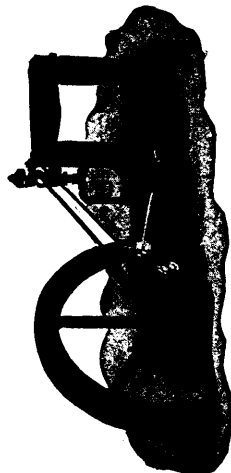
HOSE of all kinds  
DRIVING ROPE  
BELTING of all kinds



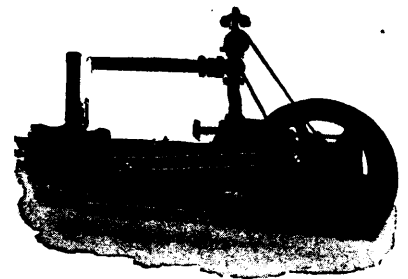
771 CRAIG STREET, MONTREAL.



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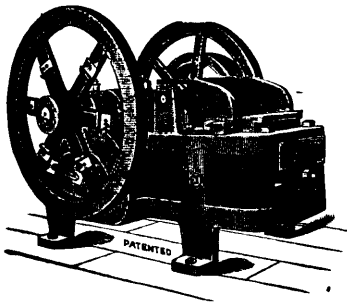
## MINING MACHINERY

The Canadian  
Rand Drill Co.

MONTREAL.  
SHERBROOKE,  
HALIFAX, N.S.  
TORONTO, ONT.  
RAT PORTAGE, ONT.  
ROSSLAND, B.C.  
GREENWOOD, B.C.  
NELSON, B.C.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

ROLL JAW CRUSHER.



**Crushes**

Large Rock

to

**4 inch.**

Send for Circular.

**STURTEVANT MILL CO.,**

104 Clayton St.  
Boston, - Mass.

The revenue derived by the Ontario Crown Lands Department during the past year was nearly \$1,500,000, or almost \$200,000 more than the previous year. The increase was in a large measure due to the greater activity of the lumbermen, who took advantage of the strong demand for their product.

It has been decided by the Ontario Government to make an important exhibit of the forest products of Ontario at the Pan-American Exposition at Buffalo during the coming summer. While its exact composition or size has not been determined, the main object will be to make it representative of our resources commercially rather than from a scientific or botanical standpoint. Naturally, there will be illustrations of pulpwood in its various stages, while the forests of Muskoka, Parry Sound and southern New Ontario will be drawn upon for example of our fine furniture woods. Mr. Thomas Southworth, Clerk of Forestry, has charge of the exhibit.

There was decidedly increased activity in the manufacture and sale of building material in Canada in 1900. That the timber industry is keeping pace with the opening up of the country is evidenced by the fact that 306 licenses to cut timber over an area of 3,610.37 square miles were issued during the year, as compared with 151 licenses and an area of 1,551.30 square miles in 1898-99. In Manitoba the sawmills have been run to their fullest capacity, the output being about 24,000,000 feet b.m., an increase of 4,000,000 over last year. The output in the Territories was 13,510,287 feet b.m., in the rye belt in British Columbia 29,684,003 feet b.m., and in the Yukon Territory about 9,000,000 feet b.m. In addition to the lumber sold by mill owners in Manitoba it is reported that no less than 132,669,083 feet of lumber was sold in Manitoba and at points as far west as Regina, the bulk of

which came from the mills at Lake of the Woods and Rainy River. Although the shipments from the United States still continue large, there has been a falling-off as compared with last year's business. The total revenue received from timber in Manitoba, the North-West Territories, British Columbia and the Yukon Territory up to July 1, 1900, was \$1,861,785.

Messrs. F. E. Myers & Bro., Ashland, Ohio, have sent us several of their new publications having reference to some of the pumping and other machinery manufactured by them. The Myers Bulldozer power pump has special mention, and deservedly so. It is described as being constructed with special reference to power, strength and capacity, the arrangement of the parts being such that it is entirely self-contained, the power being applied to the piston in such a manner that it gives great power in forcing water against a heavy pressure. Other specialities alluded to are vertical power force pumps, siphon pumps, back geared pumping jacks, horse power for pumping purposes, artesian well machinery, haying tools, spraying pumps, etc.

The Frankfort Electric Light Co., Frankfort, Ont., has been incorporated with a capital stock of \$40,000. The provisional directors include J. S. Lovell, E. W. McNeill and Augustin Scheurer, all of Toronto.

The Canadian Baling Co's premises, St. John's, Que., was destroyed by fire Jan. 9. Loss about \$20,000.

The Thos. Davidson Co., Montreal, have sent us a calendar which was produced in their own factory. Its special feature is the background of sheet metal, beautifully lithographed and showing the head of a Canadian Indian chief.

The Fraserville Pulp Co., Fraserville, Ont., has applied for incorporation with a capital stock of \$250,000, to erect pulp and

paper mills, and furnish light and power for tramways, etc. The provisional directors include J. W. Hutt, Port Medway, N.S., W. C. Trotter, St. John's, Que., and S. C. Rion, Fraserville, Ont.

The Canadian Electro-Chemical Co., Sault Ste. Marie, Ont., has been incorporated with a capital stock of \$100,000 to manufacture chemicals and chemical compounds, etc. The provisional directors include F. H. Clergue, B. J. Clergue and H. C. Hamilton, all of Sault Ste. Marie, Ont.

**IF YOU ARE DISSATISFIED**

WITH YOUR

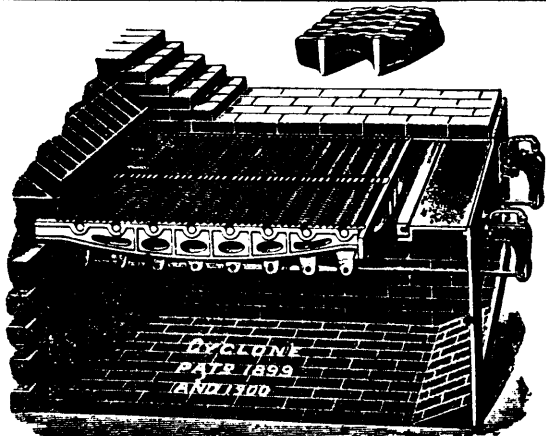
**Brass, Copper,  
Phosphor-  
Bronze,  
OR Composition  
Castings**

Send us a Trial Order.

We can please you.

**J. N. Callman & Sons**  
**Brass Founders,**

HAMILTON, - CANADA.



USE CYCLONE GRATE BARS AND PRODUCE

**CHEAPER STEAM**

No individual consumer can regulate the price of coal, but you can regulate the amount of coal burned for a given power by installing Grate Bars that will produce perfect combustion. Write us for particulars.

**E. J. PHILIP, Manager,**

404 TEMPLE BUILDING, - - TORONTO, ONT.

PHONE 8882

**THE  
CUMMER  
DRYERS.**

FOR  
**Mechanically Drying Everything**

**THE F. D. CUMMER & SON CO.,**

**HUNDREDS IN OPERATION.**

**CLEVELAND, OHIO.**

**TECHNICAL EDUCATION.**

The subject of technical education which has so largely engaged the attention of Canadian manufacturers for the past few years has again been brought to the front through the appointment of a committee by the Canadian Manufacturers' Association, for the purpose of going thoroughly into the matter. In this connection the imparting of technical knowledge by the system of correspondence instruction will receive attention. One of the most prominent institutions carrying on correspondence instruction is the International Correspondence Schools, of Scranton, Pa. These schools have had ten years' experience in teaching by correspondence. Their buildings at Scranton, Pa., were erected at a cost of \$250,000. They have a working fund of \$1,500,000. There are now, we are told, 15,000 students in Eastern Canada, about 1,500 being residents of the City of Toronto. They have met with wonderful success, due to the many original features of the system which make it so well adapted to the education of the working classes. One of the important features is the continual revision of the text books which are furnished students with their courses, thus ensuring to students the most up-to-date information on the subjects treated.

Although the roll of the International Correspondence Schools includes the names of many people who are holding responsible positions in the various professions, and are already possessed of a liberal education, the chief aim of the schools is to enable people who are engaged in the industrial trades to supply deficiencies in their education due to lack of opportunity or application in their younger days. As thus defined, it is evident that the movement is operating in an entirely new field, being in competition neither with the high school, the technical school nor the university. There is no question

that the ambition of the average Canadian to become a wage earner frequently leads him to exchange the school for the workshop long before the former has had the necessary time to give him his proper equipment; and while he may for the first few years consider himself financially the gainer, it frequently happens that his advancement in his trade is brought to a full stop by the lack of technical knowledge. It is too late for him to "go to school again," for he can neither afford the expense nor is he willing to give up a position which he may not again be able to secure. The night-school, of course, in many cases affords a partial solution of the difficulty, but there are multitudes of workers for whom these admirable institutions are not available.

The test of eligibility to become a student is that the candidate must be able to read and write English. The schools, to use the language of their prospectus, undertake to teach him "whatever he needs to know." In taking him through a course, the instructor proceeds upon the curious assumption that his pupil knows absolutely nothing about the subject. The assumption is original, but thoroughly philosophical; for, if the student is acquainted with the earlier stages, he passes quickly through them, merely refreshing his memory, while the instructor is certain that in every case the student lays a proper foundation for future work. Starting, then, with the assumption that the student knows nothing of the subject, the school sends him his first and second instruction and question papers.

After studying his first paper, he returns his written answers to the questions asked in the Question Paper, to the schools, and proceeds with his second paper. At the schools the answers are corrected in red ink and returned to the student, accompanied by the third Instruction and Question Papers and a letter explaining the errors and corrections in further detail than is pos-

sible on the answer sheets themselves. If the student secures ninety per cent. on his first paper, he is entered on the records as passed; but if he fails to get this percentage the paper is returned, and he is obliged to review the incorrect portion. This system is followed until the course is completed, when the school's diploma is granted after a final examination. Although students are not limited as to the time required for the completion of a course, those who meet with difficulties are assigned to "special instructors," who are skilled in dealing with such cases.

The University of Chicago has for several years been carrying on instruction by correspondence. Dr. Charles Alexander McMurray of the University Faculty says of this work in his Department; "I do not hesitate a moment in saying that those who did the work by correspondence did three times as effective work and gained three times as much satisfaction for themselves as those who took the work in the class-room."

This correspondence school is bound to do a world of good in the educational field. Their Canadian Headquarters are at No. 413 Temple Building, Toronto.

