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**CANADIAN MANUFACTURER**  
AND INDUSTRIAL WORLD  
DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

MANUFACTURES FOR ITSELF  
PROSPERS

VOL. 41.

TORONTO, OCTOBER 19, 1900.

No 8.

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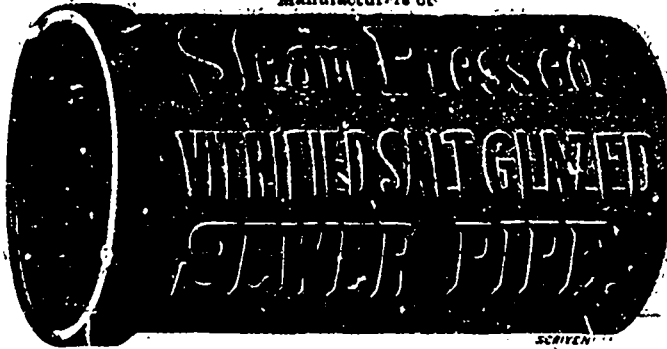
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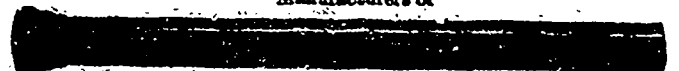
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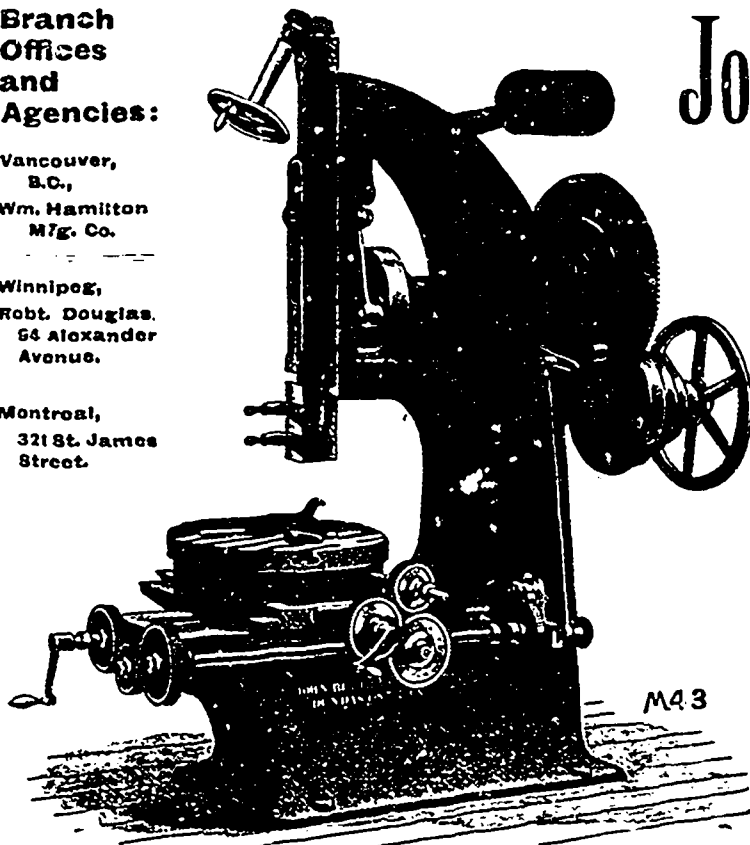
Wm. Hamilton Mfg. Co.

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Montreal,

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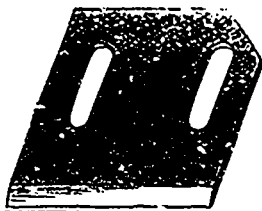
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48%, and 58% (Light and Heavy)

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35%, to 37%. (Hardwood Gas(es))

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DOUBLE STRENGTH

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ABSOLUTELY PURE

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THE BEST EQUIPPED BOILER AND ENGINE WORKS IN CANADA.

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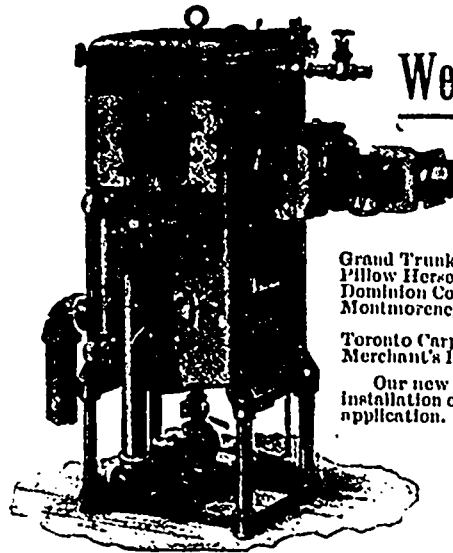
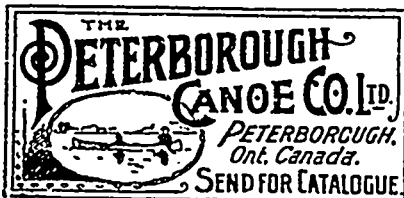


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Dominion Cotton Mills Co., Montreal. ... (6) ..	200 "
Montmorency Cotton Mills, Montmorency, Que. .... (1) ..	200 "
Toronto Carpet Co., Toronto, Ont. .... (1) ..	400 "
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Our new Catalogue explains the saving to be effected by the  
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Reliance Works, MONTREAL.

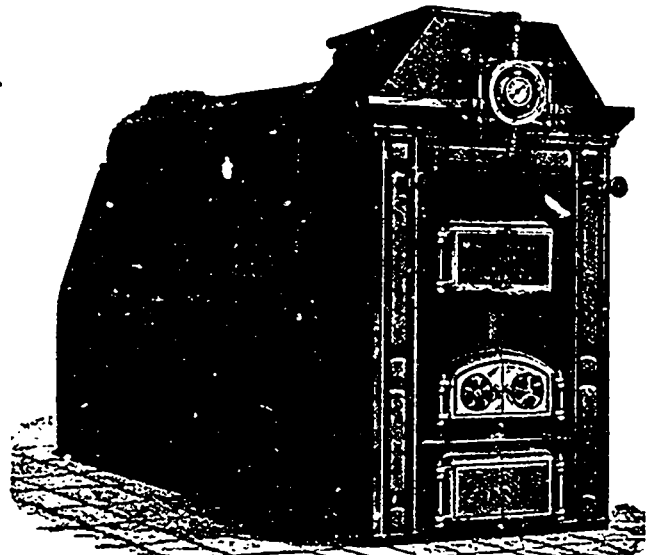
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DELIVERY MADE AT NEW YORK, MONTREAL OR HAMILTON.

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This boiler is built with sheet steel case or for brick casing as desired.  
It is internally fired, has perfect water circulation, is a quick steamer  
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Two settling chambers are provided for catching deposits of scale, and  
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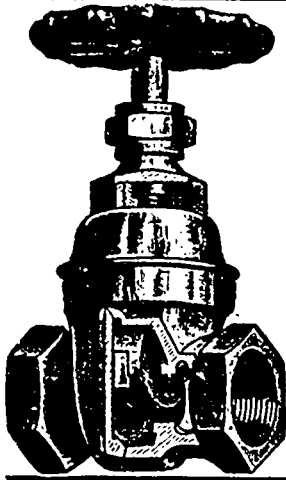
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The Wellington Mills, LONDON, ENG.

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From Less than 5 c.p. to Full Capacity. Guaranteed for Three Years.

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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.

**Northey Mfg. Co., Limited,** 1000 KING ST. SUBWAY, **Toronto, Ont.**

# THE ATLANTIC REFINING CO.

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**OILS, GREASES**  
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## Reflectors, Shades, Lamps

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

**FRANK B. WHITE COMPANY.**

The Flaxor Building, CHICAGO. 150 Nassau St., NEW YORK.

Represent the Advertising Department of THE CANADIAN  
MANUFACTURER in the United States.**IMPERIAL PREFERENTIAL TRADE.**

The Imperial Trade Defense and Anti-Free Imports League, of London, England, has sent us a brochure which was issued just before the recent Parliamentary elections in Great Britain, in which is discussed what the next Parliament must do for Imperial trade. There is no more enthusiastic and intelligent advocate for Imperial preferential trade than Mr. J. W. Mahoney, the Secretary of this League. The pamphlet is addressed to Parliamentary candidates, and expresses the view of what the next Parliament must do for Imperial trade. It says:—

The practical and vital cohesiveness of the British Empire has been tested in the fiery trials of Britain's adversity, and has convinced friend and foe alike that a world power of the highest magnitude has rounded its existence into concrete expression, and formally assumed its preponderate scale of influence in the governing potencies of the globe. To secure its permanence and to stimulate its development, a concentration of the vast industrial activities of its varied climes, on the lines of preferential trading alone is needed. A marginal advantage to the Imperial producer would bring results of surpassing and direct good for the British and Colonial worker, and indirectly benefit the whole human race.

The potential commercial resources of the Empire are above computation, and the only way to their measurable development at the speed desirable and necessary, is by the bold and statesmanlike plan of uprooting the politico-economic fungus of free trade and giving to the products of the colonies and possessions a distinct advantage in British markets over the imports from foreign nations.

The free sons of a liberty loving Empire, who raised regiments and fought with conspicuous and epoch-making success, side by side with Britain's bravest and best, will not be content to wait years for the slow and timid movements of English statesmen when dealing with trade and tariffs, but will press for prompt and comprehensive measures for Imperial trade needs, though the economic dogmas, doctrines and creeds of half-a-century be torn to shreds in the process.

The word has gone forth and is repeated in every electoral section in the kingdom, that the army shall be reformed on an Imperial basis, and the navy strengthened by colonial additions. Most wise and patriotic decisions, involving large and costly schemes. But from what source will the enormous

additional revenue be derived? Will foreign nations generously aid us in our endeavors to safeguard the Empire by remitting the taxation on British Imperial goods, and thus enable our merchants and manufacturers to make larger profits and thereby stand the strain of a heavier income tax? They have enjoyed the untaxed entrance to our English markets for fifty years. Surely it is time they reciprocated our generosity. No, it is useless to expect nations to yield an advantage to others, except from the compulsion arising from self-interest. From what plan then, or financial scheme can the extra revenue be equitably obtained? It is admitted by competent financiers that the basis of taxation must be extended in the direction of duties on imports. It is seldom in the history of a people that the mode of raising revenue can be rendered advantageous to their industrial interests. This is the case however with Great Britain at the present time. She has a fault to amend, alike as regards her own interests and those of her Empire. Free markets have been shamefully conceded to competing goods of foreign origin, while British exports have been ruinously taxed in every port in the world, and when by the growth of her Empire, England is expected to give a little preference to the products of her Colonies, she is debarred from such a desirable course by the system inaugurated by the blatant economic hypnotism practised by the self-sufficient peace idealists of the defunct Manchester school.

The next Parliament will need to make history with the subject, or the available time for Imperial trade defence will pass, leaving the Empire to fall behind in the grand industrial march of the leading nations.

The increasing complexity in modern life demand from nations as from individuals, greater care and better method in shaping external relationships than formerly. The world has grown up industrially, and the principles and modes of commerce of the majority of productive nations create a rule which no single country can safely refuse to adopt. Great advantages in commercial exchange exist no longer, hence the folly of supposed superiority in fiscal matters claimed by the dwindling free traders of England. We have at last reached the period in the World's industrial concerns when all must be free traders or none.

The next Parliament will have the industrial prosperity of the British and the Imperial workers in the hollow of its hand. Parliament can do little for trade except to regulate its international relations, and in this it is supreme. If the incoming Government fails to pass measures of fiscal reconstruction, giving the wheat, lumber and fruit of Canada, the wool, wines and minerals of Australasia, the tea and rice of India, and the products of South Africa an advantage over competing goods from foreign sources, it will amount to a criminal abandonment of the best fruits of the inter-trading power of the Empire.

The cry of the "Open Door" in China is not a plea for absolute free trade with the Celestial Empire, but a simple demand for equal conditions of trade for all rivals. We are not contented with equal opportunities with the foreigner for trade in our own Empire, but require preferential terms, and the Colonies confidently expect special favor for their commodities at British ports. In the matter of Imperial trading within the wide borders of the Empire, the foreigner is not on the same footing as the British people themselves, as he contributes nothing to the Imperial maintenance of the English dominion, and cannot, therefore, logically object to Imperial preference for the products of the Empire.

What will the British people pay for the war for supremacy in South Africa? Will France, Germany or Russia share the cost? They expect to reap commercial profit from the conquest and the certainty of future peace.

British commerce within the Empire is equivalent to inland trade, and should have all the privileges of a nation trading within itself.

Trade follows the flag, but our flag needs the sustaining power of a mighty navy and the fighting battalions from a

world-wide Empire. Are we not therefore entitled to trade privileges over our neighbors and not too friendly rivals?

The next Parliament must pronounce for preferential trading within the length and breadth of the Empire, and thus fix its permanence, promoting its development, advance its self-sufficiency, and render it a self-centred power that will tend to secure the peace, prosperity and happiness of the world.

### WHO SUPPLIES OUR WANTS?

The recent publication in this journal of a statement showing the great disparity in the value of imports into Canada in 1899 of certain manufactures of iron and steel as between Great Britain and the United States as the countries of origin, has excited considerable interest not only in Canada but also in the other countries alluded to. It was shown in our statement that of the value of the articles alluded to, aggregating more than \$10,000,000, more than eighty-seven per cent. came from the United States and less than thirteen per cent. from Great Britain. A statistical bureau of the United States Government, commenting upon and elaborating the subject, published two tables, in one of which was enumerated twenty certain articles imported from Great Britain into Canada during the years 1898 and 1900, showing the values thereof, the other table showing the facts regarding twenty other certain articles imported into Canada during the same years from the United States. The values of all these articles thus imported were as follows:—

	1898.	1900.
From Great Britain.....	\$13,900,865	\$18,957,164
From United States.....	11,005,932	15,098,677
	\$24,906,797	\$34,055,841

The aggregate increase in value of the named imports from 1898 to 1900 was as follows:—

From Great Britain.....	\$5,056,299 or 36.3 per cent.
From United States. . . .	4,092,745 or 37.1 per cent.