**HOW TO ENCOURAGE SHIPBUILDING IN CANADA.**

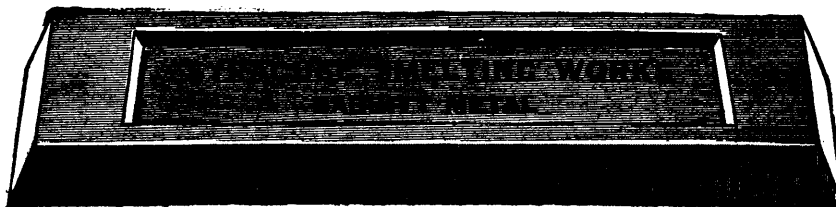
Canada has spent tens of millions on her canals, but it looks as if they were going to be utilized principally by the United States. We have built the canals. The United States will get the principal benefit of them. That is, unless Canada takes steps to protect her own interests. The new canal system will require a special type of vessel, and United States shipbuilders are now laying down a number of keels in United States yards along the Great Lakes for vessels of this type. Scores of them will be built within the next two or three

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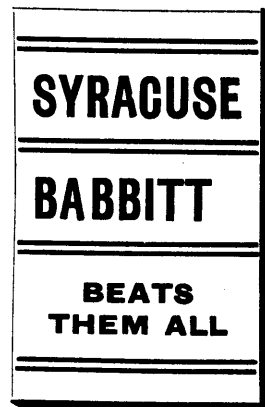
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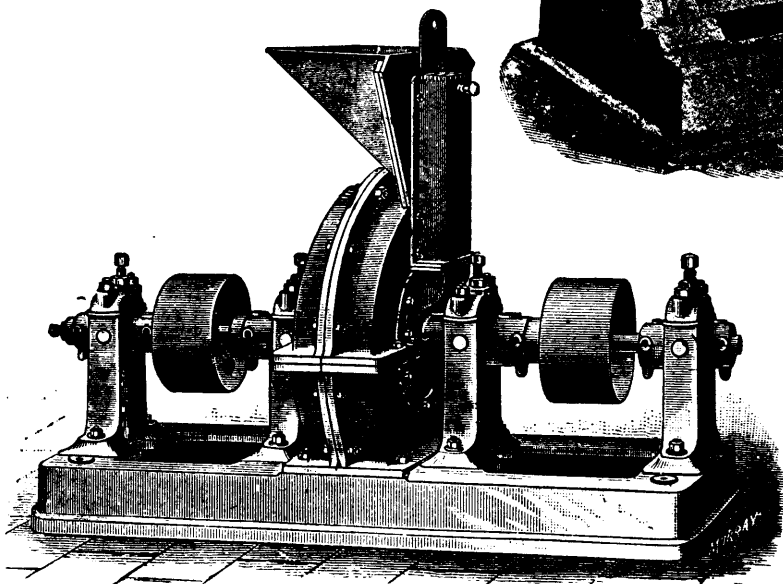
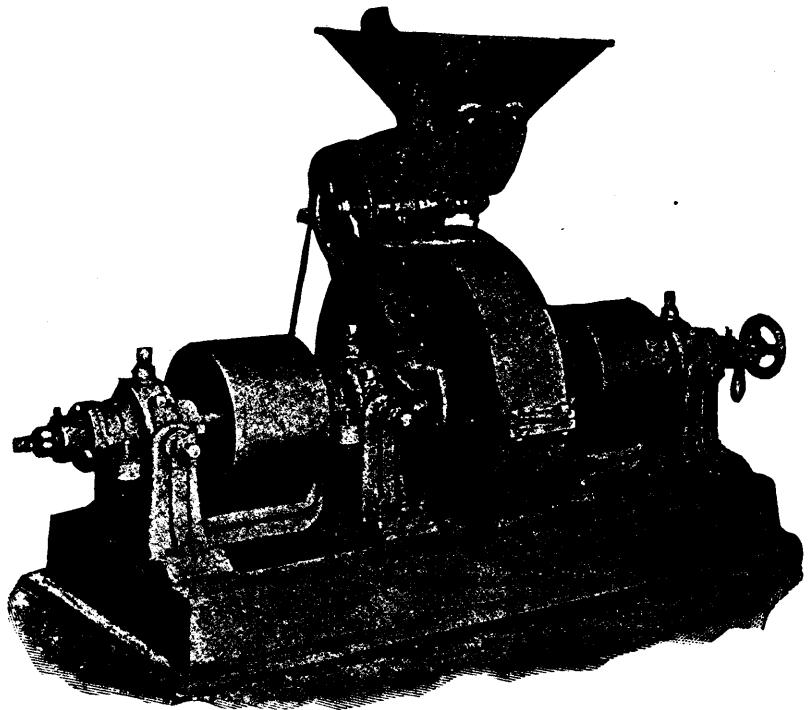
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years. If the present law is allowed to stand, all such vessels will be built in Great Britain, Germany or the United States. Ships having a British registry are admitted free of duty to Canadian registry. Vessels can be built at Cleveland and Chicago, go to Newfoundland or Bermuda, change to a British registry free of duty, and come into Canada free. This is what the United States shipbuilders contemplate doing. Should they wish to return to the United States flag, they can do so under the wide interpretation of their custom laws, which allows any article manufactured in the United States to return duty free. Canada must protect herself against the unfair competition of foreign shipbuilders. No foreign vessel should be allowed to obtain Canadian registry unless duty is paid on them. Canada has all the facilities necessary for the shipbuilding industry. The enactment of such a law as we have suggested would have the effect of establishing large shipbuilding plants at Toronto, Collingwood and other lake ports. The building of these canal ships in Canada will mean much for the laboring classes. It will mean the establishing of new industries, the stimulation of iron and steel manufactories and increased population. And not only should Canada impose a duty for registry of foreign ships, but she should discriminate in favor of Canadian vessels in the use of the Canadian canals. We should either rebate the canal tolls on Canadian vessels or increase the tolls on foreign vessels. This policy should be adopted now, before we are under any obligations, moral or otherwise, to any other country, as far as the use of our canals is concerned. There need be no fear of retaliation from the United States. They have already gone the limit against us. It is not possible for them to do anything further to injure the Canadian carrying trade. They have long ago prohibited Canadian vessels from participating in the United States coasting trade. We have been denied the use of the New York State canals. The only plan of retaliation that is possible would be the abolition of the so-called bond-

ing privileges, by which the Canadian railways would be inconvenienced. But the United States railways operating lines in Canada would suffer just as badly as the Canadian companies. Railway retaliation is a mere scarecrow. There is nothing in it. Canada should deal with her own property in a way that is most conducive to her own welfare. The canals are the sole property of Canada. They are not international and the people of the United States do not carry on their national affairs on a sentimental basis.

We have a perfect right to give our own people any advantage in affairs of this kind. The Americans apply that principal to themselves, and they can only commend it to us. Those who are charged with the affairs of this country should act on the plan outlined at once. Otherwise Canadians will be furnishing canals for foreign nations, and in a couple of years what is now a privilege will become a right.—Toronto World.

**BUFFALO CENTER-CRANK ENGINE.**

The accompanying cut shows one of the several types of high speed steam engines manufactured by the Buffalo Forge Co., Buffalo, N. Y., illustrating in this particular case their standard horizontal center-crank engine direct connected to a General Electric Co. generator. The general appearance of this engine is well brought out in the cut; for a more detailed description, reference is made to the following paragraphs.

The heavy cast-iron sub-base furnishes a solid support to which to bolt the engine bed, and at the same time raises the engine sufficiently for the fly-wheels to clear the floor or foundation. In case of dynamo direct connection this sub-base may provide a bed for the generator and also carry the out-board bearing substantially, as shown. The engine frame proper is a single casting of the center-crank type. In the smaller sizes the cylinder is also cast thereon, and then the crosshead guides are bored at the same setting and with the same bar with which the cylinder is bored. In the larger

sizes, however, one cylinder head is cast to the frame and to this is bolted the overhung cylinders. In this case, the facing of the head and the boring of the guides is done at the same time. The importance of this method of construction at once appeals to the engineer who has had experience with hot boxes occurring when the slides are slightly out of line with the cylinder. The crosshead is fitted with cast-iron shoes lined with the best babbit metal peined in, and a ready means of adjustment is provided for taking up any wear between the shoes and the guides.

The cylinder is covered with a corrugated iron jacket which encloses a dead air space as a non-conductor. Radiation is further prevented by providing a dead air space in the cylinder head. The piston is a single casting cored thin, giving maximum strength with minimum weight, and causing but little wear on the bottom of the cylinder. Two or more packing rings are used on the piston. The rod of the machine steel turned to a taper fit and secured by a single nut. A balanced piston valve is used and its pistons are also hollow. The valve rings are of the same width as the piston on which they fit and are therefore flush with the sides. This feature prevents wire draw-

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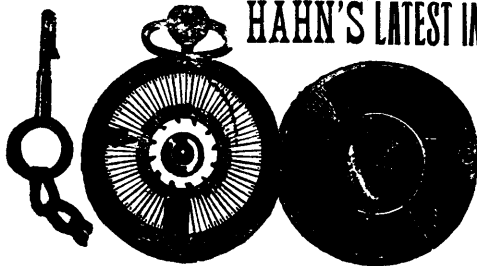
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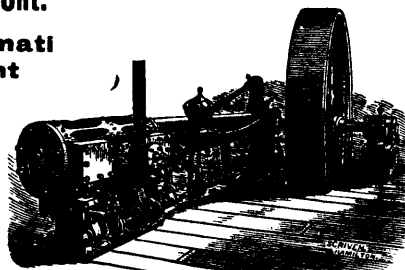
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ing of the steam as well as giving a large bearing surface to the valve. The rings have a projecting flange on the inner side which is securely clamped between the two piston faces, and held by jam nuts. By loosening these jam nuts, the rings are allowed to readjust themselves to the bore, and then the nuts can be tightened, thereby securing them in that position.

The crank shaft and connecting rod are of forged steel and the crank pin is of the same diameter as the shaft. The connecting rod is fastened to the crank pin by means of a strap and wedge. The wedge is completely enclosed by a strap and box and is securely held and adjusted by two lock bolts.

The valve motion is derived from an eccentric strap which carries the valve rod in a straight line. The eccentric strap is lined with babbitt metal of the best quality, and the trouble so common to eccentrics where cast iron straps work on cast-iron sheaves is entirely eliminated by this arrangement. The valve motion is controlled by a fly wheel governor of the most sensitive type. This governor is provided with three means of adjustment, so that it may be accurately set to control the engine at any given speed; in addition grease or oil cups are provided on its every pin. Indeed, one of the most prominent features of this engine is its thorough system of lubrication.

The engine is enclosed to run in oil and a positive means of lubrication is thereby furnished for the main bearings, the crank pin, wrist pin and crosshead slides. Where no special means is provided for the lubrication of the wrist pin of an engine running in oil (the oil which splashes upon it being relied upon as sufficient for proper lubrication), it is liable to heat and wear. An ample supply of oil for the wrist pin is insured in the Buffalo engine by the attachment of a lipped cup thereto. This cup is continually filled with oil thrown back by the crank disc, and the lip prevents it from spilling out. The wrist pin is hollow and leads the oil to the interior of the cross head, where it is fed to the bearings. A pocket or receptacle in the interior of the bed located on each side of the chamber near the top catches oil thrown from the crank discs and feeds it to the main bearings through the grooves provided. After use on the various rubbing surfaces the oil is returned to the crank pit. A light polished hood and two side plates give a perfectly oil-tight construction, and being easily removable, afford ready accessibility to the various moving parts. A large sight feed lubricator takes care of the cylinder and valve chest.

This engine is built for either belt or direct connection and when directly connected is equipped with an extended sub-base and an outboard bearing. The direct attached generator shown here is of the General Electric Co's make as mentioned, and is from a photograph of a large unit in the works of the Wagner Palace Car Co., Buffalo, N. Y.

**THE JONES UNDERFEED MECHANICAL STOKER.**

The company owning the patents covering the Underfeed system of stoking in Canada, has just changed its name from the General Engineering Co., of Ontario, Limited, to the Underfeed Stoker Co., Limited, with headquarters in the National Trust Building, 20 King street East, Toronto.

A general meeting of the shareholders of



the company was held in the Board Room of the National Trust Building on January 10, when a very strong board of directors was elected consisting of the following well-known business men :

President.—George Gooderham.

Vice-Presidents.—John B. Laidlaw, D. Fasken, W. D. Matthews, J. L. Ross, J. D. Wright, Elias Rogers, H. M. Pellatt, T. G. Blackstock.

Secretary.—T. A. Rowan.

The retiring board of directors submitted to the shareholders a very satisfactory report, dealing chiefly with the success of the company in the litigation extending over the past two years in regard to the validity of its patents.

The company has succeeded in all the Canadian courts in which actions had been instituted and has recently obtained a most important judgment of the Supreme Court of Canada upholding the validity of the Jones Stoker patents and giving them judgment for damages and costs against the American Stoker Co., and the Dominion Cotton Mills, Montreal.

The latter company which had installed a large number of American stokers, and will now be obliged to discontinue their use and to pay damages and costs. The Toronto Co. will also be entitled to an account and to damages in all cases where the American device has been installed anywhere in Canada, together with an order for the delivery up and destruction of the American stokers.

At the meeting of the directors of the company alluded to, it was decided that the best business policy for the Toronto Co., would be to endeavor to make amicable business arrangements with the different users

of the infringing device, giving them an opportunity of securing the repayment of all moneys paid to the American company, and having the Jones stokers installed in their plants instead of the American stokers.

The company's solicitors were instructed to delay for a short time taking action against those using the infringing device, and to communicate with the users of the other stokers, and to report the results at a subsequent meeting of the Board.

The successful result of the above litigation is a matter of considerable importance to all Canadian manufacturers, who rely upon the protection of patents. On the merits of the case the Jones stoker was upheld in every point throughout the litigation, and the only doubtful issue at any time was as to whether the lapse of a foreign patent should cause also the lapse of the Canadian patent, both having been applied for on the same date. The judgment of the Supreme Court of Canada sets this matter at rest, and secures to home manufacturers what is claimed to be the most valuable patent controlled by any industry to-day.

The saving in fuel by using the Jones device is claimed to be on the average \$750 per stoker per annum, which is more than the entire cost of installation. The Underfeed Stoker Co., claims to be able to accomplish better results with cheap soft coal screenings than can be produced in any other way with the best anthracite or run of mine, and also to increase the boiler capacity nearly 100 per cent., and at the same time prevent smoke even while forcing the fires beyond the maximum of any other system. The company is also prepared to undertake the equipment of plants and

accept payment out of the saving effected monthly or quarterly, guaranteeing at least ten per cent. economy over any other system or over the best hand firing. The company also claims that they have several hundreds of their stokers in operation and that in no case have they ever failed to show better results than those guaranteed.

The company will pay the entire cost of all investigations and tests which can be made which will substantiate a single charge or defect against the Jones stoker.

In the trial at Montreal, which lasted several days, the best experts available testified as to the wonderful results accomplished by this system of stoking, and Professor Nicholson, of McGill University, stated that after a most thorough investigation of nearly every system of fuel saving, he felt satisfied that the Jones Underfeed Stoker had revolutionized the art.

EVOLUTION OF THE BLAST FURNACE.

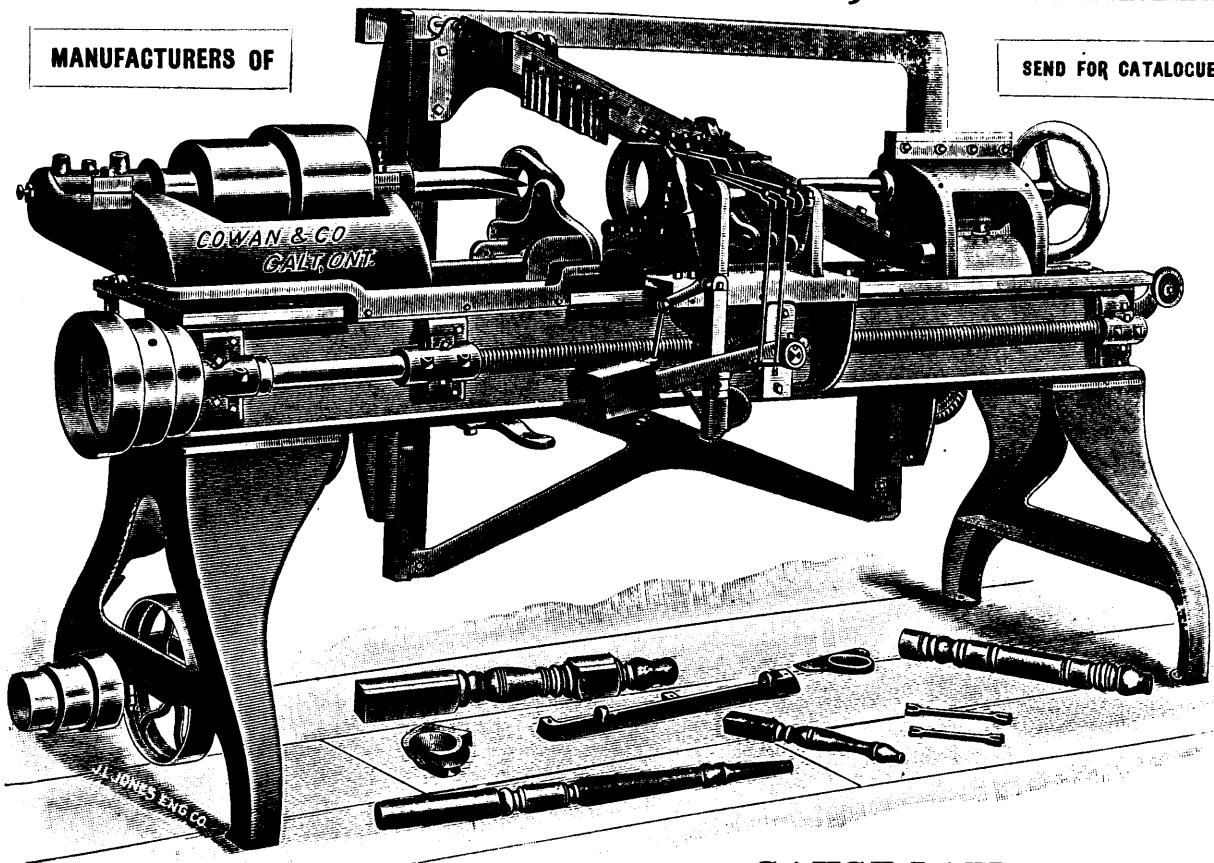
In a paper read before the Philosophical Society of Glasgow, by Professor Sexton, the evolution of the modern blast furnace was set forth in an able and historical style, as reported in Tin and Terne. The blast furnace was not a discovery or invention, but a development from the zero of human knowledge and experience. There are two ways in which the primitive man would discover the malleability and tenacity of iron : First, if one of them found a meteorite consisting of iron, he would, as an act of custom, strike it with his stone hammer, and finding that the blows indented the iron without breaking it, and that the iron at last

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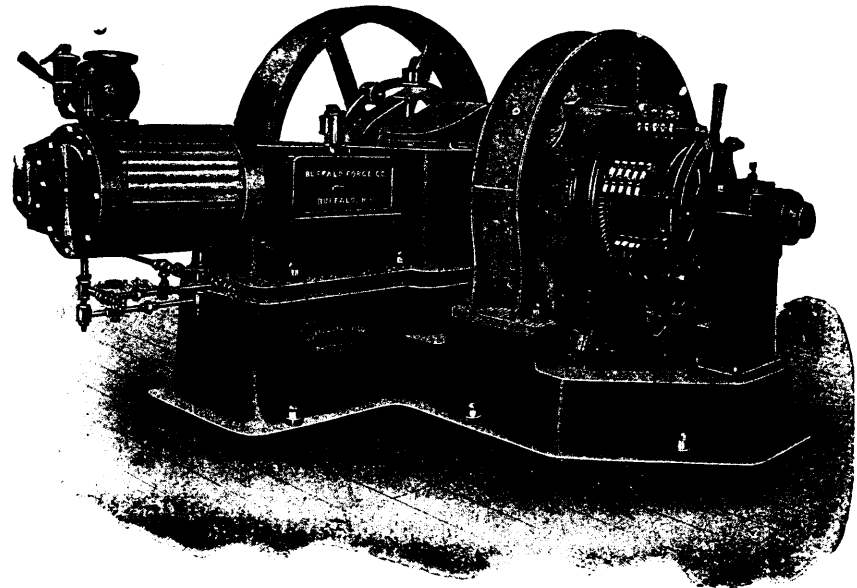
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broke his hammer, he would be so impressed with the comparative softness and tenacity of the new-found stone as to lead him to make a hammer out of it. This, however, would not teach a savage that heat would make the metal soft. The discovery must be sought elsewhere among the fire practices of the men of the stone age. Fire was used for cooking flesh, and the fire would have to be fenced in with stones. These at some time or another would consist of hematite or magnetite, and when the time of the fire was prolonged, some of the stones would be deoxidized and the constituent metal so softened on the faces of the stones exposed to the heat that, after cooling, pieces of iron of different shapes would fall off, and as some would resemble the stone hammer and axes in use, they would be picked up, examined and tried, and being found to make tools of superior sharpness and strength, the primitive man would burn some of these peculiar stones in the midst of a hot stick fire, and having done so, they would in the attempt start the first iron deoxidizing furnace. The smelting would be disappointing, as the result of using slow fires, and this would show them that a high and prolonged heat gave the best results. They would then build their fire on an elevated and exposed situation, where a brisk wind would quicken combustion, intensify the heat, and shorten the change. This would be the first blast furnace, and such actually was the case, for the remains of such wind furnaces have been found in the hillsides of Asia and Europe. In the course of time he would understand the elementary mechanism that would blow or produce an artificial wind

to intensify his fires, and enable him to build a furnace where the carriage of the fuel and stone would require the least labor. Such furnaces are still in use in the Himalaya mountains. In a description of a furnace found in the same country, Dr. Hooker

hands and press them down with their feet; or they could be worked alternately by the feet alone. Lumps of iron are obtained as large as two fists. Professor Sexton says: Going back as far as history can carry us, to Egypt, sculptured pictures are found that



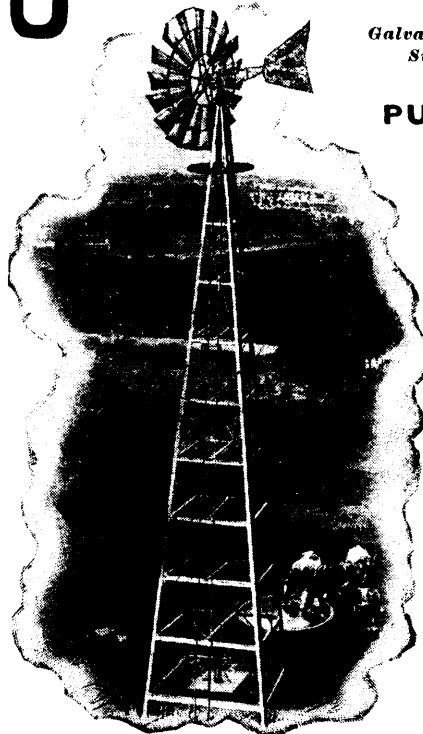
Buffalo Horizontal Class "A" Engine.