There were three articles enumerated in each of the tables prepared by the Bureau of Statistics which decreased in value in the years named, as follows:—

FROM GREAT BRITAIN.	
Worsted Tissues.....	\$30,266 or 1.0 per cent.
Apparels and Slops.....	299,405 or 19.0 per cent.
Earthen and China Ware..	187,044 or 23.0 per cent.
FROM UNITED STATES.	
Furniture.....	\$129,096 or 22.7 per cent.
Cycles.....	266,236 or 36.8 per cent.
Telegraph, Telephone and Scientific Instruments..	28,239 or 9.2 per cent.

The tables compiled by the Bureau of Statistics were evidently intended to show not the comparative gains in Canadian trade of Great Britain and the United States in the articles included in either of the tables, but rather the gains of each country in the articles in which they excelled; and it is noticeable that as regards the twenty enumerated lines of British goods, in the seventeen in which there were increases, in fourteen the increases were more than twenty-five per cent., in seven more than 100 per cent. and in three more than 113 per cent., the highest—cutlery—being 738.6 per cent.; while, as regards the twenty enumerated lines of American goods, in the seventeen in which there were increases, in twelve the increases were more than twenty-five per cent., and in only two were they more than 100 per cent., the highest—carriages—being 197.1 per cent.

These figures show very conclusively that for the Canadian market certain lines of British manufactures are in better favor than those of any other country; and they also show that for certain other lines American goods have the preference.

The very large increase in volume of British goods imported in 1900 over 1898, more than \$5,000,000, or 36.3 per cent. may be attributed directly to the operation of the preferential tariff, but in those imports which decreased in value, the decrease in worsted tissues of only one per cent. indicates that in that special line Canadian mills are not affected; in apparel and slops, the decrease of nineteen per cent. may be attributed first to the greater ability of Canadian factories to supply the demand, and, second, to the increased imports from Germany, that country showing its ability to drive British goods out of the Canadian market.

The imports into Canada in 1899 of earthenware, including bath tubs, Rockingham ware, decorated ware, churns and crocks, granite ware, china and porcelain ware, tiles and earthenware n.e.s., were valued at \$903,446, of which Great Britain supplied \$575,979, or 63.7 per cent.; and the falling off of imports of such articles from that country to the extent of twenty-three per cent. indicates that other countries are gaining the trade. The industry in Canada is not as thrifty or extensive as it should be.

On the other hand, regarding the falling off of certain imports from the United States, the decrease in value of furniture from 1898 to 1900, say 22.7 per cent., indicates that the manufacture of furniture in Canada is in a most flourishing condition, our exports of furniture growing at a rapid and satisfactory rate; and the same may also be said of cycles, in which the decrease of imports is 36.8 per cent. The decrease in imports of telegraph, telephone and scientific instruments from the United States of 9.2 per cent. indicates that Canadian electrical manufacturing plants are gradually gaining over the home market.

### CANADA'S GREAT FAIR.

At last we are favored with what might be called an official view of the situation which environs the Toronto Industrial Exhibition Association. We allude to an editorial in the October issue of *The Trader*, of which Mr. W. K. McNaught is editor and also one of the vice presidents of the Exhibition Association. *The Trader* tells us that at the founding of the Exhibition twenty-two years ago, every building on the grounds was new and up-to-date, since which time every building devoted to the care of live stock has been rebuilt on up-to-date lines, but is forced to admit that those portions of the exhibition intended for the use of manufacturers do not fairly reflect the position of Canada as a manufacturing country. The buildings intended for the exhibition of manufactured goods are entirely behind the age, and are neither large enough nor modern enough to satisfy the demands and needs of our fast expanding industries—that while the agricultural portions of the exhibition has gone ahead, the manufacturers portion has been compelled to stand still—that it has outgrown its environment, and that it is unreasonable to expect it to thrive in its present inadequate and unsuitable quarters. This unfortunate condition has been obvious to the management of the Association for several years, who have resolved, Mr. McNaught

thinks wisely, now that the live stock buildings are all completed, to turn their attention to the erection of commodious and modern buildings for the proper housing of our manufactures. He tells us, however, that although the Association can recommend the erection of new buildings and improvements, they have no power to put such plans into execution unless the citizens of Toronto, through their city council, approve of the things recommended, and furnish the money for them—that this is the condition that exists to-day. The exhibition must either go ahead or fall back, and, in the opinion of the vice-president, it can only advance by having the manufacturing features of it, brought into line by the erection of the desired up-to-date buildings. It is an undoubted fact, however, Mr. McNaught tells us, that while the Toronto Exhibition has come to be regarded by the agricultural portion of the people of Ontario as the best place at which to spend their annual outing, and where they can be amused and instructed as to what is best in pumpkins, mangel wurtzels and live stock, so far as the citizens of Toronto are concerned, seventy-five per cent. of them judge the exhibition entirely by the grand stand performances and side shows, as a proof of which he cites as a fact that at the grand stand review of all the prize winners in both cattle and horses, the citizens showed their appreciation of it with an array of practically empty benches, while at the evening performances the grand stand was crowded night after night, every seat being occupied and thousands paying for standing room only.

This official deliverance is remarkable in several respects, and, to the citizens of Toronto, exceedingly inconsequential, Mr. McNaught's conclusion being that as far as the aforesaid citizens are concerned, they take but little interest in the results accruing from the large outlays made by the Association in the erection of horse stables and cattle byres, and the bestowment of some \$35,000 each year in prizes and premiums to the exhibitors of horses, cattle, sheep, swine, poultry, farm products, etc. The management of the exhibition feel themselves forced to admit that under existing conditions the conveniences afforded to the manufacturers portion of the affair do not reflect the position of Canada as a manufacturing country, and that it is ridiculous to expect those interests to thrive in the inadequate and unsuitable quarters provided for them, while at the same time they plead the baby act and scold because the taxpayers of Toronto are disinclined to vote a few hundred thousand dollars to be expended under the direction of the Toronto District Electoral Society and their followers to carry on a concern in which they take but little interest because of inefficiency and bad management. It may be all right for the directors at this late day to turn their attention to the erection of commodious and suitable buildings for the housing of exhibitions of manufactures, but their suggestions go for but little when, in their present frame of mind, the tax payers of Toronto are looked to to supply the funds.

We quite agree with Mr. McNaught that the time has arrived when the exhibition must either go ahead or fall back. To go ahead means the expenditure of much money to be supplied by Toronto taxpayers, but this is not to be expected, when, as Mr. McNaught shows, at least seventy-five per cent. of the taxpayers take but little interest in the best exhibition the management is able to offer, outside the fire works and side shows. Toronto does not care to be taxed

so heavily for the entertainment of the agricultural population of the country and in supplying them with an amusing place at which to spend their annual outings, especially when their more vital interests—those of their manufacturers—are so persistently ignored and discriminated against.

To prevent the falling back, new blood and much of it is required, and there should be a vigorous lopping off of the dead branches.

#### A GRATUITOUS AFFRONT.

Mr. S. Coulson, of the iron manufactory of H. R. Ives & Co., Montreal, writes to the *Globe*.—"We can conceive of nothing that could be more disastrous to the best interests of the manufacturers of Canada and the general prosperity of the country as a whole than a change of Government at the present time."—The *Toronto Globe*.

To which The Mail and Empire makes answer by pointing out that according to the Auditor-General's report, H. R. Ives & Co., with whom Mr. Coulson is connected, "did business with Tarte" last year to the extent of several thousand dollars, and exclaims "Bring on the next calamity howler." The intimation of The Mail and Empire is that Mr. Coulson and H. R. Ives & Co., are "calamity howlers" because they think that the general prosperity of the country is well conserved by the existing Government.

How long our manufacturers will stand such insolence at the hands of ultra political newspapers is a question they themselves must answer. Messrs. H. R. Ives & Co., are among the oldest and most substantial manufacturing concerns in Canada. They are members of The Canadian Manufacturers' Association, and at their annual meeting in Toronto in August, Mr. Coulson, who represented that concern, alluded to the fact that recent changes in the tariff had been of much benefit to them. "Our house," said Mr. Coulson, "is an old one which has been in business for forty years, and I am bound to say that we never had a tariff that worked so well and so smoothly as the present tariff, and I am sure this expression represents the feeling of the great majority of the Montreal manufacturers. Stability of the tariff is what we want." The meeting at which Mr. Coulson made these declarations was a large one, composed of some of the most influential manufacturers of the country, and the remarks met with no objection whatever. Then why should The Mail and Empire speak of a representative concern, having large influence in The Canadian Manufacturers' Association, as "calamity howlers?"

#### PARADISE.

According to a special telegram in The *Globe* a few days ago, Mr. J. P. Murray, of the Toronto Carpet Manufacturing Co., and an active member of the Canadian Manufacturers' Association, was in Halifax, N.S., to assist in the formation of a branch of the Association in that city, in which he was successful. Being interviewed by a newspaper reporter, Mr. Murray stated his views substantially as follows:—

"From the manufacturers' standpoint the general tariff will not admit of further reduction, and the relief to the consumer must come from the arrangement of commercial treaties with favored countries, and especially with our sister colonies and the motherland. This is the statesmanlike policy, and the effects of these reciprocal treaties being gradual will work no serious injury to our manufacturing

interests which are gradually able to adapt themselves to the changed condition.

"There has been a very satisfactory condition of trade in Canada, and the manufacturing interests were never on a more stable basis than to-day. The general prosperity that has visited the Dominion has been abundantly shared by the manufacturers. It has not only been the increase of business that has been so gratifying, but the better tone of the country and the ability of purchasers to meet their payments promptly has been very encouraging.

"The Canadian factories are running to their full capacity for the most part, and many have been compelled to work overtime to keep up with their orders. The rate of wages has been advanced, but the dividends have not suffered thereby. There never was a time when the manufacturing interests of Canada were in a more satisfactory state."

"As a general proposition it can be asserted that Canadian manufacturers are paying no special interest to the pending contest of the parties. They are not troubling themselves as a body as to which side wins. They are satisfied with affairs as they exist. Individually we all have our political preferences, and would like to see our own party win, but the day is past when as a solid body the manufacturers of Canada will interest themselves in an election. Most of us are so busy looking after our expanding business interests that we have little time to give to politics."

Mr. Murray is evidently entitled to speak for the Manufacturers' Association, else he would not have been in Halifax organizing a branch of it; and this being so it is somewhat in contrast with the recent action of the Association in sending a strong delegation to Ottawa to represent to the Government the heavy load the woolen manufacturers were laboring under because of the burdensomeness of the tariff affecting that industry. The delegates of the Association were accompanied by a large number of manufacturers, members of the Association and others, who represented to the Government that unless some substantial measure of relief was afforded, the industry would be forced to the wall. According to Mr. Murray at Halifax, the woolen manufacturers can hope for no further favors from the Government than what they now enjoy, but must depend upon any arrangements that may be made in the way of a treaty with the Motherland, or a modification of our preferential tariff, for it is that which hits our woolen manufacturers so heavily. It looks, however, that the statesmanlike policy which originates and perpetuates this reciprocal business which will work no serious injury to our woolen manufacturing industry is more highly admired by Mr. Murray than by the gentlemen who visited Ottawa.

It may be true, as Mr. Murray says, that Canadian manufacturers are paying no attention to the pending political contest; are not troubling themselves as to which side wins, and are satisfied with affairs as they exist; and it may also be true that the day is past when as a solid body they will interest themselves in an election, being too busy looking after their individual interests to pay any attention to politics, but we doubt it. These may be the views of Mr. Murray, but certainly not of the Canadian Manufacturers' Association. Such sentiments are enough to send shivers down the spinal column of the bronze monument that stands in Queen's Park.

#### EDITORIAL NOTES.

The Electrician, of Fleet Street, London, Eng., informs us that the nineteenth edition of their Electrical Trades Directory and Handbook is now in preparation, and will be published in January. It will contain, as usual, a carefully computed list of British, colonial and foreign electricians, electrical engineers, electric light and power and electric railway engines and contractors, manufacturers of electrical apparatus and machinery, etc.; also useful tables and data relating to electrical subjects.

Complete official returns for the fiscal year ending June 30, 1900, show that 1,446 vessels of 393,168 gross tons were built and documented in the United States. Since 1856 this record has been exceeded only twice—in 1861, when 415,740 gross tons were built, and in 1874, when 432,725 gross tons were built. The total tonnage built and documented on the Great Lakes during the year, 125 vessels of 130,611 gross tons, is the largest in the history of that region. The total for the Middle Atlantic and Gulf Coasts, 605 vessels of 135,475 tons, exceeds any record since 1872. The total for the New England Coast, 199 vessels of 72,179 gross tons, has not been equalled since 1891, while the product of the Pacific Coast, 300 vessels of 40,396 tons, is surpassed only by the returns of 1898 and 1899.

The Supreme Court of New York decides that to apply the word "scab" to a person is libelous and unlawful. A just decision against one of the weapons of spurious trade unionism.

Since the Ontario Government restricted the right of exporting nickel matte to the Cleveland and Constable Hook interests, these have been able to raise the price of nickel to almost double what it formerly was. These American capitalists get all they want. They are to be congratulated on the outcome of the last move.—The Mail and Empire.