says: The fire is kindled on one side of an upright stone with a small hole near the ground; a bamboo tube communicates with the bellows. These are worked by two people who raise the flaps with their

date from about the year 1500 B.C., and show men working a bellows. Remains of very simple furnaces have been found in various parts of the world, but the ages of them are always uncertain and some of

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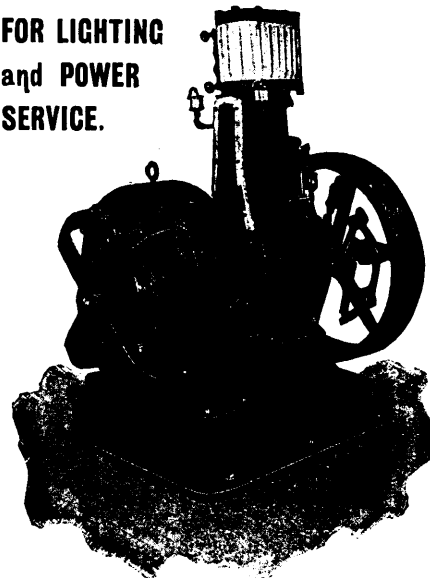
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them may only be survivals. Some are characteristic of a period anterior to the use of bellows. Those found in Switzerland consist of cylindrical cavities dug out in the side of a hill surrounded by a conical clay funnel. The fuel for these furnaces appear to have been charcoal. M. Figueir supposes that the ages of them are 4,000 years.

For some thousands of years these primitive methods continued. These might be modified—the bellows improved, and more skill acquired—but, notwithstanding this, it was not until the fourteenth and fifteenth century of our era that cast iron was discovered, and it was a hundred years or more after that before its manufacture and use became the general practice of civilized people. The discovery of cast iron was made in Germany some time during the thirteenth century, when to increase the output of iron furnaces, they were made ten feet high and eight feet wide, open at the top, and put into blast with bellows worked by water power. This furnace did its work so well that it developed a smelting and carbonizing temperature by which the ordinary bloom or wolf was made to flow, and produce what the workers called, "stuff they had no use for." A use was soon found, however, and the demand increased so much for cast iron, that larger furnaces had to be built and worked with a stronger blast. No further improvements of importance were made until near the close of the eighteenth century, when the demand for cast-iron pumps and pipes for the steam-power drainage of mines increased the demand above the capacity of the supply, and larger blast furnaces became an imperative necessity. At this stage of furnace develop-

ment, however, another difficulty arose in reference to fuel, for up to this time charcoal was the only fuel thought of. As soon, however, as the want was felt, it was satisfied by the introduction of charred coal or coke. The bellows now became insufficient for the blast required for the quick burning of coke, and then James Watt, the inventor of the improved steam engine, built and set to work the first blowing engine at the Carron iron works, in Scotland, in 1760. The water tuyere was about this time invented by John Candies, the inventor of the lift and tilt steam hammers. Later improvements have supplied the hot blast and larger furnaces with higher blast pressures, and the converter for producing cheap steel. Notwithstanding all this, the principle that underlies that of the most improved of the modern blast furnaces is the same as that of the most ancient ones, and it is just as possible that a transition as great as that from the puddling furnace to the converter will displace the present blast furnace in the near future.

**CANADIAN NICKEL INDUSTRIES.**

The United States Commercial Agent at Sault Ste. Marie, Ont., reports to his Government regarding the nickel industries of Canada as follows:

Nickel was first found to exist in paying quantities in Canada in the year 1887, the principal deposits being in what is known as the Sudbury district. Since then, the industry has developed until it is claimed that Canada furnishes over forty per cent. of the nickel of the world.

The district in which the ore is found is near Sudbury, in Ontario, and is about seventy miles long by forty miles wide.

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It is poor economy to buy a good dynamo unless your wiring is properly installed.

It will not pay you to save power at your dynamo if you lose it on the way to your lamps.

Our wires are proportioned to the power they are to carry, and we put them up to stay.

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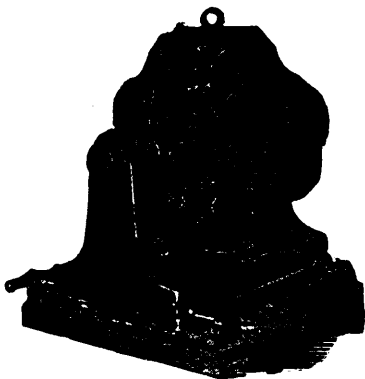
The deposits are irregular in character and range from small pockets to acres in extent, rising in places to ridges and hills of solid ore. It is estimated that there is enough nickel now located to supply the world for the next hundred years at the present rate of consumption. There are now less than a dozen mines equipped with plants, with an output of about 700 tons of ore per day.

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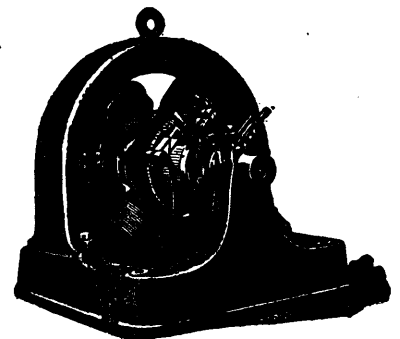
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The deepest mine goes down about 1,000 feet and others from 50 to 400 feet.

The ore usually runs about three per cent. in nickel to the ton, or a little less, and about the same in copper, with a large proportion of sulphur and iron in almost equal parts.

No ore is at present reduced to the pure nickel and copper in Canada; most of it being shipped in the shape of matte to the Orford Copper Co., in New Jersey, for refinement.

It takes as a rule seven tons of ore to make one ton of matte. Reducing ore to matte is a very simple process. Dry split wood is placed on level ground to the height of about one foot, and ore is placed on top of

this to the height of about six or eight feet. Fire is applied and the wood soon ignites the sulphur in the ore; it will burn from six to twelve weeks, reducing the sulphur, roughly speaking, from thirty per cent. to seven per cent.

It is then coarsely crushed and run through a smelting process in a furnace, the ore settling to the bottom and the slag running off, as in a common iron furnace. The ore is self-fluxing, but the addition of a small amount of lime or limestone will produce better results.

The matte thus produced is called forty per cent. matte, but an analysis from one furnace shows 38.5 per cent.

The principal companies operating and preparing to operate in this district on a large scale are the Canadian Copper Co., Cleveland, Ohio, the Mond Nickel Co., London, England, and the Lake Superior Power Co., of this city; others are in the field, but on a smaller scale.

The two companies first named are putting in refining plants to further reduce the matte to perhaps eighty or ninety per cent. before

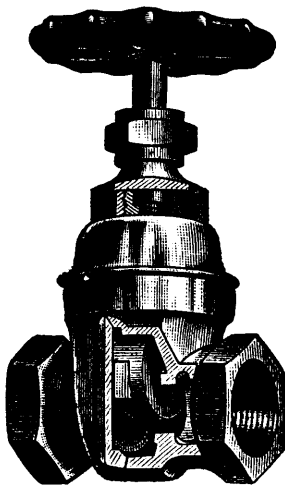
shipping to their refining plants in New Jersey and Swansea, Wales, respectively. The Lake Superior Power Co. is building smelting and refining plants in this city, and proposes by a new electrical process to separate and save all the by-products of the ore.

A large quantity of the sulphur thus saved will be utilized in the manufacture of sulphide pulp in the new mill just about completed here, and the balance will probably be put on the market for sale in the shape of liquefied sulphuric acid. This company claims that the nickel pig manufactured by its process will contain nickel and iron in a perfect state of harmony—also a large per cent. of carbon—and be capable of producing the very highest quality of nickel steel.

The managers have therefore concluded to utilize the product themselves in the manufacture of nickel steel, and have commenced the construction of steel mills in this city for the manufacture of rails and plate; the capacity will probably be about 600 tons of nickel-steel rails and 400 tons of plate per day.

Iron for mixing with nickel pig will be smelted here, the ore coming from the Helen mines, near Michipicoten. These mines have been shipping ore during the last season, and have developed a capacity of 1,000 tons per day.

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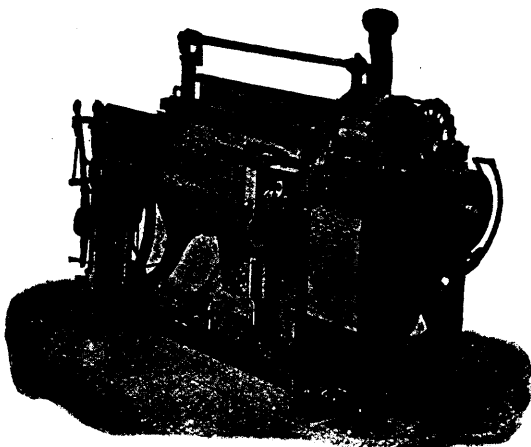
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## OPPORTUNITIES FOR TRADE.

The following enquiries have been received at the offices of the High Commissioner of Canada in London, and of the Canadian Section of the Imperial Institute, London, England.

**NOTE.**—Those who may wish to correspond with any of these enquirers can obtain the names and addresses by applying to THE CANADIAN MANUFACTURER, Toronto. No charge for giving information. When writing refer to the numerals opposite the enquiries.

391. A London firm ask to be placed in communication with Nova Scotia dealers in, and shippers of salted and dried cod fish, packed in drums of 128 pounds each.

392. The names of leading salt manufacturers, or large shippers of salt, are asked for by a Canadian correspondent.

393. Enquiry is made for names of importers of maple wood rollers by a Canadian firm engaging in the manufacture of these articles.

394. Enquiry has been received from an agent in London, for names of Canadian

firms desiring to be represented at the forthcoming exhibition in Glasgow.

395. A correspondent asks for information concerning the manufacture of soap, candles, starch, paper and turnery in Canada.

396. A Montreal firm of Manufacturers' Agents desire to take up the representation in Canada of an English house whose goods are suitable for the Canadian market.

397. An Ontario firm of farm implement makers who use French buhr stones for fork and hoe grinding are desirous of having the addresses of quarry owners from whom they can purchase scrap or waste.

**AUSTRALIA.**—The advent of federation, the location of the Federal Senate in Melbourne and the coming of a member of the English royal house to open the Federal Parliament are circumstances calculated to assure the hope of a good time coming, and plenty of money going, in a few months' time. A straw to show the way the wind blows is the fact that here in Melbourne during last week there were no less than five new American travellers hustling round the boot and shoe trades, Victoria's own pet industry.

It here occurs to me that your manufacturers must not, when sending travellers out here, altogether ignore what might be termed the sentimental aspect of trade. Attempts are occasionally made in the press, chiefly by old fogies signing themselves "Britisher," to detract from the value of American trade connections on the ground that your country merely uses Australia as a dumping ground for surplus stock. Truth to state, this complaint has in the past been well founded, but one does not hear it now to anything like the same extent as a few years ago. But the sentiment still exists to a certain degree and must be recognized. A preferential tariff in favor of the Mother Country might be adopted, although this writer's opinion is that it will not be. A wave of passionate patriotism has just swept over the country in consequence of England's trouble in South Africa, but the Australian nature is too impulsive to sustain it and too cosmopolitan to submit to the trammels of a preferential tariff. Canada cannot be quoted as a comparison. Circumstances, climate and distance from London account for too much. Still your manufacturers must recognize the existence of the English sentiment, although it is a disappearing one.