If this means anything it means that the Ontario Government should not have done anything restricting the export of nickel matte from the Sudbury region. For many long years the Dominion Government have been importuned to place an export duty on nickel ore and matte, with a view to the establishment of nickel refining works in Canada. From the days of Sir John Macdonald, and through all the Conservative Governments of the country, no step was ever taken in this direction; and although the present Government took power to impose such a duty, it has never been assumed. But when Hon. Mr. Ross, the Ontario Premier, took steps to restrict the export of matte, and it appeared that the refining industry was really to be protected, works for the purpose were begun, and hundreds of thousands of dollars invested in them in Sault Ste. Marie and Hamilton, and at an early day there will be Canadian refineries which will more than rival that at Constable Hook, New Jersey. And yet The Mail and Empire poses as an advocate of protection to Canadian manufacturing industries.

In expressing regret at his inability to attend the banquet of the Canadian Manufacturers' Association at Toronto on Aug. 30 last, Sir Charles Tupper wrote:—"I regret exceedingly, that a previous engagement at Sydney, C.B., makes it

# THE CANADIAN MANUFACTURER

ESTABLISHED IN 1880.

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We especially request Canadian manufacturers to send us lists of the different lines of goods produced by them so that we may address to them special letters of inquiry as soon as information is received by us.

### ARGENTINE REPUBLIC.

Bicycles. | Bicycle Accessories.

### AUSTRALIA.

Builders' Household Carriage Carpenters' Machinists' Bicycles. Carpets and Rugs. Paints, Oils and Varnishes. Window Glass. Rope and Twine. Printing Paper. Writing Paper and Envelopes. Telegraph and Telephone Materials. Wire for Electrical purposes.	} Hardware.	} Tools.	Electric Fixtures. Electrical Supplies in general. Barb Wire and Fence Material. Oilcloths and Linoleums. Lamps. Kitchen Utensils. Boots and Shoes. Wrapping Paper. Bags and Twine. Optical Goods. Dentists' Materials. Antiseptic Dressings. Surgical Plasters and Hospital Supplies.
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### BELGIUM.

Builders' Household Carriage Bicycles. Electrical Instruments. Plows and Cultivators. Fine Carriages. Harness and Saddlery. Carpets and Rugs. Oilcloth and Linoleum. Lamps. Stoves and Ranges. Kitchen Utensils. Refrigerators. Window Glass. Wagon and Carriage Parts. Electrical Machinery. Wire for Electrical purposes. Electric Light Fixtures. Hardwood and Batten Furniture. Brass and Iron Bedsteads. Office Furniture and Safes. Sheetings, Shirts, etc. Handkerchiefs. Smallwares and Notions. Hats and Caps.	} Hardware.	Ho-siey and Underwear. Travellers' Requisites. Musical Instruments. Jewelry. Silverware. Optical Goods. Firearms and Ammunition. Photographic Goods. Groceries. Flour. Hams, Bacon, Pork and Lard. Wines and Spirits. Writing Paper and Envelopes. Folding Boxes, Wooden Dishes, etc. Toys and Games. Drugs. Patent Medicines. Bottles. Hides and Skins. Belting Leather. Factory Supplies in general. Agricultural Machinery. Flour. Sole and Upper Leathers. Cut Soles and Findings.
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### BRAZIL.

Plows and Cultivators. Seeds (all kinds). | Distilling Machines. Corn Planters.

### CUBA.

Wrapping Paper. Nails—Iron and Galvanized. Paints—dry and mixed. | Brushes. Carpenters' Tools. Office Fixtures.

### EGYPT.

Sewing Machines. | Tools.

### GERMANY.

Oats and Oatmeal.

### HOLLAND.

Machinists' Blacksmiths' Farming Axles and Springs. Engines and Boilers. Pumps. Metal-working Wood-working Milling Electrical Shafting, Hangers and Pulleys. Dairy Supplies.	} Tools.	} Machinery.	Barb Wire and Fence Material. Valves, Pipe Fittings, etc. Wire Rope. Telegraph and Telephone Material. Wire for Electrical purposes. Electric Light Fixtures. Electrical Instruments. Electrical Supplies in general. Mowers and Reapers. Planters and Seeders. Plows and Cultivators. Threshers.
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### MEXICO.

Builders' Hardware. Paints, Varnishes and Oils. Plumbing Material. Printing Paper. Wrapping Paper.	} Bags and Twine. Writing Paper and Envelopes. Blank Books. Toys and Games.
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### PERU.

Jewelry. Optical Goods. Silverware. Sewing Machines. Trusses. Woolen Goods. Corsets. Flannels.	} Stockings. Blankets and Counterpanes. Millinery Goods. Dress Goods. Sun Shades. Collars and Cuffs.
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### PORTO RICO.

Drugs. Pharmaceutical and Chemical Preparations. Druggists' Supplies. Trusses. Syringes—hard and soft rubber and glass. Perfumery. Writing Paper and Envelopes. Wrapping Paper.	} Bags and Twine. Folding Boxes—Wooden Dishes. Blank Books. Printing Office and Stationers' Sundries. Heavy Chemicals and Acids. Alcohol. Bottles. Paints, Varnishes and Oils. Toys and Games.
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### SOUTH AFRICA.

Builders' Household Cast-iron Pipe, Socket Pipes.	} Hardware.	Sluice Valves. Agricultural Machinery. Canned Provisions.
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Preserve this Bulletin for Reference—it will not be Duplicated.

*If You want Information, Ask for It.*

Address,

THE CANADIAN MANUFACTURER, Toronto, Canada.

impossible for me to accept the kind invitation of the Canadian Manufacturers' Association to attend their annual banquet on August 30. I need not tell you that I regard the protection of Canadian industries, in which your association is so greatly concerned, as being of the most vital importance to Canada, and I believe that the progress and prosperity of the country is greatly identified with the maintenance of the great principle of giving fitting appreciation to all Canadian industries and all Canadian labor. The great principle involved in that policy is sufficiently broad to meet whatever necessity may present itself. That policy in no way conflicts with the mutual preferential trade policy within the Empire, which I hope at no distant date will be inaugurated, as I am satisfied that an examination will show that it is the great means of promoting the unity of the Empire, and will strengthen it by the great development of Canada, Australasia and South Africa." More recently Sir Charles visited Toronto, accompanied by Hon. Hugh John Macdonald, and both of them, in the Massey Music Hall, proclaimed their belief in and adhesion to the National Policy, such as it was in the days of Sir John A. Macdonald, the father of Hon. Hugh John. Since then Hon. Hugh John has repudiated the very essence and spirit of the National Policy, and what is Sir Charles going to do about it?

A telegram from Brandon, Man., announces that Hon. Clifford Sifton had declined to accept an invitation from Hon. Hugh John Macdonald to meet in that town, and from the same platform discuss questions of common interest. Upon what question of common interest could the two gentlemen possibly differ? Mr. Sifton advocates free trade for agricultural implements, the manufacture of which is one of the most valuable industries of Canada, and Mr. Macdonald also advocates free trade for agricultural implements. Mr. Sifton says he expresses the views of his party; Mr. Macdonald, who is not an adherent of Mr. Sifton's party, does not seem to express the views of the party to which he says he belongs. What is he after?

If Hugh John Macdonald wins a seat in the coming elections as a member of the Dominion House of Commons his position will be an anomalous one. If Sir Charles Tupper's party carries the day, Mr. Macdonald expects to be Finance Minister, and as such formulate a new tariff, which, as far as

agricultural implements go, will resemble the play of Hamlet with that important character omitted. It will be either that or he will be like a cat in a strange garret—a free-trade protectionist among a party of protectionists who mean protection. If Sir Wilfrid Laurier's party carries the day, Mr. Macdonald would find himself in company with a party of professed free-traders, who would care nothing for him, and also in a company of protectionists who could have no sympathy with his tergiversations. Mr. Macdonald is certainly on the wrong track.

Sir Charles and Sir John were the fathers of the National Policy, which included adequate tariff protection to our manufacturing industries. Hugh John, the son of his father and now the lieutenant of Sir Charles, has assumed the role of free-trade protectionist, and thinking of the effect of the recent Manitoba speech of the lieutenant upon Canadian manufacturers generally, Sir Charles, in a low gurgling tune sings:—

The lightning bug is brilliant,  
But it hasn't any mind;  
It stumbles through existence  
With its headlight on behind.

#### OPPORTUNITIES FOR CANADIAN 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.

341. Enquiry has come from Dresden for the names of the most important firms in Canada trading in asbestos, and of asbestos mine owners.

342. The proprietors of a fluid for preventing and removing incrustation in land and marine boilers are desirous of introducing the article into the Canadian market, where they are not as yet represented.

343. The patentees of a zinc-light ventilator desire to have their goods placed on the Canadian market, and would be glad to hear of an agent who could push their business.

344. The addresses of a few buyers of iron crespeular and red hematite, etc., are asked for by a correspondent in Nova Scotia.

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## CAPTAINS OF INDUSTRY.

The following items of information, which are classified under the title "Captains of Industry," relate to matters that are of special interest to every advertiser in 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, bolting, 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.

The manufacture of paper from esparto grass has been carried on a long time; but the discovery was recently made in England that common grasses can be made into paper, says an exchange. No special process is called for—simply washing in water, treating in hot soda wash; another water bath; then grinding into a pulp. All the common kinds of grass, it has been found, answer equally well in the making of this new paper, only the grass must be cut before it has begun to run to seed. The fibre of the paper thus obtained has remarkable suppleness and strength, which renders the paper especially suitable for writing, drawing and tracing. It has been reckoned that two pounds of dried grass will give half a pound of paper—in other words, one quarter of its weight. Two and a half acres of land will produce 5,000 pounds of grass.

The xylosote process of wood-preserving is now extensively used in Europe, and tests of timber so treated have been made at several government institutions. The process consists in boiling the wood under pressure varying from fifteen to forty pounds to the square inch in a solution of metallic and mineral salts. The impregnating liquid consists of a solution of the sulphates of copper and iron crystallized together in the proportion of eighty per cent. of iron to twenty per cent. of copper, alumina and "Kanit," a mineral which is mined at Starsfurt, Germany, and consists chiefly of sulphate of potash and magnesia and chloride of magnesia. The sap of the wood is destroyed and carried off in the liquid. The function of the copper is to destroy any germs of decay which may be present in the wood, while the iron forms a chemical com-

bination insoluble in water, with the cellulose or woody fibre. One important feature of this method of treatment is that the salts are not left in the form of crystals in the pores of the wood to be dissolved out again by rain, and that the wood is able to withstand the various climatic conditions incidental to use out of doors. Tests made in Austria indicate that wood so treated is valuable for the props used in vineyards, as it resists decay; while the officer in charge of the impregnating works of the Royal Bavarian Government railways reports that sleepers of soft woods hardened in this way are equal in all respects to those of oak.

J. C. Wilson & Co., Glenora, Ont., report business very active all the season. Recent shipments, independent of their export trade have been many. They include the following: C. Becker, New Dundee, Ont., one sixteen inch Little Giant Turbine; Jas. Angel Co., St. John, Newfoundland, one sixteen inch Little Giant Turbine; Pontbriand & Frere, Sorel, Que., one twenty-one inch Little Giant Turbine; Henderson & Potts, Halifax, N.S., one twelve inch Little Giant Turbine; Williamson & Crombie, Kingsbury, Que., one twenty-four inch Little Giant Turbine—this makes some five or six wheels. Messrs. Wilson & Co. have applied this firm for their different mills in the province of Quebec. Wm. Auger, Haydon, Ont., one sixteen inch Little Giant Turbine, also one of the same size, with two pairs of gears, shafting, etc., to Thomas Lintott, Sparta, Ont. Menno Snider of Conestoga, Ont., has recently put in a thirty-three inch Little Giant to increase the capacity of his mill. Geo. C. Whyte of Galetta, Ont., has just been shipped a

twenty-four inch Little Giant, making the third he has put in. H. J. Pidgeon, New Richmond, Que., one ten inch Little Giant Turbine; John Dodson, Union, Ont., one twelve inch Little Giant, shafting, pulley and iron pipe for conveying water to the wheel.

Messrs. Ramon, Rivera, Nieto and Refugio Aguilar, at Irapuato, Mexico, are establishing a large carriage and wagon factory at a cost of about \$200,000. Manufacturers of wood-working machinery should take notice.

The Pressed Steel Car Co., of McKees Rocks, Pa., have just ordered two very large Cross Oil Filters from the Burt Mfg. Co., of Akron, Ohio.

Messrs. McQuat & McRae, Lachute, Que., manufacturers of general machinery, all supplies, pumps and pumping machinery, etc., inform us that notwithstanding they have more than doubled the number of hands employed by them within the year, they are, and have been during the past summer, working overtime. They are now working on a large order for pulp grinders and other pulp and paper mill machinery. They find difficulty in obtaining all the moulders they could use to advantage in their foundry department.

As the line of the Algoma Central railway is pushed northward into the wilderness the surveyors find most substantial proofs of the wisdom of the promoter of this enterprise. Extensive tracts of splendid agricultural lands, belts of pine, maple, oak and other valuable timber, wide areas of pulpwood, and great bodies of minerals are brought to light, of which the world had not heard but for the courage of a Clergue to dare an expenditure of millions to show Canada the enormous value of her long neglected natural resources in this very wonderful Algoma District, of which the half has not yet been told—Sault Ste Marie, Ont., Pioneer.

The Shipbuilding, Drydock & Wrecking Co., of Collingwood, Ont., has changed its name to the Collingwood Ship Building Co.

A recent visitor to Canada was Mr. W. R. Lysaght, one of the directors of John Lysaght, Limited, of Bristol, Eng., whose name is a familiar one in Canada, especially in connection with their well-known "Queen's Head," brand of galvanized iron. During his stay Mr. Lysaght had an opportunity of seeing through a number of representative manufacturing establishments and expressed his pleasure at the signs of enterprise and progress evident everywhere, both

## 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.



in manufacturing and merchantile circles. Being personally in charge of the manufacture of the steel sheets, which are the basis of the galvanized sheet, he was keenly interested in the lining of the many purposes for which such sheets, both black and galvanized, are used in Canada. After visiting Toronto, Hamilton, London, Montreal and Quebec, Mr. Lysaght left for Sydney, C.B., for the purpose of seeing the works of the Dominion Iron & Steel Co., in which enterprise British manufacturers are taking a deep interest.

The Western Electric & Mfg. Co. have just ordered their third order with the Burt Mfg. Co. of Akron, Ohio, for Cross Oil Filters for use in their works.

Wave motors and tide power schemes have been almost endless in number, says a writer in Cassier's Magazine. The former have, in a few instances, been used for light pumping work at seaside places, but such pumping outfits have been very far from demonstrating that the wave motor could ever be seriously considered as a prime mover where large power was demanded, in fact, the wave motor is little better than a toy. As to power from the tides, there is little to be said, except that such money has been wasted in vain endeavors to turn it to practical account. The tide-power scheme probably always will be alluring and also disappointing. The disappointment comes from the fact that very few people seem to take the trouble to figure out how much water and how considerable a fall are required to give any useful amount of power. A horse-power for a day of ten hours, for example, would require something like 120 tons of water falling from a height of 100 feet, so that a 500 horse power factory, say, would need 60,000 tons of water at a 100 foot head. On the basis of thirty-six cubic feet of water to the ton, there would thus be over 2,000,000 cubic feet of water, and this would make a fair sized pond, say about 1,000 feet long, 200 feet wide and ten feet deep. There is in these few figures something that may help to open the eyes of the tide-power plan inventor and of those who are in the habit of putting money into such things.

The Westinghouse Air Brake Co. have just ordered from the Burt Mfg. Co., of

Akron, Ohio, a large Cross Oil Filter to equip their power house.

Editor Cary, manager of the Packard Electric Co., St. Catharines, Ont., has gone and done it again. This time his effusion takes the shape of a most beautiful aluminum desk calendar with thermometer, handsome enough for a present to the happiest bride that the sun ever shone on. The Calendar is perpetual, making the thing of beauty a joy forever, the thermometer attachment being evidently intended to indicate the fervor of the hot times the boys occasionally undergo. Mr Cary distributed these unique souvenirs to his friends at the recent electrical convention in Kingston, Ont., and there is where the utility of the thermometer was demonstrated. Mr. Cary informs us that the issuing of the calendar was in commemoration of the tenth anniversary, not only of the Canadian Electrical Association, but also of the Packard Electric Co. It constitutes a valued and appreciated ornament on the editorial desk.

J C. Wilson & Co., Glenora, Ont., are supplying the Imperial Artistic Wood Turning Co. of Thorold, Ont., with a thirty-eight inch Little Giant Water Wheel to drive their new factory. Also with machine dressed gears, shafting, etc.

The works of the Canadian Portland Cement Co., at Marlbank, near Perth, Ont., were destroyed by fire Sept. 25. Loss about \$60,000. The works will be rebuilt without delay. The plant was formerly the property of the Beaver Portland Cement Co., Montreal, but in May last was taken over by the Canadian Portland Cement Co., who have been very materially adding to and improving the plant, so that it was just getting in first-class working order, having a capacity of 500 barrels per day, and employing about 150 men.

The German Consul at Payta-Piara (Peru) dwells with exultation in his report on the discovery of large rubber forests on the Niera River, a branch of the Amazon, which can be reached from the middle of the tobacco plantations by an eight days' journey. Several German firms equipped at once a large expedition to start for the interior and to secure the right to collect the rubber. As the natives are very poor, it is expected that cheap native labor will facil-

itate the collection. A special road is projected, which will touch Iquitos, over which place it would be best to send all material, as it would be difficult to find a route which is shorter through the Piara district.—Kuhlow's.

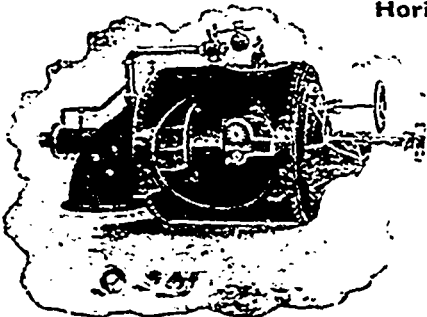
Preparations are still going on among some manufacturing firms to cope with the demand that is likely to arise in South Africa soon for finished products. Quite a number of agents are to return during this month, and some 500 mine owners and managers are to leave England shortly for the Cape in order to be near at hand to commence work at an early date. The latest advices from Cape Town, however, dealing with commercial affairs say that merchants are gradually resuming business, but at first they only order in sufficient quantity to carry them from month to month. Army stores and provisions still make up the largest transactions of the day. This state of affairs is plainly demonstrated in the local market. While the orders for manufactured goods are small they keep arriving steadily, and if these do not come direct they are sent to this market via England. It is expected that the early revival of trade with South Africa will immediately increase the demand for manufactured iron, railway material, electrical goods, hardware and very extensively the call for mining and hydraulic machinery.—The Manufacturer.

J. C. Wilson & Co., Glenora, Ont., are now completing a double forty-four inch Little Giant Turbine for John Breakey, Esq., Chaudiere Mills, Que. This wheel is to develop 120 h.p. under a ten foot head of water.

Rankine in his Steam Engine bases his calculations of results with forced draft on an air supply of only eighteen pounds of air per pound of coal, while those upon chimney draft are based upon twenty-four pounds, and then remarks that "with a forced draft there is less air required for dilution, consequently a higher temperature of the fire, consequently a better economy of heat than there is with a chimney draft." So also D. K. Clark, in his work on the same subject, states that "the system of forced draft opens the way for increase of efficiency in facilitating the adoption of grates of diminished area in combination with acceleration of combustion."

# THE Crocker Patent Turbine

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.

WATER 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 Mississauga Lumber Co., Hamilton, Ont., has been incorporated with a capital stock of \$72,000. The provisional directors include H. S. Brennan and W. J. McDonald, both of Hamilton, Ont., and W. P. Bull, of Toronto.

The Lucan Milling Co., Lucan, Ont., has been incorporated with a capital stock of \$20,000. The provisional directors include J. R. McComb, A. E. Stanley and J. S. Gillilan, all of Lucan, Ont.

The Cooper Handle Bar Co., Windsor, Ont., has been incorporated with a capital stock of \$25,000. The provisional directors include E. W. Rider, Detroit, Mich.; J. A. Straith and S. B. Best, both of Windsor, Ont.

The Canadian Voting Machine Co., Toronto, has been incorporated with a capital stock of \$60,000. The provisional directors include J. E. Boss, H. H. Dewart and J. F. Wildman, all of Toronto.

The Magnetic Electric Brake Co., Toronto, has been incorporated with a capital stock of \$500,000. The provisional directors include W. T. Pember, G. H. B. Hooper and W. D. Earngey, all of Toronto.

The premises of the Dominion Metallic Packing Co., Hamilton, Ont., were destroyed by fire Oct. 4. Loss about \$500.

The Calvert & Dwyer Co., Toronto, has been incorporated with a capital stock of \$100,000. The provisional directors include J. O. Buchanan and J. L. Morrison, both of Toronto.

The Royal Paper Box Co., Quebec, Que., has applied for incorporation with a capital stock of \$50,000. The applicants include J. A. Cote and E. E. Ross, both of the city of Quebec.

The Canadian Litholite Co., Owen Sound, Ont., has been incorporated with a capital stock of \$50,000. The provisional directors include John Lucas, Toronto; R. P. Butchart, Shallow Lake, Ont., and D. M. Butchart Owen Sound, Ont.

The J. H. Still Mfg. Co., St. Thomas, Ont., has applied for incorporation with a capital stock of \$99,900, to acquire the business of J. H. Still, sr. The applicants include J. H. Still, sr., J. H. Still, jr., and George Pettit, all of St. Thomas, Ont.

That the advantages of mechanical draft are recognized by experts, and that it is rapidly assuming its place as a rival and successor of chimney draft, is clearly evidenced by the fact that several technical schools have recently placed orders with the B. F. Sturtevant Co., Boston, Mass., for the equipment of their boiler plants with this means of draft production. In several cases the fans have been so installed as to provide opportunity for experimentally comparing the chimney with the fan.

Messrs. O'Hare & Sons, Midland, Ont., are making some important changes in their woolen mill, the machinery for which is being supplied by Toronto Woolen Machinery Co.

Messrs. J. E. Rhoads & Sons, 239 Market St., Philadelphia, manufacturers of belting, rubber goods, etc., have sent us their new illustrated catalogue having reference to the goods made by them. To the uninitiated it would be a surprise in examining this book to observe the excellently well gotten-up half-tone pictures which relate to leather in all the various forms into which it is manufactured by Messrs. Rhoads, and the machinery used in producing them. Reference is made to about every form and style of

bolting in use in factories, electric stations, mills, and all places where transmission of power by belts is desired, and where leather can be used in such places, and this refers also to rubber and cotton belting. Messrs. Rhoads will have pleasure in sending their catalogue upon application, and give full information regarding prices, etc.

Mr. Wm. H. Frost proprietor of the Smith's Falls Malleable Iron Works, Smith's Falls, Ont., informs us that he has increased the capacity for production of his works from 2,000 tons of malleable castings per year to 3,000 tons; and that he is now producing the strongest, toughest and softest castings in the twenty-two years history of his business. He has a large staff of employees at work, and keeps well abreast of the growing times both in capacity of production, appliances for conducting his operations, and excellence of products.

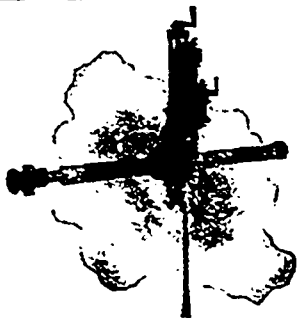
A French inspector of forests, named de Gall, has succeeded in melting wood by means of very high temperature combined with high pressure. The escape of the gases which form while wood is burning is hindered, and when the wood has been reduced to a liquid condition and has settled it does not in any way resemble the body which it before was. It is, in fact, more like coal—black, hard and heavy. When broken, the surface is seen to be very finely grained, and it will take a beautiful polish. There is, however, no longer any trace of organic structure visible. On the other hand, it possesses many qualities which may finally lead to its adoption in various industries. It can be pressed into any form; is impervious to water and the action of acid, and is a non-conductor of electricity. Melted wood is without question of the highest scientific interest. Its usefulness must

# W. A. FLEMING & CO.

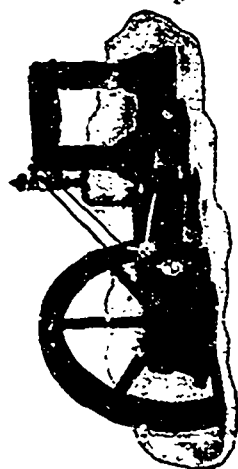
**MILL SUPPLIES**                      **CAMEL BRAND BELTING**  
**HOSE of all kinds**  
**DRIVING ROPE**  
**BELTING of all kinds**



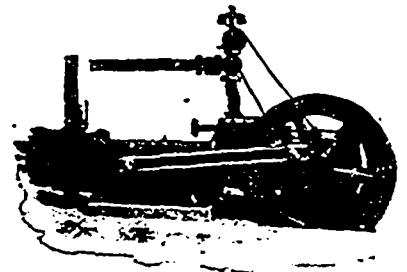
771 CRAIG STREET, MONTREAL.



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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.

naturally depend upon its production, as there are already many things possessing the same qualities which are used in manufacturing.

Mr. Burrows, who was one of the geologists attached to the exploring party in charge of Mr. Alexander Nevin, which was examining that part of New Ontario lying west of the boundary line between Nipissing and Algoma, beginning at the 198th parallel and running west to Mississauga river and then to the lake of the same name, returned to Toronto a day or two ago. He reports that the region explored by Mr. Nevin consists for the most part of a very extensive and level tract of clay land covered in most places with a heavy growth of spruce, poplar and other timber which is of very vigorous growth along the rivers and lakes. This tract of land is about 100 miles long and 80 to 100 miles wide. The soil appears to be fertile, as the native fruits and berries grow luxuriously. There was an entire absence of frost from the time the party arrived until the middle of September. Bear and moose were abundant, but fur-bearing animals were scarce. Mr. Milne, one of the party, shot two bears with a revolver, and also caught a large sturgeon. There are comparatively few fish in the rivers flowing into Hudson Bay, but those entering into the great lakes are well stocked. There was little opportunity of observing the geology of the country, the only rock exposures being on the river channels, but the rocks appear to be for the most part of the Laurentian age.

More than \$100,000,000 worth of India rubber has been imported into the United States during the past four years, and more than \$60,000,000 worth in the last two

years. A decade ago the annual importations of India rubber amounted to about \$15,000,000, now they exceed \$30,000,000, and are steadily increasing. Practically all of the importations of rubber come in crude form for use of manufacturers. Northern Brazil, southern Mexico, the West Indies, Central Africa, India, the Straits Settlements and the Dutch East Indies supply this increasingly important feature of our importations. Probably no single article has made a more rapid growth in its relations to manufactures in the past few years than rubber. India rubber is not, as is generally supposed, the product of a single tree, but, on the contrary, is produced from a variety of trees and plants. Java, Sumatra, Penang, Singapore and French Indo-China are already large producers of crude India rubber or caoutchouc, and its production in the West Indies has been sufficient to indicate the entire practicability of its being made an important industry in Cuba and Porto Rico, as well as in the Hawaiian, Philippine and Samoan Islands.