The manufacturing center of Australia will most likely develop at Newcastle, N.S.W., the coal producing district on the Hunter River. Victorian legislation, under the guise of a shops and factories act, will drive manufacturing industries which have to compete with foreign goods out of the colony. This new form of protection regulates hours, wages, apprentices, etc., everything, in fact, except selling price, and firms are beginning to complain of its operations. —Australian correspondent of the Iron Age.

**AUSTRIA-HUNGARY.**—The Hungarian Minister of Finance proposes to expend 31,340,000 crowns (\$6,392,000) for various public works, of which the following may offer opportunities to manufacturers: The enlargement of the State foundry at Vajda-Hunyad, and the improvement of the machinery and tools so as to utilize more of the hydraulic power in the neighborhood of the Zolyom-Brezo works; the construction of numerous public buildings for some of which American building materials and sanitary and heating or ventilating appliances may be applicable; the large appropriation for the workshops of the State railways; the doubling of certain railway lines, building of new sidings, etc., and the construction of a large bridge over the Tisza between Szentes and Csongrad, on the national road from Alfold.

**AUSTRALASIA.**—There are many makers of boots and shoes in Australasia, and they do a very profitable business generally speaking. It is beyond doubt that a large establishment using the most modern machinery, would have—under the Federation Régime and a relatively high tariff—numerous chances of success, especially as the goods now made are of a very coarse type and often of inferior quality.—Belgian Consul-General at Melbourne.

Amongst other industries which could be developed in the Australian Colonies, I may mention the manufacture of mineral waters, wine, sugar, confectionery, and preserves of all kinds. The climate of these countries is suitable for the cultivation of fruit, and the consumption of confectionery is very important. Taking into consideration the special exigencies of the export trade, makers would have no difficulty in finding excellent markets abroad.—Belgian Consul-General at Melbourne.

**BRAZIL.**—According to the Rio News, a project is on foot for the construction of an electric railway from Piracicaba to Villa Americana, in the State of Sao Paulo. The last-named station is in the old American colony of Santa Barbara. The estimated cost of the line is \$2,500,000, and permission to construct it has been asked of the Sao Paulo Legislature.

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**COSTA RICA.**—For two years from November 2, 1900, iron posts, frames, and perforated iron for the construction of houses; bricks, Roman cement, earthenware pipes for drains, lime and ruberoid roofing; and timber in planks, beams, joists, posts and laths, for use exclusively in the City of Limon, may be imported into the Republic, free of all import duty and wharfage.

**EGYPT.**—There is reported to be a good demand in Egypt for such lines as the following: Shovels, plows, hoes, corn shellers, etc., mining, milling and hydraulic machinery, wagons for farm work, carriages, wood and iron wheelbarrows, stoves and ranges, steam and hot water apparatus, windmills, steam pumps, feed grinders and threshing machines.

The imports of bottled beer went up from 124,674 dozen in 1898 to 130,836 dozen in 1899. Our imports are no longer of any importance, having been crushed by English and German competition. Thanks to its extremely low prices, England is doing a steadily growing trade with the "Tennent" brand of "Pilsener" beer. A case of forty-eight bottles is sold here at frs. 26 free warehouse.—Austro-Hungarian Consul-General at Alexandria.

**EASTERN SIBERIA.**—Beginning January 14 the Russian provinces in Eastern Asia will cease to be open to the unrestricted trade of all the world as heretofore, but the tariff now in force in European Russia will be applied to all goods entering Eastern Siberia, with certain exceptions. As, however, the list of exceptions comprises a large number of articles manufactured in the United States, and indeed includes most of the articles for which American firms have heretofore found any sale in Siberia, the new arrangement will not work such injury to our export trade to that region as it might at first seem likely. Following is a list, reprinted from Dun's Review of September 29, of the more important articles exempt from the provisions of this decree and still to be admitted free of duty as heretofore: Cereals of all kinds, rice, vegetables, fruits

and berries, tea, salt, meat (salted, smoked or dried), meat and sausages, butter, cattle and horses, manure and fertilizers; wooden ware, including furniture and veneers; building materials, including cement, stone, etc.; coal, coke and tar, asphalt, sulphur, borax, etc., and various chemicals, tanning and dyeing materials, white and red lead, cast and wrought iron, tin plate and steel, including iron and steel rails, sheet iron, sheet steel, etc.; manufactures of iron and steel, including iron pipe, boiler and bridge work, etc.; manufactures of tin plate, wire, needles, agricultural implements, tools, machinery of all kinds, including locomotives, reapers and binders, etc.; scales, musical instruments, passenger railway and tramway cars, seagoing and river vessels, and books, pictures and maps.

**GERMANY.**—The utilization of wind power to the generation of electricity continues to receive attention in Germany, and we learn that Mr. Gustave Couz, of Hamburg, has been experimenting in this direction with promising results. A wind motor has been erected at the works of the company in question, which has a diameter of forty feet and an effective sail surface of 1,070 square feet. The motor works at the rate of about eleven revolutions per minute, which speed is regulated by the automatic modification of the direction of the sails to the wind. With this motor an output of one horse power to thirty horse power and more may be obtained, according to the force of the wind, which power is transmitted to a thirty horse power shunt-wound iron-clad dynamo, designed to give 120 amperes at 160 volts terminal pressure when running at 700 revolutions per minute. The current generated by this machine is conducted to a switchboard and thence to a battery of accumulators having a capacity of 66,000 watt-hours, or may be delivered to electro-motors. So soon as the wind has attained a velocity of eight feet per second, the dynamo may be brought up to its full terminal pressure. With an increasing wind force the charging of the battery may be commenced. Automatic cut-outs for the dynamo were proved unnecessary with the arrangement adopted. The electromagnets of the

dynamo are permanently excited by the battery, the plus pole being connected with the battery, while the minus pole is connected to the charging switch. By this arrangement automatic regulation of the dynamo voltage is secured. An automatic battery discharging switch serves to maintain the line tension of 110 volts constant, both during the charging process and when discharging. Small motors are connected up to the lighting circuits, but larger ones are supplied by separate circuits branched off from the terminals of the generator.—Kuhlow's.

At the present price of coal, says a German journal, the use of turf as fuel commands our special attention. Hitherto, all attempts to use turf as fuel and for the production of gas on a large scale have failed, for the reason that no means existed to dry it cheaply and quickly, nor could it be pressed into a small volume. Turf contains about seventy-five per cent. of water, of which it loses very little in ordinary "drying." It is now proposed to reduce the turf to pulp and destroy the fibre, after which the mass is easily dried, getting quite hard and furnishing an excellent charcoal. There is no reason why this turf coal should not be used for electric stoves and in the manufacture of carbide of calcium. In distilling the turf coal, paraffin, ammoniac, and a strong illuminating gas are found. In using it as a fuel for locomotives, a heat equal to that of 93.25 per cent. of best coal has been attained, while it shows only 2.62 per cent. of ashes, thus being equal in purity to high-grade Derbyshire coal. The cost of converting turf into coal has been calculated at sixty-one cents per ton.—United States Consul at Coburg.

**GREAT BRITAIN.**—A London correspondent of the Iron Age writes:

I have previously drawn the attention of your readers to the probabilities of steam heating supplanting the old English fireside. Many of the American Radiator manufacturers are well represented here in London, but I imagine before long there will be room for more. The advance in the price of coal and gas looks like hastening some system of steam heating, while the growing



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tendency to live in flats instead of detached or semi-detached houses makes for steam heating on American Radiator lines. I understand that a large company have been formed to take over the European rights of some American patents. The manager of this company says :

I have made a tour of England, and I can now realize what is meant by saying that England is damaging her business prosperity by extravagant consumption of coal. In many plants I found no feed water heater existing, and in others the heating of factory buildings was being done by live steam, while at the same time precious exhaust steam from the engines was going to absolute waste. We take this exhaust steam to heat the building and save you a small fortune in coal. Really it seems a crime to see the big buildings in the banking districts of the city still using open grates for heating purposes and sending three-quarters of the precious heat up the chimneys. For the moment we are giving our attention to the big buildings that own steam plants for lighting or other purposes. Several big hotels have already adopted the American device, and it is at present being laid at the Hotel Cecil extension. Soon after must come the day when with every row, even of the tiniest cottages, erected at the suburbs of London there will be built one central heating plant, from which warmth will be supplied for next to nothing to the entire community.

A well-known heating engineer of London says that engineers have to exercise a considerable amount of diplomacy to carry through any system of steam heating. The British public has a sentiment for its fire place, and has distinctly a prejudice against steam, which it associates in its mind with explosions. The Institute of Heating and Ventilating Engineers has been holding its quarterly meeting in London during last week, and I was struck with the large number of English ironmongers who attended. It would be near the mark, I think, to say that in every large city in England the chief ironmonger is generally in a position to undertake steam heating.

The Iron Trade Review, speaking of the decline in production of iron in Great Britain, says :

While the output of pig iron in the United States in 1900 will probably prove to be 100,000 to 150,000 tons in excess of the record of 13,620,703 tons in 1899, it is estimated that in Great Britain the production was from 200,000 to 300,000 less than in the preceding year. The two countries enter upon 1901 with opposite tendencies—in Great Britain a curtailment of output, a number of blast furnaces having gone out of blast in the past few weeks, while in the United States the output of pig iron is on the increase. In giving this estimate of the year's outcome in pig iron the London Iron and Coal Trades Review notes that the volume of business in iron and steel is being rapidly contracted there and that the outlook is much less favorable than at the same period one year previous. British iron and steel exports in November were 83,000 tons less than in November, 1899, and for the eleven months ending with November were 3,336,200 tons, against 3,399,522 tons in eleven months in 1899, a falling off of 63,322 tons. The imports show a corresponding increase, being 666,941 tons to November 30, in 1900, as against 604,671 tons in the eleven months of 1899.