The Beatty Mfg. Co., Toronto, manufacturers of children's headwear, etc., will erect a large brick factory at the corner of King and Portland Streets, this city.

The production of pig iron by Pennsylvania furnaces is equal to nearly one-third of the entire pig-iron product of Great Britain. The value of the Pennsylvania output in 1899 was nearly \$100,000,000. The steel production was in excess of that of Great Britain by 1,500,000 tons, and was about sixty per cent. of the total steel production of the United States. The total production of iron and steel rolled into finished form in 1899 is valued at \$233,377,126, an increase of \$96,556,684 over 1898.

While Pennsylvania is rapidly increasing her steel output relatively to the entire steel product of the United States, the latter is rapidly loading Great Britain. During the past five years the increase for the United States has been about 140 per cent., against an increase of fifty-five per cent. for Great Britain. Nearly thirty-seven per cent. of the tin and tinned plate made in the United States was produced in Pennsylvania. The precedence of the United States over Great Britain in the production of pig iron means that we are leading the world in this industry. In 1895 the product of the four countries, the leaders in the industry, stood: United States, 9,446,308 tons; United Kingdom, 7,703,459; Germany, 5,464,000; France, 2,004,000.

The Cataract Power Co., Hamilton, Ont., has applied to the Townships of Barton and Saltfleet for right of way for an electric line from Hamilton to Grimsby. Work is to be begun next spring. In time the line will be extended to Niagara Falls.

Mr. Clergue's iron mines will soon be turning out 3,000,000 tons of ore annually, and that enormous quantity will be smelted and changed to Bessemer steel right here, in this lively little town of Sault Ste. Marie, Ont. The Helon Mine is now rolling out ore at the rate of 2,000 tons per day, and the mine is only beginning to assume workable shape.—Pioneer.

A new substitute for celluloid for engineering and other industrial purposes is described, says the London Electrician, in a German paper. The name of the new substitute is "Marloid," and it seems that it is manufactured from untanned leather boiled in oil. The product is said to resemble celluloid in every respect.

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**Extra C is our best grade. We cannot make anything better than the best. You cannot buy anything better, try where you will. When you buy, see that our Trade Mark and grade are stamped on it and quality will be there.**

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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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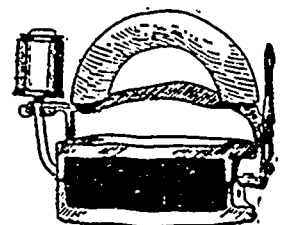
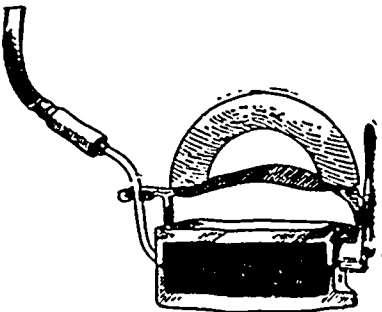
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**Self-Heating Sad Iron**

Something New. Sells Well.



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# CRUSHERS--ROLLS

Roll Jaw Fine Crushers Reduce Large Rocks at once to Gravel and Sand. Centrifugal Rolls. Cost half and do three times as much as Common Rolls of equal dimensions, and do finer work.

SEND FOR CIRCULAR.

STURTEVANT MILL CO., 104 Clayton St., BOSTON, MASS.

The A. A. Griffing Iron Co., whose extensive works and head offices are at Jersey City, N.J., have established a Canadian agency in Toronto under the management of The Steam Specialty Co., who will carry lines of steam traps, separators, feed water heaters, exhaust heads, low water alarms, boiler covering, etc. The Griffing Co. have just issued an entirely new catalogue in which their products are elaborately illustrated and described, the introduction stating that how to make the most steam and use the least fuel is the subject of it; that the utilization of steam and hot water heretofore thrown away being the method, and the Bundy steam specialties the means whereby this economy and saving is effected. We are told that the buyers of Bundy steam specialties are abundantly protected by thirty-six construction, design and trademark patents owned or controlled by the Griffing Co. in the United States, Great Britain, Canada, Germany, Belgium, France and Switzerland. Those who are interested should see or write Mr. E. J. Philip, of the Steam Specialty Co., for further information.

This year, for the first time, the United States has passed Great Britain in the exportation of steel rails. The rail exports of the United States in the first eight months of this year, according to the Treasury summary issued within the last few days, amounted to 256,276 long tons. In the same period Great Britain's rail exports amounted to 247,504 long tons. The August exports were 33,968 tons for the United States and 33,989 tons for Great Britain. The rail exports of the United States show a decided increase, the exports for the first eight months of 1900, 1899 and 1898 being respectively 256,276 tons, 158,937 tons and 196,128 tons. In no other important line among the cruder forms of iron and steel has the United States yet reached Great Britain as an exporting nation. Our pig

iron exports fall far short of Great Britain's and show a smaller total for the first eight months of this year than in 1898 and 1899. The United States pig iron exports (not including ferro-manganese) in the first eight months of 1898, 1899 and 1900 respectively were 122,655 tons, 177,342 tons and 120,696 tons. The pig iron exports of Great Britain in the first eight months of 1899 and 1900 were 849,321 and 1,015,256 tons respectively, being in 1900 more than eight times as great as those of the United States. The United States exports of ferro-manganese, however, have steadily increased, being in the first eight months of the last three years respectively 3,954 tons, 15,673 tons and 20,767 tons.--Tin and Terne.

Among the mineral riches of Ontario not a small item is the material for cement for building purposes, which is found distributed here and there in the province. Some fifteen miles from Owen Sound exists a property which, we are told has for years yielded large quantities of marl or carbonate of lime, a principal ingredient in cement. Quantities of cements are made at Welland and in several other parts of Ontario, where conditions are more or less favorable. We now hear that in the township of Caledon, close to Orangeville, there is a deposit of this carbonate on the banks of a lake with only three feet of soil covering it. A company in Orangeville I said to own 350 acres of land containing this carbonate, and to control properties nearby which contain the peculiar sort of clay which, mixed with the marl, will produce good cement. Of these substances, Mr. Thomas Hoys, an expert in such matters, writes: "I have no hesitation in saying that your material is equal if not superior to any other I have examined, and am of opinion it will make a Portland cement of equal quality to the best English, Canadian or American grades in the market." So it may be assumed that they intend to make Portland cement.

There are four or five natural rock cement works in the province, employing somewhere near 100 men and turning out 50,000 to 100,000 barrels per year; but according to the Ontario Bureau of Mines report there are only two establishments which make Portland cement. These employ more than 200 men, and their product last year exceeded \$300,000 in value.--Monetary Times.

The curled hair and hair cloth factory now being erected in Toronto will cost about \$6,000 independent of machinery.

Fire in the dry kiln of Alexander McLaren at Montreal on Oct. 9 did damage to the extent of about \$5,000.

The Canadian Pacific Railway Co. will build a five-span steel bridge over the Columbia river at Sproat's Landing, B.C., at a cost of \$500,000.

## "Quality Talks" In Electrical Work.

The fact that we have installed, and are installing electrical equipments for the foremost concerns of the country, should convince you that our work is of the best and our prices close.

Among our customers are --

- Menzie, Turner & Co. . . . . Toronto.
- McLaughlin Carriage Works. . . . . Oshawa.
- Mall Job Printing Co., Ltd. . . . . Toronto.
- Brodie Woolen Mills. . . . . Hespeler.

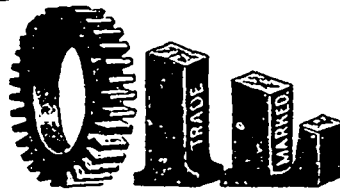
Always pleased to quote prices.

**R. A. L. GRAY & CO.**  
Electrical Contractors,  
83 YORK ST., . TORONTO.

## "Capitol" Cylinder

"RENOVN"  
ENGINE

"ATLANTIC" RED



RELIABLE WELL-KNOWN BRANDS.

ALL ORDERS PROMPTLY FILLED

THE...

# QUEEN CITY OIL CO.

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TORONTO, CANADA

## Dominion Oil Cloth Co. (LIMITED)

Manufacturers of....

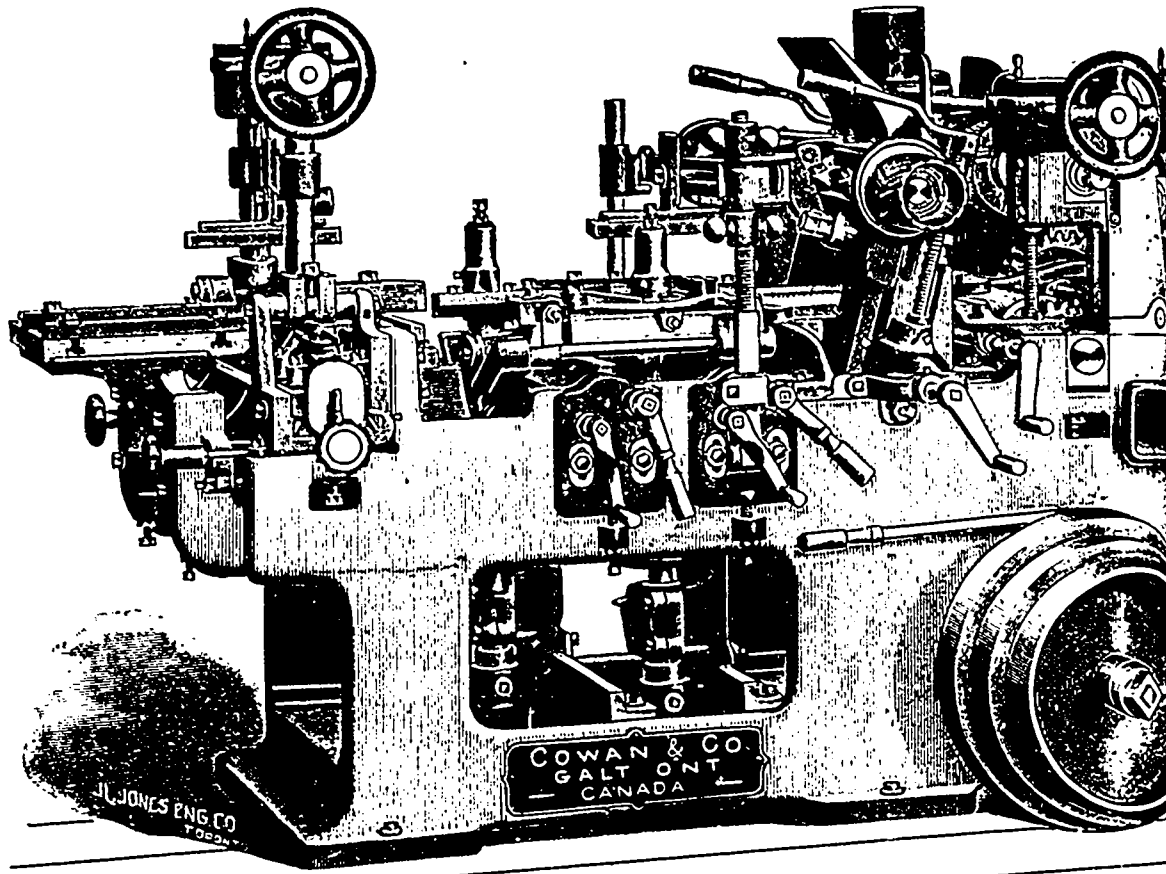
**OIL-CLOTHS** of Every Description

Floor Oil-Cloth, Table Oil-Cloth, Carriage Oil-Cloth,

Enamelled Oil-Cloth, Stair Oil-Cloth, etc.

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MONTREAL, Que.

# Planer and Matcher —AND— Inside Moulder



An order has been placed with the Collingwood Shipbuilding Co., Collingwood, Ont., for the construction of a large steel freight and passenger steamer to cost about \$350,000, intended for service on the upper lakes in connection with the steamers Monarch and United Empire. She is to have a speed of better than eighteen miles an hour and to accommodate 400 passengers.

The town of Thorold, Ont., will grant exemption from taxation for ten years to the Rehder Plating & Mfg. Co., who are now erecting a factory there, having removed from Paris, Ont. The town has also granted similar exemption from taxation to the Artistic Imperial Wood Turning Co.

The passenger steamer City of Parry Sound was destroyed by fire at Collingwood, Ont., on October 9, loss about \$30,000.

Messrs Roberts & Co., patent attorneys, Banque du Peuple Building, Montreal, have just issued another edition of their Red Book—Inventors Manual. Mr. Wm. B. Roberts has had about twenty years experience as patent solicitor, twelve of which he was examiner in the U.S. patent office. Their principle of operation "No patent—no pay" is a reasonable and attractive one. The Manual will be sent on application to any interested person.

The Ottawa electorate having decided in favor of municipal ownership of the electric light plant, negotiations are being opened with the electric company in that city with a view to the purchase of their plant.

The English acting-consul for Zanzibar reports the discovery of a new gutta-percha. This substance is derived from a tree which grows principally at Dunga. When tapped with a knife, a white fluid emanates, which,

when placed in boiling water, coagulates into a substance which, in character, bears a very striking resemblance to gutta-percha, says the Scientific America. As the material cools it becomes exceedingly hard, but while soft it can be moulded into any required shape. The fruit of the tree resembles a peach in shape, but grows to the size of a small melon. Experts have experimented with this new product to see if it in any way possesses the qualities of gutta-percha, and although it is not expected to prove equal to the genuine article, it is considered that it will be quite suitable for some purposes for which gutta-percha is at present utilized, and will thus become a marketable article. It is said to abound in Zanzibar, and will be a very cheap product.

The City Engineer of Toronto has recommended to the city council that a new pumping engine with 15,000,000 gallons capacity, to cost \$100,000, be installed in the main pumping station, and another engine with 5,000,000 gallons capacity, to cost \$40,000, be installed in the high level station, be forthwith provided. A by-law will be submitted.

A couple of years or so ago there were those who persisted in saying that Nova Scotia would never again find a footing for her coal in the United States. These were prophets of no repute. Up to September 8, the receipts of provincial coal at Boston had reached close on 403,000 tons, only a thousand tons less than the shipments for the whole of 1866 which saw the second largest, and sixty two thousand tons for the whole of 1865 which saw the largest shipments in the history of the trade. Allowing the shipments for the remaining months of the year to be in proportion to

the eight months that have elapsed, the shipments to the U.S. will be far in excess of any previous years.—Mining Record.

The Dominion Iron & Steel Co., of Sydney, N.S., expects to have its No. 1 blast furnace completed and ready to blow in about November 1. Its No. 2 furnace will be ready for operations early in 1901. It is not likely that its No. 3 and 4 furnaces will be completed and blown in before March 1, and May 1, 1901, respectively. The open-hearth steel furnaces of the company are expected to be completed and ready for operations by July 1, 1901.—Mining Record.

According to returns obtained from the manufacturers of envelopes in Canada, the number of that article made by them in 1899 aggregated 272,500,000. The imports of envelopes during that year aggregated 32,600,000, thus indicating the consumption to be over 308,000,000 per year.

A wonderful object lesson of the mineral resources of the United States has been sent to Paris by that government. It consists of a huge diagram drawn in colors, in which the Eiffel tower is utilized for the purpose of comparison. The country's annual output of coal makes a stack 1,000 feet square and five and a half times as high as the tower—a little over a mile. Great Britain's stack is 300 feet lower and Germany's two thirds as tall, all the rest of the world supplying a stack smaller than Germany. Another diagram shows a mass of pig iron 250 feet square and 100 feet higher than the Eiffel tower, which is 1,000 feet in height. This represents the annual production of that material by the United States. A similar block two thirds as high stands for Great Britain's output of pig iron, while Germany's chunk is one-half the size of that of the

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MANUFACTURERS OF  
**WOOD-WORKING  
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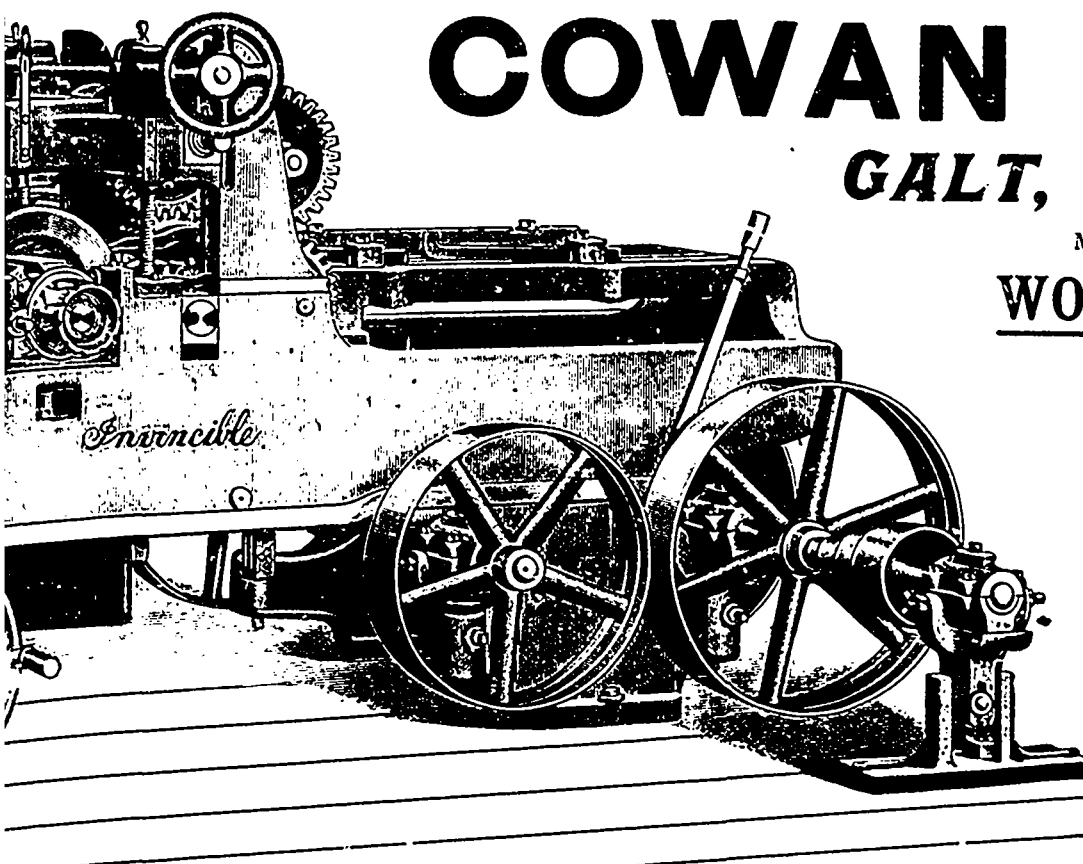
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**Feed Water Heaters  
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*Saw Mill Machinery,  
Etc., Etc.*

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United States. France and all other countries put together produce somewhat less pig iron than Great Britain alone.

The Toronto city treasurer is in receipt of \$11,950, being the city's percentage on the street railway earnings for September, 1900. Following is a comparative statement of the last six Septembers:—

	Receipts.	Percentage.
Sept., 1900.....	\$149,386 38	\$11,950 91
Sept., 1899.....	140,279 67	11,222 37
Sept., 1898.....	136,254 72	10,900 37
Sept., 1897.....	114,223 40	9,137 87
Sept., 1896.....	106,529 58	8,522 36
Sept., 1895.....	106,533 40	8,522 67

The St. Thomas Street Railway Co., has increased its capital stock from \$100,000 to \$250,000, and will commence the extension of a radial line to Port Stanley this fall.

Mr. O Chalifour's shoe last factory in the City of Quebec was destroyed by fire Oct. 10.

Mr. J. N. Greenshilds, of Montreal, arrived home from Europe a few days ago, having been in Belgium and France in connection with the new pulp enterprise projected at Shawinigan Falls. He reports having had most encouraging success in organizing a syndicate in Belgium. Five million francs are to be put into the undertaking by Belgian capitalists. The syndicate has leased from the Shawinigan Water & Power Co., all the water power they will require. On the St. Maurice, near Shawinigan, the construction of a large pulp mill has been begun and is to be in running order by the first of May. One hundred tons of pulp per day is to be the output. During the summer, the output will go to seaboard by way of Three Rivers and in winter via St. John, Halifax, or Portland.

It is expected that the output will be marketed largely in Belgium. A large Belgium paper company is to draw its supply from the Shawinigan mills.

A report issued by the Department of Trade and Commerce at Ottawa gives the returns of trade with many foreign countries for the last three years. Japan's trade is interesting from the fact that last year Canada's chief article of exportation to that country was wood pulp, this country contributing more than one-third of Japan's total imports of that article.

Canada's trade statistics for its fiscal year are only partly completed, but it is interesting to note that the quantity of wood pulp exported from the Dominion to England during the year was about twice as much as was exported during the preceding year. It is evident that England intends eventually to become independent of the Scandinavian manufacturers in the matter of a supply of pulp. Nothing is known as yet as to the quantity of pulp wood exported from Canada to the United States, but it is presumed that it was about the same as it was the year preceding. Canada's exports of paper were probably diminished somewhat because of the fires in Canadian mills, but in this branch of the business the Dominion has not made as much progress thus far as in the exportation of pulp.—The Paper Mill.

A representative of British capitalists interested in the pulp industry was recently in Ottawa, making inquiries about areas in Canada where the industry may be further extended. He will probably do some exploring of northeastern Quebec, where, in the basin of the Moisie River, dense forests of spruce exist.

The water power of the Hull, Lumber Co., at Chaudiere Falls, Que., has been purchased by Egan & Edwards for \$150,000 where they intend to erect a large pulp mill, having a capacity of 100 tons per day.

The Canadian Manufacturers' Association will take a hand in the fight against what is regarded as the unnecessary increase in ocean freight rates from Montreal. The Commercial Intelligence Committee of the Association have discussed the rise in ocean freight rates from Montreal to British ports, compared with those from New York and will co-operate with the Montreal Board of Trade in an endeavor to secure a reduction, as they believe that the present rates are injurious to the Canadian export trade.

The E. B. Eddy Co., Hull, Que., have placed an order with a concern in Hamilton, Ohio, for a large cylinder machine for the manufacture of wood board. Its cost will be approximately \$55,000 and it is to be shipped by next January.

The Kinleith Paper Co., St. Catharines, Ont., will install a new 90-inch Fourdrinier machine to be used in making book paper.

The exploration party, headed by Mr. Beattie, now working on the west side of Lake Nipigon, report to the Ontario Bureau of Mines that they have found large areas of spruce and poplar, suitable for pulpwood.

J. C. Wilson & Co., Glenora, Ont., have recently shipped fourteen Little Giant Water Wheels to their London, Eng., agent for distribution in Europe, the English settlements in Africa, and the Australian colonies. They report their export trade to be rapidly increasing.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



**TRADE OPENINGS ABROAD.**

**GREAT BRITAIN.**—The report of the British Board of Trade shows that the applications for provisional orders for street railway construction or improvements during the session of the recent Parliament numbered 36, the largest total since 1881. Of these 35 were for authority to construct

new or extension lines, and one for power to substitute new motive power. The aggregate length of the proposed lines is 59 miles of double and 99 miles of single track, at a total estimated cost of £1,620,307. In addition to the foregoing there was a still larger number of applications for electric railways by private bill.

An extensive stamping works is soon to

be constructed at Willenhull by Messrs. J. B. Brooks & Co., near Birmingham. Much of the machinery is to be built in the United States.

Scandinavian manufacturers of pulp and British manufacturers of paper are in a controversy that is interesting, not to say amusing, and it is a question whether the point at issue would be classed as a theory or as a condition. The Scandinavians contend that the product of their mills is already sold ahead; that prices are going to be high, and that anybody who does not immediately "get on board the train will be left." On the other hand, the Englishmen say that they are not only well provided with pulp, but that they are even turning an honest penny by selling some of their surplus, and that they can get all they want from Canada, and therefore are independent of the Scandinavians. The real point of interest in the affair is this: that the English paper manufacturer has now become so well accustomed to the use of Canadian pulp that he regards Canada as a natural source of supply, and that hereafter the battle between the Scandinavian and Canadian mills will be fought out solely on the issues of price and quality, regardless of traditions and customs that have prevailed heretofore. The tactical position of the Canadian pulp manufacturers has been improved vastly within the past two or three years.—The Paper Mill.

**The Diamond Machine Screw Co. Limited, Toronto**

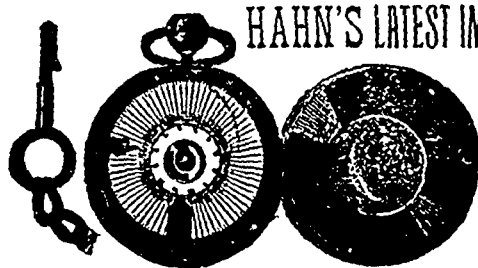
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This Clock is adapted for six or twelve stations, and the keys are all different, ranging from 1 to 6, and 1 to 12, instead of as in the old style Time Detectors, which mark either by holes or an impression on the dial, being the same for all stations.

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This Clock received the First Prize at World's Fair

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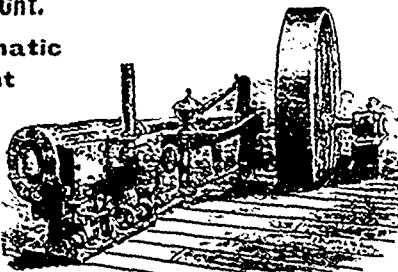
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- Pumping Machinery,
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**RUSSIA.**—The Russian Government has appropriated 8,500,000 roubles for improving the Western, Central and Trans-Balkon sections of the Siberian Railway. About 3,500,000 roubles of the amount will be devoted to replacing the present wooden bridges with steel structures. The rolling stock of that railroad has proven inadequate to the demands made upon it, and various railways in European Russia have been drawn upon for locomotives and freight cars for use beyond the Ural mountains. The result is a general shortage of rolling stock throughout the country, and large orders for new equipment are probable.