The English press takes rather a gloomy view of the outlook ; but as we have pointed out before, some of the pessimism is due to

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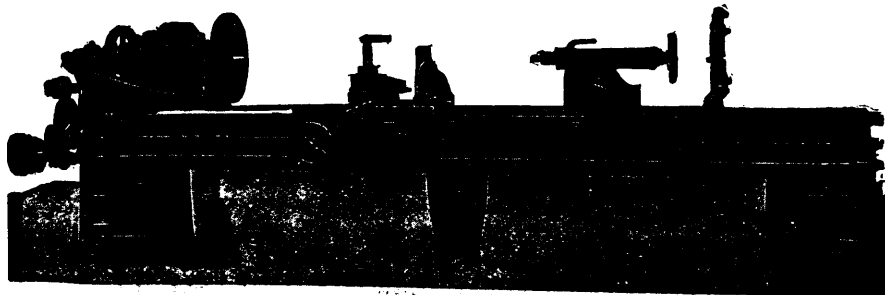
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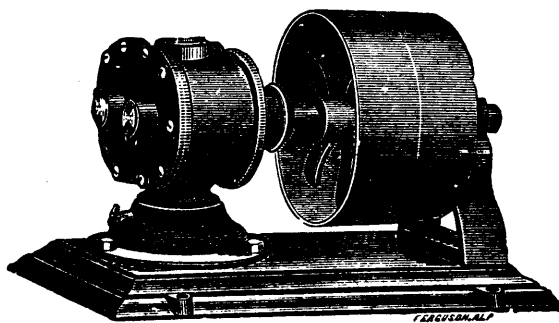


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looking too intently on current receipts from the United States, which are far larger than current sales for export from this country. The promise for export trade of American steel producers is far from being what they would have it for 1900. Low prices abroad

and high ocean freights are cutting off this business sharply. The London Iron and Coal Trades Review points out that the situation is not as hopeless for the British iron manufacturer as some are inclined to believe. It concedes that there are more

plants in the United States that can produce pig iron and steel at low figures—say \$7.50 for pig iron and \$12 for steel—than in the iron-making districts of England, but it cites an English works at which pig iron is made at twenty-eight shillings, and adds that the number of such works may be increased when furnace gases and coke oven by-products are fully utilized. Undoubtedly the progress of the United States in foreign markets is impeded most by lack of ocean vessels adapted to the carrying of bulk freight; and of the working out of that problem depends the success of the campaign for world markets on which so good a beginning has been made.

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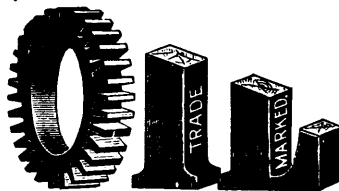
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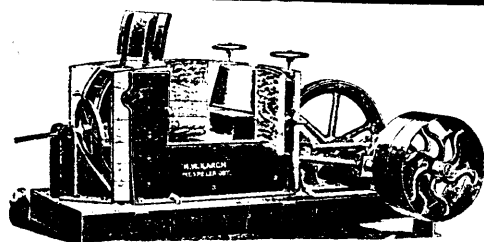
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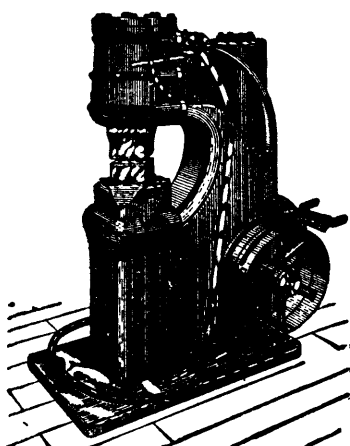
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GUADELOUPE (French West Indies).—The American Consul recently reported inquiries for the following: Machinery, boilers, engines, evaporators, centrifugals, etc., the complete installation of a sugar mill to grind cane and make about 500 tons of centrifugal sugar per season; small crushing mills for grinding cane, to be worked by animal power; machinery and installation of small sugar mills, to be used with above; machinery for complete installation of a tannery to make sole and similar leathers, capacity about 5,000 hides; tan mills (a) for green bark, (b) for dark bark; machinery for complete installation of rum distillery; capacity, from 50 to 100 gallons per diem; machinery for complete installation of rum distillery; capacity, from 500 to 1,000 gallons per diem. In every instance manufacturers are urged to quote prices as well as send circulars and catalogues, and to conduct their correspondence in French, using metric terms throughout. The catalogues, etc., called for above should be addressed to Mr. T. Papin Beaufond, Bateaux a Vapeur, Pointe a Pitre, Guadeloupe, West Indies.

HOLLAND.—Firms desiring to tender for government contracts in Holland should note the following particulars, several of which are highly important. In general it is undesirable to tender by letter, and English experience seems to show that employing Dutch engineers as intermediaries is the best policy for foreign firms to pursue. If a foreigner tenders direct he must give some technical place of domicile, such as his bank, and is also required to obtain as security two well-known householders, who also have to sign the tenders. The government, and also the municipal authorities, require that some person directly representing the firm making a tender, should be a resident of the country, with power to decide all questions that may arise out of the contract, so as to avoid loss of time by correspondence in cases of misunderstandings. The parties tendering have also, if successful, to deposit a certain percentage (fixed in the specification) of the value the whole contract as guarantee for its satisfactory fulfilment.

ITALY.—That the imports of minerals, metal goods and machinery into Italy increased from \$34,979,000 in 1898 to \$47,486,000 in 1899. The imports of machinery alone increased from \$6,139,966.52 in 1898 to \$10,931,298.82, or about 77 per cent. Among the more important lines of machinery in the imports of which important increases took place were: Electrical machinery, weaving machinery, spinning machinery, distilling, brewing and sugar machinery, agricultural machinery, machine tools and woodworking machinery, steam engines, marine engines, boilers, portable engines, hydraulic machinery and windmills,

flour mill machinery, paper mill machinery, and knitting machinery. The only ones of the foregoing lines in which the United States at present enjoys any appreciable share of the Italian trade are agricultural machinery, and machine tools and wood-working machinery. In these American imports stand third. In all the other lines, however, American manufacturers have achieved pronounced successes in other countries, and all that is needed for them to do the same in Italy is a careful study of the conditions and requirements of the Italian machinery market, and more direct representation.—American Machinist.

JAPAN.—The British Foreign Office have received from the British Consul at Yokohama a printed copy of the plan of the proposed improvements in the accommodation of the Tokio Custom House, which was issued some months ago by the Director of Customs, together with a map illustrative of same. The improvements proposed are very extensive, and will involve the supply of a large amount of iron, machinery, etc.; they will occupy, it is said, two and a half to three years to complete.

Some valuable suggestions regarding Canadian trade in Japan are contained in a letter from Mr. Malcolm C. Fenwick, of Kobe, formerly of this country, to Mr. George Anderson, who, it will be remembered, visited Japan as Canadian trade commissioner a couple of years ago. Mr. Fenwick has had considerable experience in Japan in the commission business, and writes of what he knows. He says that during the past season he has sold goods in the following lines:

Foodstuffs—Canned goods (fruits and vegetables), packing house products (hams and bacon), butter in tins and wood, condensed milk (sweetened and unsweetened), cheese (small full cream, about nine pounds, most popular).

Dry goods—Suspenders, furs, cotton fabrics. There is a large market in woolen cloths, woolen underclothing, woolen blankets, Mr. Fenwick says, which he has barely touched.

Sundries—Soaps, perfumes, cosmetiques, for which there is much and constant demand; iron, nails, watches, watch cases, jewellery, cutlery, bicycles, guns, sewing machines, in each of which there is an enormous trade.

Mr. Fenwick quotes the present through rate of the combined railway and steamship companies connecting with the east, and says he presumes the Canadian divisions of these lines will conform thereto. The following is the present tariff per 100 pounds:

	Per car.	Less than car.
Canned Goods.....	\$ 90	\$1 50
Packing house products....	1 10	1 60
Piece goods.....	1 10	1 75
Machinery K. D. in pieces.	1 00	2 50
Machinery K. D. in boxes.	1 00	2 00

The writer goes on to say that he receives a commission from the manufacturers on all goods, and usually gives the agency of a given product to a resident merchant, and then works up a trade through him by securing him orders. His idea of working up a trade for Canadian manufacturers is to secure a sample room temporarily in each port or large city, visited for a month or six weeks at a time periodically, and samples being displayed and advertisements published in the local papers, native and foreign. The Japanese are now making every

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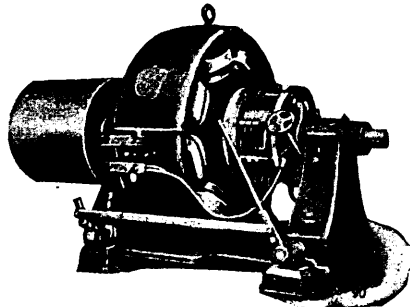
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We manufacture Direct Current Machinery in all sizes and for any purpose.

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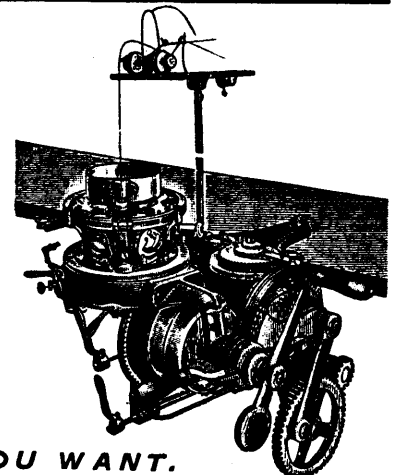
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FLEXIBLE AND FLANGE PIPE.

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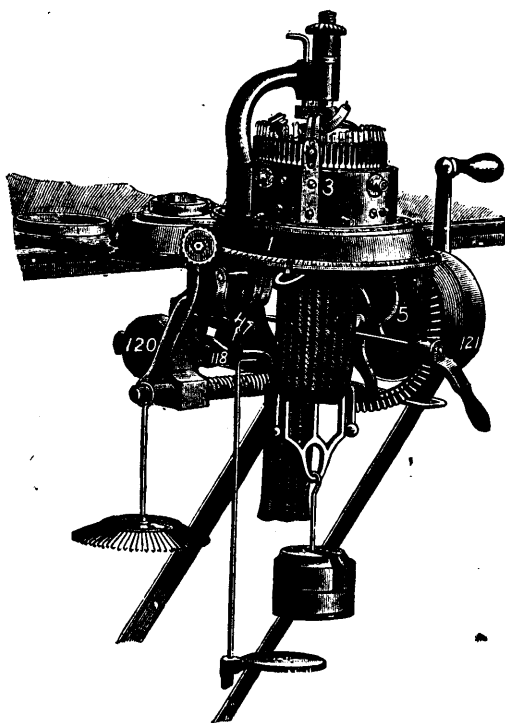
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Why? MERIT and SUPERIORITY  
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## CREELMAN BROS.,

Manufacturers,

GEORGETOWN, ONTARIO, Canada.

effort to deal direct, and independent of the foreign commission merchant. Mr. Fenwick says if this were thought advisable, goods would have to be shipped against B. L. and freight paid by draft with order. This freight would also serve the second purpose of bargain money. He regards this as a popular scheme and one that would help to secure a footing against American, English, French and German goods already established. Mr. Fenwick concludes with an expression of opinion that our Canadian railways, especially the Canadian Pacific, should be prepared to do something better for Canadian trade than the regular through rates quoted above.

The duties on the following articles have been largely increased in the new tariff, as compared with those formerly levied: gold, silver and platinum and gunpowder. Duties on the following have been somewhat increased: tin, zinc, lead, iron and steel and copper, and all manufacturers thereof not hereafter specially mentioned: drugs and chemicals, animal oils and heavy oils, colors, dyes, varnishes, tobacco, matches, silk tissues, and the higher grades of leather goods. The duties upon the following articles remain substantially the same as under the existing tariff: glass and glassware, pottery and porcelain, medicines and most chemical products not hereafter mentioned, all grains except rice and corn, starch and soap, raw cotton, cotton yarn and tissues, flax and hemp, both raw and manufactured, raw wool and woolen yarns, and unsweetened biscuits. On the following articles the duties have been reduced very materially: canvas, metal sheathing, and ropes for ships, coke and coal (about fifty per cent.), copper wires and electrical supplies, structural and railroad iron, turpentine and the lighter oils (about thirty per cent.) rubber and rubber goods, smoking tobacco, paper, staves for barrels and wooden articles generally, watches and clocks, cured pork, bacon and other hog products, flour, corn and corn meal, sweetened biscuits, the cheaper grades of leather goods, furniture of cane and rushes, carriages, cured fish, rice, butter and cheese, and machinery. The following have been placed on the free list: railway and tramway materials, quinine and other products of cinchona bark and germicides, books and periodicals, agricultural machinery, railway cars and fresh meats.