This paper has repeatedly called the attention of American manufacturers to the vast undertakings projected or being erected in Russia. We shall persist in this policy till we have that country honey-combed with United States agents or agencies. It has canals to cut, long and deep as any ever cut by us; it has forests to clear, mines to open and work, railroads of all kinds, horse, electric and steam to build, bridges, rolling stock, etc., to construct, mills, shops, etc., etc., to erect. Who is going to help Muscovy most, in this work of development? Who by a one hundred years' experience along similar lines is best fitted to help her? The United States. During 1899 Russia made arrangements to spend huge sums for electrical plants. The falls of the empire's vast rivers are to be utilized for electricity. A company commanding \$3,000,000 capital has just been formed to exploit the falls of the Dnieper. It is engineered by a corps of Russian army officers. One of its aims is to make the Dnieper navigable from Ekaterinoslav to Alexandrovsk. The power is to be carried to Ekaterinoslav for the numerous mills, mines, shops and factories recently opened Vladivostock, Nijn Novgorod, Tomsk, Odessa, Lodz, Moscow and St. Petersburg are to put in new or to increase old electrical and other plants. Moscow and St. Petersburg have plans of American plants that involve \$6,000,000. Our able, efficient and wide-awake Consul at Moscow, Mr. Thomas Smith, pointed out recently, in

a report to the Department of State that American machinery will drive out English and German machines within the next ten years. When American machinery began to invade Russia, the employers and the operatives were doubtful about its lasting quality. They had become accustomed to the clumsy and heavier machinery supplied by Great Britain, and they feared that the lighter machines from this country would break down and become worthless. They have discovered that the better grade of material used in the construction of the American machines insures their durability, while their lightness makes operation much easier and quicker. Shortly before coming away I visited a factory where English, German and American lathes are used side by side. There is intense rivalry on the part of the Russian workmen in this shop to get assigned to the Yankee machines. One manufacturer told me that he had four times cut down the wages of the men on the American machines, because they made so much more money than their associates. He had to make the cut in order to allay the discontent on the part of men running the older German and English machines.

In every line in which we have scored tremendous successes Russia is to follow. Agriculturally her resources are not unlike ours. The Urals and Caucasus will corre-

spond to our mountainous parts, the Siberian steppes to our prairies. In the Crimea she has vineyards and orchards. The tools, implements and machines that have helped to make our farmers so successful will be wanted from Riga to Port Arthur, in Manchuria as well as in Muscovy. Any and every effort put forth now, when the field is open will be worth a much greater effort later.—The Manufacturer.

**SOUTH AFRICA.**—Nearly the whole of the Orange River Colony and a considerable portion of the Vaal River C. have been opened to trade subject to a few restrictions. This will have a most stimulating effect upon the commercial activity of South Africa. The machinery in nearly all of the mines in the Rand district was greatly damaged during the war, and new machinery must be placed before operations can be begun. Orders for some equipments are now being placed.

The Cape Government Railways are about placing orders for 1,000 additional freight cars.

The town council of Ladysmith will establish a municipal lighting plant, employing either electricity, illuminating gas or acetylene gas.

An additional power plant for the Cape Town tramways is to be installed at a cost

of about £50,000. Fifty new cars for the system have been ordered.

An electric tramway system is to be installed at Durban.

There is already a large sale in South Africa for carriages of various descriptions. This demand is supplied largely from American factories, but the trade can be largely extended, and there is a good opening there for Canadian vehicles. A style at present in good demand is a four wheeler, six seat, extension top barouche called the "handy carriage." It has the same track as the American vehicles, but the seats are made six inches wider. Nearly all carriages are provided with tops.

There is a great dearth and consequently a great demand for canned goods at Bloemfontein, Kimberly, Johannesburg and Pretoria.

A writer in the London Telegraph says that before the discovery in 1884 of the rich deposits near the present site of Johannesburg the entire district could have been bought for \$50,000. It was not until the recent date of 1886 that the development of the Rand was methodically entered upon. A few years afterward Mr. Hamilton Smith, the American expert who examined the fields for the Rothschilds, estimated that the Rand would produce gold to the value of something over a billion



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HUNDREDS IN OPERATION.

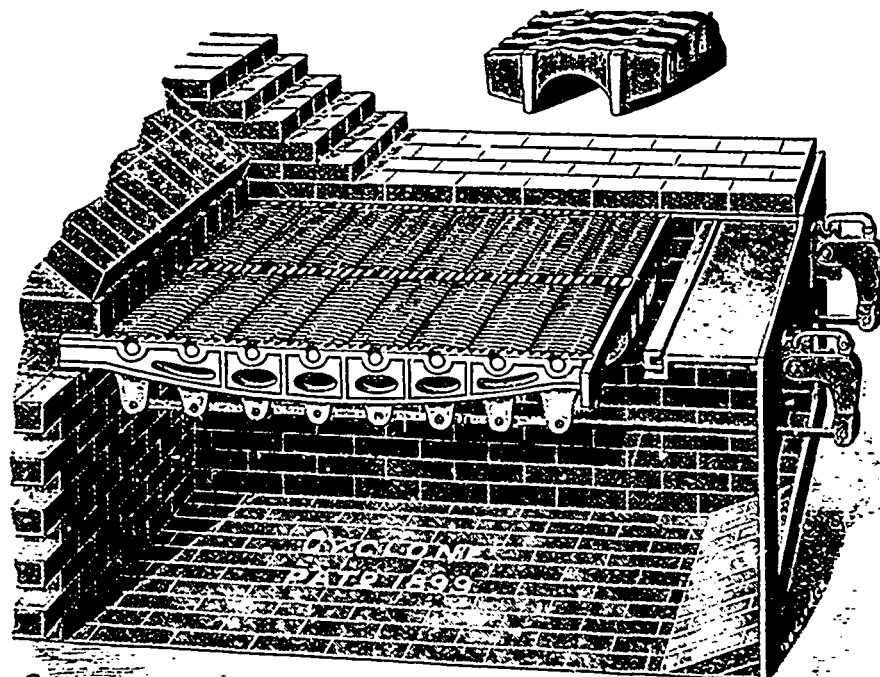
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## THE CYCLONE GRATE BAR



### Simplicity, Durability, Economy.

**FIRST TEST** at Hamilton Asylum was reported as follows: Was taken with the Grate Bars put in by Watrous Engine Co. of Brantford.

People's Coal used.....	1,950 lbs
Water Evaporated.....	18,400 "
Weight of ash remaining.....	552 "
Test commenced.....	at 9 a.m. April 17th.
Ended.....	at 5 p.m.

**SECOND TEST** was made with Cyclone Grate Bar of Toronto, with the following results:

People's Coal used.....	1,850 lbs.
Water Evaporated.....	20,000 "
Weight of ash remaining.....	315 "
Test was made.....	April 24th.
Test commenced.....	at 9 a.m.
Ended.....	at 5 p.m.

These tests were made under 75 horse power boiler in west boiler house main building.

(Sgd.) J. W. MARTER,

Chief Engineer.

### TESTIMONIAL.

WATERLOO, August 9th, 1900.

CYCLONE GRATE BAR CO., Limited, Toronto, Ont.

DEAR SIRS, In reference to Grate Bars you put in for us about six months ago, we beg to state that we found them satisfactory, and all you represented them. Our draught is greatly improved, easier to fire, and we think it will be a saving in our coal bill.

Yours truly,

RICHARD ROSCHMAN & BRO.

**W. G. BLACKGROVE,**

Gen'l Agent for Ontario,

Office, 10 KING ST. WEST,  
TORONTO, CAN.

Manufactured  
by...

**Cyclone Grate Bar Co. Limited,**

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



of dollars, and would yield \$50,600,000 annually. The writer notes that subsequent developments there revolutionized the conditions of the world's gold output. From 1883 to 1887 the estimate was \$90,000,000 per annum, the United States standing first, Australia second and Russia third. In 1890 the world's yearly output had reached about \$115,000,000, and in 1896 about \$200,000,000, with America first, Australia second and South Africa third, displacing Russia. In 1898 South Africa attained first place as a gold-producing region, with an estimated output of twenty-eight per cent. of the world's total. Until reports of operations were interrupted by the war, the yield of the Rand for 1899 promised to be greatly in excess of any former year. When the war began more than 10,000 whites and 60,000 natives were employed in the Rand mines alone, and Johannesburg had grown to be a city containing nearly 18,000 buildings and a population in excess of 100,000.

If the Boer war has done nothing else, it has had the good effect of stirring up our colonies to secure a greater share of South African trade than has hitherto been the case. In another column we give extended consideration to the movement which has been started in Toronto with the object of increasing Canada's commerce with the sub-Continent. The only wonder is that this was not attempted years ago. Had the same attention been bestowed upon that magnificent market by Canadian manufacturers which has characterized their competitors in the United States, in all probability the latter would not now be enjoying an export trade which amounts to something like three-and-a-half millions

sterling, and is still increasing. It is undeniable that, as regards the major portion of the goods shipped, the Dominion could have competed on favorable terms with their neighbors, but until the war awakened its citizens to their folly in neglecting so golden an opportunity, practically nothing had been done to secure even a modicum of the trade that is awaiting them. The steps which are now being taken to attain this end include the appointment of a resident Consular agent in South Africa, an increase in the number of Canadian commercial representatives there, and the inauguration of a direct steamship service. The latter would seem to be the most important, for Canada is now altogether dependent on the American lines for the transport of her goods to Cape ports. Each and all of these, and the other means outlined in our article have their distinct merits, and in the interests of the oldest member of the Empire it is devoutly to be hoped that it will succeed in realizing the essential portions of its new programme. As we have elsewhere stated, the expansion of inter-Imperial trade is a distinct benefit to the Empire at large, and any means to further this cannot fail in enlisting our goods wishes.—British and South African Export Gazette.

EGYPT.—There is a growing demand at Alexandria and Cairo for imported carriages. Coupes, gigs, landaus, victorias, breaks, phaetons, and cabs are the types chiefly in vogue. At present Austria is gaining ground faster than any other country, owing to the lightness of her samples. Those of other European countries are too heavy, and

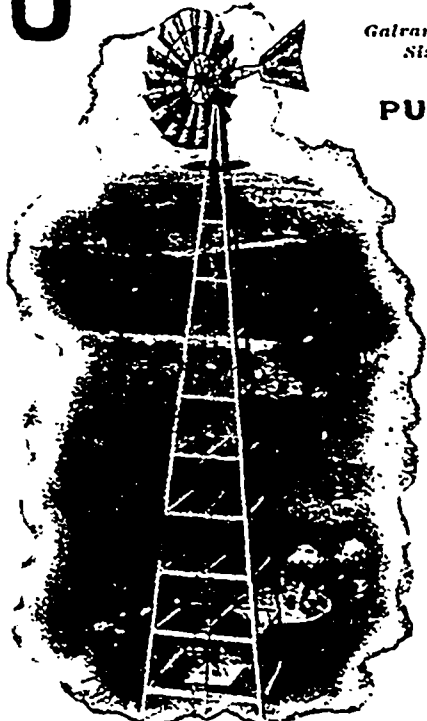
this point is worth the attention of manufacturers. As a rule the demand is for very high-grade goods, with fine finish and elegant mountings.

The Egyptian Government, through A. J. Cotterill, engineer in chief of State Railways, at Cairo has decided to spend \$3,500,000 in improving its railways and increasing the rolling stock. It intends to double about fifty-six miles of existing track, and build a line from Salkhed to Port Said at a cost of \$1,500,000, including rolling stock. During the year 400 30-ton coal trucks, 22 locomotives and six steam coal hoists have been received by this system from the United States.

GERMANY.—United States Consul Schuman, at Mainz, Germany, says: Cheap laundry soaps hold the first place in this line of exports to China, but cheap toilet soaps also find a ready sale. Laundry soap must be in bars, and a certain number of bars must weigh exactly fifty pounds avoirdupois. Each fifty pounds must be packed in separate cases suitable for sea transport. Each bar of soap must be stamped in Chinese letters with the name of the foreign commission house in China to which the soap is consigned. Toilet soap should be packed in cardboard boxes, each holding two to three pieces. Each box should be decorated with a picture which appeals to the taste of the Chinese. There is also great demand for single pieces of soap, enclosed in a round or square tin box, enameled and decorated. The demand for candles in China is very large, owing to the fact that they are used at all religious ceremonies. Pure white and cochineal red candles are the most saleable

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Galvanized Steel or Wood, all Sizes, 4 to 26 feet in Diameter.

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FURNISHED WITH OR WITHOUT TANK ELEVATED IN TOWER.

**GALVANIZED Steel Towers**

Any height, either Three or four post, with substantial ladder.

**TANKS**  
Any Capacity, Any Purpose Made in Pine, Cypress, Fir or Galvanized Steel.

Our windmills are self-regulating and self-governing, and with our Hoosier Automatic Anti-Freezing Force Pump the windmill outfit takes care of itself, night or day, in calm or storm.

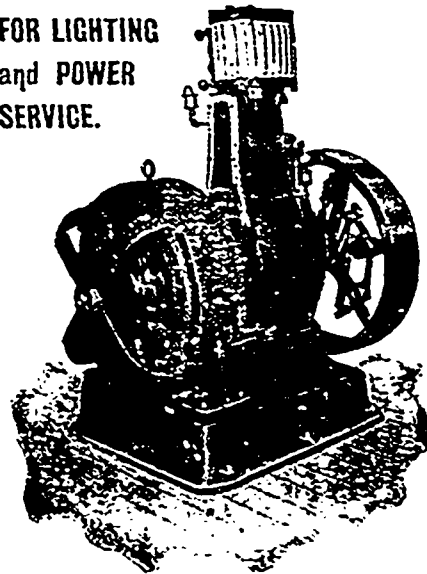
"Hoosier" **IRON**  
—AND—  
"Fast Mail" **PUMPS**  
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"STATION A" **KENDALLVILLE, IND.**



# Buffalo Engines

FOR LIGHTING and POWER SERVICE.



Buffalo Upright Direct Connected Engine Running in Oil.

**BUFFALO FORGE CO.,**  
BUFFALO, N.Y.

**E. A. WALLBERG,** Canadian Representative,  
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colors. It is essential that they be cheap and of fair quality. Great care must be exercised in the selection of the colors for the packages. It may happen that a cardboard box or paper wrapping which in design and coloring would appeal to our taste, would seem abominable to the Chinese, and under no condition could they be induced to buy it, even though they fully appreciated the value of the ware it enclosed. Merchants who wish to do a profitable business with China must always take into account the tastes, superstitions, and religious ideas of the Chinese. They always detect symbols of luck, wealth, etc., in the general make-up of articles, and this will influence them in buying.