The metric system of weights and measures has been retained, and the peso has been continued as the monetary standard, its value being estimated as equal to fifty cents American currency. The Board recommends that four months should intervene between the adoption of the new tariff and the date of its going into effect.

PHILIPPINE ISLANDS—The report of the board of officers appointed to revise the Philippine tariff has been received at Washington and transmitted to Congress by the President. The new tariff will do away with the series of successive taxes levied under the Spanish tariff, whereby an article might be assessed a specific duty, levied according to quantity, then an additional charge called the "sur tax," then ten per cent. of the total thus obtained under the title of "harbor dues," and an eight per cent. ad valorem tax as arbitrarily fixed by a table of valuations, and finally a consumption tax which was levied upon spirits, vegetables, flour, salt, and mineral oils. In accordance with the terms of the Treaty of Paris there is no discrimination in the new tariff in favor of the United States, but many of the duties on

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American products, which before were inordinately high or even prohibitory, have been reduced, as have the duties on many products, such as unhusked rice and agricultural machinery, deemed to be of importance in fostering the prosperity of the islands.

**RHODESIA, SOUTH AFRICA.**—The Rose of Sharon and Shamrock gold mines in Rhodesia are soon to place orders for air compressors, hoisting machinery and rock drills, pumping machinery, stamp batteries and engines. No date for closing these contracts has been announced, and, as it is probable that the orders will be placed without call-

## Toronto Woolen Machinery Co.

We now offer as a going concern the property known as

### The Vienna Woolen Mills

Consisting of the following machinery:—

- One set 48 in. Platt Cards, all clothed.
  - One 264 Spindle Bancroft Mule.
  - One 24 in. G. & Mc. Picker. One Cone Duster.
  - One Fraser's Card Grinder. One Yarn Spooler.
  - One 60 Spindle Fly Twister.
  - One 108 in. Crompton Cone Loom, 4x4 box, 4 harness.
  - Two 92 in. Faisey " " 4x4 " 24 " "
  - One 48 in. Gilbert " " 3x1 " 4 " "
  - One 48 in. " " " 1x1 " 4 " "
  - One Broad Warper and Beamer.
  - One Bobbin Winder.
  - Two Broad Up and Down Gigs.
  - One Rotary Filling Mill. One Cloth Washer.
  - One Yarn Washer.
- With Spools, Bobbins, Tools, etc., etc.

#### BUILDING No. 1.

Two and a-half Storey Frame, with stone foundation, 30x60 feet.

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Boiler and Picker House—One Storey Brick, 24x64.

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#### Cross Oil Filter

will save you 50% on your oil bills. A trial will convince you. We send on approval at our expense. Why not to-day? Catalogue 26.

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### TO EXPORTERS AND IMPORTERS

The Publishers beg to draw attention to the preparation of the 15th edition of the "MERCHANTS' MANUFACTURERS' & SHIPPERS' DIRECTORY OF THE WORLD," containing classified lists of Trades and Tariffs for all countries. Highest award—Gold Medal—Paris, 1900. For further particulars, charges for advertisements, etc., apply

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W. P. Dent, Manager, Head Office, London, W.C. Eng.

ing for public tenders, manufacturers should put themselves in communication with the mining company at once.

**RUSSIA.**—There are in Russia at present thirty-six cement factories, a considerable number of which will be found in Poland. In twenty-one factories, 3,500,000 tons were produced during 1899, and in respect of the other fifteen no statistics are to hand. The maximum power of production may be put down at nearly 5,500,000 tons. The oldest cement factory was founded in 1866, and comparatively few others were established during the thirty years following that date. The great majority were opened in the course of the last ten years. Since 1897 exceptional activity has been shown in the calling into existence of cement works. Portland cement is manufactured by most of the Russian works, as only four devote themselves to the production of Roman cement.

The following enquiries have been received at the British Foreign Office from Mr. Henry Cooke, British Commercial Agent, 88 Petrovski Boulevard, Moscow, Russia, to whom enquiries should be addressed:

A Moscow firm asks for the addresses of the manufacturers of emery wheels, bearing the trade mark of a crown, and known in Russia as the "Corona" make.

In the same report, Mr. Cooke states that according to the official "Commercial and Industrial Gazette" of St. Petersburg, the Ministry of Ways of Communication has decided to collect expert data as to the working on Russian and foreign railways of every kind of mechanical and electrical block apparatus with a view to the application to Russian railways of the system which appears to be the most advantageous.

Mr. Cooke further states that according to the "Journal de St. Petersburg," the Ministry of Ways has despatched an official abroad to enquire into the systems in use for lighting railway carriages by means of acetylene, with a view to the possible adoption of this system on Russian Railways.

**SWITZERLAND.**—The Chamber of Commerce Journal has received information from the British Consul at Berne to the effect that there is at the present time a demand in that district for leather goods of British manufacture, such as bags, straps, harness, etc. It is suggested that firms manufacturing such articles should either communicate with the Secretary of the Chamber of Commerce at Berne, forwarding catalogues, price lists, etc., or instruct their travellers to visit the Berne district.

**SOUTH AFRICA.**—The report regarding the discovery of large coal fields situated 180 miles northwest of Bulawayo, and extending over some 400 square miles has been confirmed by the experts sent out by the British South African Company, and work will be begun in the way of developing them shortly. The Cape to Cairo railway is to be extended to the centre of the coal fields and on to Victoria Falls, and this important region will then be rapidly opened up.

The Cape Government will shortly be in the market for a dredger, to cost about £14,000 (\$68,040), to be used in removing the bar at the mouth of Port Alfred harbor.

There is reported to be a strong demand in both the Cape and Orange River Colonies for cream separators and other modern dairy apparatus. Co-operative creameries are being established in several sections, and it is

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Cheese Box Bands and Rims.  
Box Shooks (Small and Fine).

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**TEMPLE BUILDING, TORONTO, ONT.**

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Machines sent on approval.

**Canadian Typewriter Exchange,**  
45 Adelaide St. East,  
TORONTO.

probable that a large trade in American specialties in this line, including cooling apparatus and refrigerator cars may readily be built up.

Blankets made of shoddy find a large sale among the Kaffirs, where they are called "koogs." Those principally used come from Dewsbury, England, and are from sixty-four by sixty-eight to seventy-two by eighty-four inches in size, weighing four and a half and five pounds, respectively. They come in three different qualities and have broad red, yellow and blue stripes on both sides. The importation of these blankets during 1899 amounted to \$370,000.

At the annual Union of Conservative Associations held in London on the 18th ult., at which 750 delegates were present, it was resolved, by a majority of 719 "That in view of the present incorporation of the Transvaal and Orange River States within the dominions of the British Empire, this Conference is of opinion that it is desirable that, in reorganizing the fiscal system of the above countries, preferential tariffs in favor of British and colonial products shall be established, and that specially advantageous terms shall be conferred upon the colonists and settlers from the mother country in acknowledgment of the services rendered by them in the interests of the Empire."

**SOUTH AUSTRALIA.** — The pearl shell fishery of the Northern Territory of South Australia was very prosperous during 1899. The total export increased nearly eighteen tons; the value increased by £11,000, reaching nearly £30,000, the price being £140 a ton. The average earnings of each boat were calculated at £556, including those that were employed for only a few months. The known beds have now been worked for several years, and are becoming exhausted. Steps have been taken to prospect the coast, the government contributing £1 for £1 subsidy on the amount actually expended. Four reliable pearlers are engaged in this work. It is hardly conceivable, says the Governor-Resident, that with such an enormous coast line, pearlshell should exist in the immediate vicinity of Port Darwin. — Australian Ironmonger.

**TURKEY.** — The annual imports of biscuits at Constantinople amount, according to estimates of merchants, to about £5,000 in value. England is the chief country of origin (Huntley & Palmers, Peek, Frean & Co.) France and Germany (Hamburg) also do a trade, but of much less importance. Cheap sugared goods are most in demand. — Austro-Hungarian Chamber of Commerce and Industry at Constantinople.

### BRITISH ORDERS EXECUTED IN CANADA.

Whatever other sins may be imputed to the War Office it cannot be said that they have neglected the Colonies in placing orders for the vast supplies which the military operations in South Africa and China have demanded. The Ottawa correspondent of The Standard gives the following list of orders executed in Canada during the present year for the British and Indian Governments:—

#### FOR THE BRITISH GOVERNMENT.

3,075 sets of saddlery .....	\$118,463
5,114 numnahs .....	16,109
2,000 numnah panels .....	4,410
30,000 greatcoats .....	180,180
50,000 pairs trousers, khaki .....	95,020
50,000 serge frocks, khaki .....	130,725
10,000 tent pin bags .....	5,460
50 transport wagons .....	18,375

\$568,742

#### FOR THE INDIAN GOVERNMENT.

33,675 greatcoats .....	\$268,341
43,300 pairs long stockings .....	23,841
29,000 leather moccasins .....	83,737
1,320 fur caps .....	3,118

\$379,037

The above are all of Canadian material, manufactured and shipped to Vancouver in October.

Negotiations are going on for the following supplies:

2,200 wooden huts for South Africa .....	\$2,650,000
110 wooden huts for China .....	132,000
2,000 tons firewood for China .....	4,000
300 transport wagons .....	105,000

\$2,891,000

Tents and boots: Samples have been submitted to the War Office, and large quantities will be required.

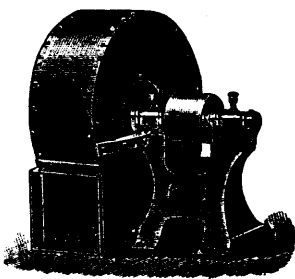
There has been also supplied to the Imperial Government, through the Agriculture Department, hay, oats, jam, etc., to the value of about \$500,000.

Since the above list was prepared, a further order for 1,000 fur caps and 1,500 pairs of gloves for the use of the British forces in China has been placed with a Quebec contractor.

### MEETING OF BUFFALO FORGE CO'S REPRESENTATIVES.

In order to secure the many advantages of personal acquaintance and free exchange of ideas among its various representatives, the Buffalo Forge Co. during the first week of the new century called together its entire staff of travelling men and officials. During the gathering at Buffalo they were most hospitably entertained by the firm, and carried away with them the remembrance of many pleasures which the meeting presented.

The occasion was afforded of a better acquaintance and closer contact between the various officials of the company, travelling representatives and heads of departments as well, some of whom had never met before. As a result of this contact and intercourse, the interests of harmony and unity throughout were thought to be well served, while securing at the same time the mutual benefits of the thorough discussions of engineering and commercial problem encountered in the field of heating, ventilating and drying.



## PLANING MILL STEEL PLATE EXHAUST FANS

For removal of refuse from Wood-Working Machinery.

## CYCLONE DUST SEPARATORS

Made of Galvanized Steel. All Sizes for Fans from 30 inches and up.

Estimates cheerfully given for Complete Installations of Fans, Piping, Gates, Hoods and Separators, with or without Shavings Feed Attachment to Boiler Fires.

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WE MAKE

Forge, Cupola and Disc Fans, Electric Fans, Heaters and Fans for Lumber and Wool Drying, etc., and for Heating of Factories. STEAM TRAPS, OIL SEPARATORS, ETC.



Manufacturers of Cotton, Jute, Hemp and Flax, Twines and Cordage, Mill Banding and Driving Ropes, Chalk and Fishing Lines, Seine Twine, Hammocks, Tennis, Cricket and Fly Nets, Cotton Rope and Clothes Lines, Plough Lines, etc.

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mechanical draft forge installation, and the similar lines of the company.

Experience is the great teacher of course, and upon this is based the benefits arising from a free interchange of ideas upon such occasions. The various engineering problems encountered in planning and installing heating and blast plants of various sorts were discussed in the light of that familiarity which comes from practical experience with the varying conditions constantly arising. The opportunity given for the presentation of individual ideas upon the subject of procuring customers and following up business, as well as upon the best methods to be employed in different cases was also made use of to the benefit of all present. Mr. D. W. Roper, who for the past year has been travelling in England and Europe in the interest of the Buffalo Forge Co., returned home in time to attend the meeting, and was able to impart much that was of interest and value concerning trade conditions and outlooks across the Atlantic. The gathering, looking upon its practical side, commemorated the close of a decade successful beyond the highest anticipations of the Buffalo Forge Co., and fittingly marked the advent of which the brightest prospects for still greater prosperity are most apparent.

The entertainment provided by the firm was hospitable in the extreme. One evening the party occupied four boxes at a leading Buffalo theatre. On the following evening a banquet at the Iroquois Hotel was tendered the representatives, covers being laid for thirty. The decoration of the banquet hall and the tables were beautiful in their harmony while the repast itself was

such as much delights the inner man. Mr. H. W. Kreinheder, of Buffalo, who was instrumental with valuable aid and suggestions in the founding of the Buffalo Forge Co., was the guest of honor and officiated as toast-master, while on his right and left were seated Messrs. William F. Wendt and Henry W. Wendt, senior and junior members of the firm. Mr. Krainheder was especially happy in his selection and presentation of toasts, and before the evenings pleasures had been brought to a close every one present had been heard from. The phenomenal growth of the company as brought out by the contrast between the past and present conditions, as well as its present prosperity and bright prospects were the main themes of the post-prandial remarks. Numerous facts concerning the early history of the firm were mentioned which were doubly interesting as portraying various phrases in the growth and development of a large industry. The company had its beginning in a small office in Buffalo about a quarter of a century ago, the work being done in an outside shop. After one change, the shop and office was located in a small two-storey frame building since which time the company has expanded without a check until the shops now occupy the entire block. So rapid has been the growth that the original frame building had to be removed to make room for improvements, and even now with recent completion of a large six-storey shop, the company is hampered for lack of space. Such were a few of the topics touched upon at the banquet. The gathering as a whole was a great success in every respect.

NEW RAILWAY IN BRITISH COLUMBIA.

The ratepayers of Victoria, B.C., recently voted to give a bonus of \$15,000 per annum for twenty years to a syndicate which proposes to organize a railway and ferry to connect Victoria with the Fraser River Valley and the Great Northern Railway of the United States.

The company intends to construct a railway from the present terminus of the Victoria and Sidney Railway in the city of Victoria through the streets to the terminus of the Esquimalt and Nanaimo Railway; to lease and use the Victoria and Sidney Railway for running cars to Sidney (eighteen miles away on the east coast of Vancouver Island); also to maintain a car-ferry service between Sidney, across the Gulf of Georgia, to Steveston, the great cannery town on the Fraser River; thence to build a railway to Cloverdale (twenty-six miles), where connection will be made with the Great Northern Railway.

In addition to the bonus, the syndicate has the privilege of using such streets of Victoria as are necessary to construct the 1½ miles of track between the present railway depots.

The distance between Sidney and Steveston, to be covered by a car ferryboat, is forty-five miles, which it is expected will be traveled in less than three hours; the proviso being that the ferry steamship shall be capable of making fourteen knots an hour, and of carrying eight loaded freight cars, of the capacity of 30,000 pounds each, and 400 passengers on each trip.

All interested in South and Central American Trade should read

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Manufacturers of Engine Sized Superfine Papers, White and Tinted Book Papers, Blue and Cream Laid and Wove Foolscaps, Account, Envelope and Lithographic Papers, etc.

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6-8-10  
 Adelaide St. W. TORONTO.

The Great Northern Railway has a five-year contract to carry all freight to and from Victoria by this route, which will enable cars to come direct to the city without breaking bulk, thus avoiding wharf charges for freight and transshipment of passengers.

By many this is regarded as the commencement of an era of improvement which will culminate in the extension of the Esquimalt and Nanaimo Railway to Hardy's Bay, the extreme north of Vancouver Island, and thus place Victoria in the direct line of travel from the United States to the north.

**THE SMOKE NUISANCE IN TORONTO.**

On the motion of Alderman Russell at the meeting of the Legislation Committee yesterday afternoon, further consideration of the by-law for the abatement of the smoke nuisance was deferred until the new City Council is installed. This was quite satisfactory to a committee of manufacturers who appeared to oppose hasty legislation on the subject. They expressed appreciation of the policy of the aldermen in holding the by-law over for investigation by those who would be affected by its operation. They had communicated, they said, with leading cities of the United States and England to ascertain the nature and scope of by-laws to abate the smoke nuisance, and the results of their operation. The replies went to show that nearly every city of size had such a by-law, but that it was not enforced in any harsh way against manufacturers. Opinions as to the efficacy of smoke consumers varied so much as to leave the question of their practical utility still in doubt.

The manufacturers of Toronto, their representatives assured the Civic Committee, did not desire to oppose the adoption of a workable by-law to abate the smoke nuisance, but such legislation, they thought, should be more for the future than for the present, when there is no cause for general complaint. Meanwhile, they recommended strict regulations respecting the installation of new boilers in the city, which could reasonably be required to have the necessary appliances attached for lessening the volume of smoke, while to enforce the owners of established industries to adopt some new device would, in many cases, require a reconstruction of the plant and involve heavy expense and annoyance.

The manufacturers also thought that the proposed by-law should specify a number of smoke consumers that would be satisfactory, and that prosecutions thereunder should be instituted by the City Engineer or some other responsible official, in order to prevent possible persecution by irresponsible persons. The regulation should be at first applied only to the densely populated parts of the city, and then only after a reasonable time has been given those affected to make the necessary changes in their plants. The regulation, the manufacturers urge, should operate against steamboat and railway companies, as well as against themselves.

These are briefly the points, concluded the manufacturers, which it is desired that the City Council will consider before passing any legislation on this subject. Manufac-

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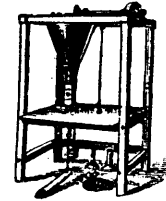
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turers and others creating smoke are interested in having a clean and beautiful city, but the whole question of the utility of smoke consumers is still so much of a debated question, and so many frauds have been perpetrated in connection with devices of this kind, that it is necessary that action should be taken slowly, and only with the fullest information as to the relative merits and cost of smoke-consuming devices on the market. In this way it will be possible to provide for the enactment of legislation which will be much more effective in securing a clean atmosphere for the future in our city, than if a more hasty measure were adopted as the result of a particular grievance of the moment. — Toronto Evening Star.

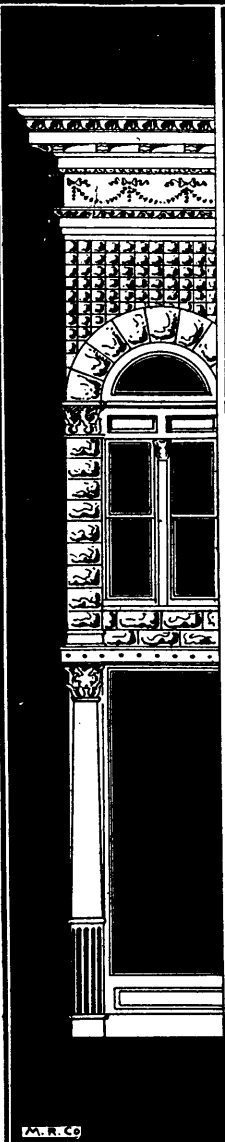
Canada continues to increase her productive power in regard to wood pulp, and our supplies from there are certainly improving. The question of freight is receiving serious attention, and there is every prospect that in the near future we shall experience a substantial decrease in the cost of conveying pulp from Canada to this country. There is an abundance of raw material awaiting the mills which are projected for converting it into the pulp which is so necessary to the paper makers of this country. Commissioners who have been investigating the matter report that in Ontario the whole region is richly timbered. Everywhere pulp wood abounded, especially spruce. The reports of these commissioners are to be printed under the Canadian Government, and we may be sure that they will be read with almost as much interest here as in the Dominion. Meanwhile an effort has been made in this country to increase the price of paper. Suffice it to say that prices remain pretty much as heretofore, and, as we have often observed when similar proposals have been made, that combinations in this country to rule prices are almost sure to fail. The meeting at the Hotel Cecil did not bring forth any practical scheme, and for what it did the conference might just as well have been abandoned. — Paper Makers' Circular, London.

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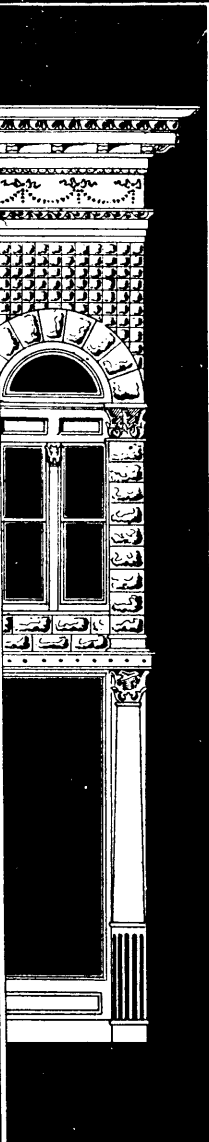
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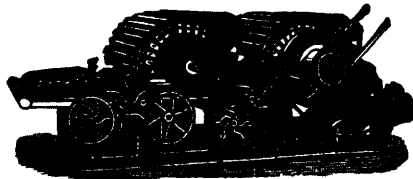
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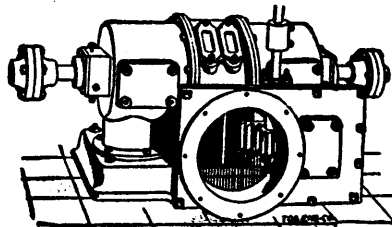
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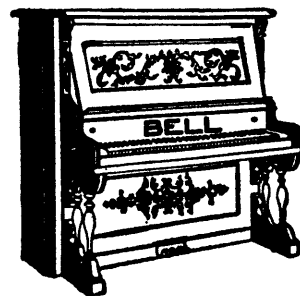
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