**AUSTRALASIA.**—It is proposed to establish extensive iron works, to cost about \$100,000, some forty miles from Geelong, Victoria, for the purpose of working colonial ores. It will be the first in the colony.

A narrow gauge railway line is proposed to run from Moa to Walhalla. It will form a part of the Colonial Railway system of which Mr. F. Rennick, Sydney, is Engineer-in-Chief.

The Minister of Works for New South Wales has in view the construction of a number of light railways in the agricultural and mountain districts of that colony.

The city of Auckland, New Zealand, and the town of Mount Morgan, Queensland, are considering the installation of municipal electric lighting plants.

The South Australian Electric Light & Motive Power Co. are to greatly extend their power plant in Adelaide. Three boilers have already been ordered of Babcock &

Wilcock for this plant. The capacity ultimately contemplated is 3,000 h.p.

**ARGENTINA.**—The demand for steel wire for sheep fencing is steadily increasing. Five or six rows of ordinary wire and one of barbed wire are used in fencing the estancias, many of which are miles in circumference. An additional strand of thick rope wire is also often used as a protection against the guanacos.

There is a good demand for corrugated iron roofing material which is used very extensively along the Patagonian littoral, where it is also frequently used for walls as well.

The imports of stoves are increasing in Southern Argentina and in Patagonia, where the winters are very severe. Such goods should be shipped packed in a manner adapted to transportation overland on pack animals.

The American Consul at Buenos Ayres reports that 200 knitting machines are employed in that city, twenty of which came from the United States and the others from Germany. As the American machines are claimed to be superior he advises manufacturers to send sample machines and a competent salesman. Special consular reports on the subject state that there is no market for knitting machinery in the other parts of South America, their use at present being small in the Latin American countries other than Argentina and Mexico.

In a recent report of the Commercial Expert attached to the German Consulate-General in Buenos Ayres, on the subject of the commercial development of the littoral of Patagonia, several varieties of goods are mentioned for which the above

named district is said to offer a promising market. In particular the attention of exporters is called to the enormous consumption of iron wire, which is used for fencing the estancias. As the sheep rearing industry in Patagonia grows, and larger tracts of land are devoted to it the use of iron wire must increase, and even at the present time quantities of this article are included in almost every shipment to the district. Some estancieros, besides the ordinary fencing, consisting of five or six rows of ordinary wire and one of barbed wire, also use as a protection against inroads of the guanacos, an additional line of thick wire rope.

Another important article is corrugated iron, which is used almost exclusively for roofing in Patagonia, and frequently also for walling.

At present there does not appear to be any demand for wind turbines for water pumping, as there are numerous streams in the country which differ greatly in this respect from the pampas plains further north. As the whole country, with the exception of the Chubut district is devoted only to cattle breeding, there is no great demand for agricultural implements, but light wooden wheelbarrows would find a sale. Iron bands and covering cloths for bales of wool are also used.

Various specifics against the sheep scab ("P na") are also imported, sheep dips consisting of tobacco extracts coming principally from France and Italy. Many of these specifics, which are known as anti-sarnicos are made in the country, but the quantity used must be very large as it is usual to dip each sheep in a solution of this kind at least twice a year.

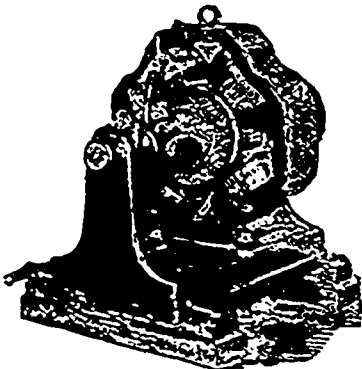
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**STOCKS and DIES. PIPE VICES.**

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**WRENCHES.**

**STEAM PIPE.**

Cor. King and Victoria, TORONTO

**Toronto and Hamilton  
ELECTRIC CO.**

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We have in stock the following Incandescent Dynamos, 110 volts:

- 200 Light Multipolar.
- 120 " Bipolar.
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Write us for Prices.

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HAMILTON.**

'Phone 958

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Owing to climatic conditions fuel and heating materials form an item of considerable commercial importance. Cardiff coal for household purposes cost in Galiegos and Santa Cruz fifty to sixty pesos per ton (say 5L.) per ton last winter. There should be a good opening for heating stoves, which should be readily transportable. The Americans are already endeavoring to capture this trade.

The extreme south of America also offers a ready market for the sale of preserved meat and vegetables. Mutton is the staple food, poultry is very dear and it is very difficult to grow vegetables in the climate so

that it is usual to fall back upon preserved foods for a change of diet, and this trade should be capable of considerable expansion. Occasional consignments of potatoes that would keep ought to find a remunerative sale.

It is of great importance owing to conditions of transport that all goods sent to Patagonia should be securely packed.

MEXICO. The British Vice-Consul at Monterey, reports that, in his district, there is a steadily increasing demand for good steel hoes, octagonal steel bars, steel shovels, steel cables, steel rails, electric and telegraph wires, firebrick, cast-iron pipes, Portland and Roman cement, carbide for the manufacture of acetylene gas, barbed wire fencing, typewriters, leather belting, paints (dry and ready mixed), hand and steam pumps, caustic soda, china and porcelain ware, windmills, chemical preparations, liqueurs, horse-shoes and carpets.

The "Compania Jabonera de la Laguna," of Gomez Palacio, Durango, will shortly apply a sum of 250,000 piastres to the reconstruction of their soap works, which were destroyed by fire some few months ago. Over and above this the heads of this company have recently obtained permission from the Mexican Government to establish a glycerine factory. All the plant required for the two establishments will have to be imported, and the purchases will not only comprise the special machines and apparatus required for the manufacture, but also the boilers and engine.

ROUMANIA.—The Austro-Hungarian Consul General, at Bucharest, writes that the new factories and other mechanical and industrial establishments which are constantly being opened in Roumania have led to a notable increase in the imports of driving belts for machinery, which, last year, attained a value of 580,800 francs. Canadian belt makers should take notice.

The importance of Roumania as a field for the sale of many manufactured articles, and particularly as a market where the demand for machinery and tools is increasing, is explained in the current number of the American Machinist. The writer says there is a widespread opinion among American manufacturers that the general business conditions in the Balkan States leave so much to be desired that almost all commercial transactions are connected with more or less risk. This is quite wrong, and it is certainly safe to say that business in most of the Balkan States, if properly conducted, can be regarded as safe as that in Central or South American Republics. If business were so unsound in the Balkans there would not be as many large German, Austrian and French concerns who confine their transactions exclusively to those countries. The writer claims to have visited regularly for many years all the Balkan States—Turkey, Roumania, Bulgaria, Servia, Greece and Montenegro—and has found no difficulty in dealing with the merchants and manufacturers of those countries on a sound basis. In Roumania, the most progressive of those countries, the trade is chiefly in the hands of Germany, Austria and Great Britain. The total imports of that country each year are large. Upwards of \$20,000,000 worth of the import trade is in the hands of Germany, \$19,000,000 worth of all sorts of effects is taken there from Austria, and Great Britain sends about \$15,000,000 worth, while the United States only furnishes each year about \$200,000 worth. The imports of iron and steel, hardware and machinery into Roumania reach each year upwards of \$13,000,000; consequently it is argued that the market is well worth the attention of American manufacturers.

TRADE OF THE WORLD.—Of the \$18,000,000,000 worth of commerce done by all the nations of the world Great Britain's share is 18.3 per cent.; Germany's, 10.8 per cent.,

**The Westinghouse Air Brake Co.**  
 have just ordered from us a large filter to equip their power house.  
 One by one they recognize the superiority of TITR  
**Cross Oil Filter**  
 The Cross Oil Filter will save half your oil bills. We send on approval at our expense.  
 Catalogue 26. The Burt Mfg. Co., Akron Ohio, U.S.A.



**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

Dominion Branch, Kelly's Directories Ltd.  
 71 Victoria St., Toronto, Ont.

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

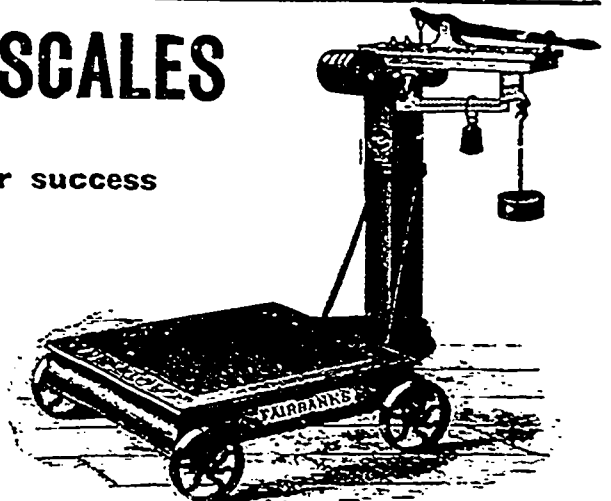
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Good Scales are as essential to your success as accurate Bookkeeping.

Our Montreal Stock is Complete.

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MANUFACTURERS OF



Lang's Patent Wire Ropes  
 For Colliery and Mining Use.

**WIRE ROPE** of every Description and for all purposes.

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drills, \$1,360. Japan, 2 cases separators, \$144; 30 bundles shovels, \$181; 8 packages harvesting machinery, \$143. Liverpool, 4 packages grain cleaning machinery, \$190; 16 cases plows, \$303; 2 case forks, \$153; 16 cases drills, \$2,386. London, 50 packages agricultural machinery, \$680; 6



**SOUTH AFRICA**

Messrs. Kelly's Directories Limited, (London, Eng.) beg to announce that a new edition of the **General Directory of South Africa** is now in course of preparation and desire to draw the attention of Canadian Manufacturers to the importance of the work as an advertising medium for making their goods known to buyers in South Africa. Being **THE STANDARD WORK** it reaches the very people whom manufacturers desirous of opening up or extending their export trade with South Africa, would desire to get in touch with, **THE ACTUAL BUYERS THEMSELVES.**

For further particulars, charges for advertisements, etc., apply to

Dominion Branch, Kelly's Directories Ltd.  
71 Victoria St. Toronto, Ont.  
W. P. DENT, Manager.

cases drills, \$1,113; 4 packages agricultural implements, \$100; 2 cases mowers, \$64. Marseilles, 98 packages agricultural machinery, \$1,576. Mexico, 10 cases hoes, \$223; 10 packages wheelbarrows, \$112, 11 cases corn shellers, \$227; 2 cases drills, \$46; 2 packages lawn mowers, \$10; 6 crates agricultural implements, \$194; Malmo, 76 cases plows, \$1,550; Porto Rico, 4 cases plows and parts, \$35. Portuguese Possessions in Africa, 6 cases agricultural implements, \$200. Southampton, 14 cases lawn mowers, \$45; 12 packages hay loaders, \$310. Trieste, 1 reaper and parts, \$40. Tunis, 3 cases agricultural implements, \$38. Uruguay, 12 packages agricultural implements, \$204; 931 packages harvesting machinery, \$20,027, 294 packages plows and parts, \$2,032; 24 cases wheelbarrows, \$96. Venezuela, 4 cases feed cutters, \$10.

**EXPORTATION OF LOGS PROHIBITED.**

What is true of Michigan is true of the remainder of the country and the fact that Canadian logs cannot, under any condition, be brought across the border and sawed in the United States has its effect in the remotest part of the Union. Gen. Alger has

sold the last of his Ontario lumber limits, 108 square miles on the north shore of Lake Huron, to Ferguson & McFadden, of Renfrew, Ont., for \$150,000, and has purchased \$500,000 worth of pine in Minnesota.

We sold our Canada holding because we could not make any money under the restriction requiring all Canadian logs to be sawed in Canada, said Gen. Alger. Please bear in mind that I am not criticising Canada. I am informed that they would have stood the one dollar tax, the amount of the old McKinley law, but the two dollars they would not stand, and they retaliated by putting on this restriction. If we were to go on lumbering in Canada we would have to close up our Michigan mills and build new mills there, and I found I could do better with my money by selling out my Ontario holdings at a loss and purchasing lands on this side of the line. There is no political significance whatever in what I have done. I have large interests in Canada yet. We are lumbering along the north shore of Lake Superior, and I have large interests in the Laurentides Pulp and Paper Co., on the St. Maurice river Quebec.

I would buy land in Canada as quickly as anywhere else; it is only a matter of dollars and cents. I have been treated with all possible consideration in Canada, but there is no sentiment in business.—Marino Record.

**THE BEST IS NONE TOO GOOD**

**SYRACUSE  
BABBITT**

**BEATS  
THEM  
ALL**

The largest machinery builders in Canada and United States use our Babbitt Metal.  
Is this not sufficient proof of its superiority over other anti-friction metals?  
If the largest users are satisfied with our Babbitt Metals, why should it not suit you?  
We can furnish you with numbers of testimonials.

Importers and Dealers in

PIG TIN  
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SOLDER  
TYPE METALS

Manufacturers of

COLUMBIA  
PHOSPHOR TIN  
AND ALL OTHER  
WHITE METALS

**SYRACUSE SMELTING WORKS,**

WILLIAM and ST. THOMAS STREETS,

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**Shafting—Hangers—Pulleys**

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**Rope Transmission of Power.**

**HANDSOME ILLUSTRATED CATALOGUE ON APPLICATION.**

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**AN IMMENSE CANADIAN INDUSTRY.**

Engineers have begun work upon the Grande Decharge of the Saguenay for the new pulp and other mills which American capitalists propose to put up there. These works are to cost two or three million dollars, according to the programme that has been announced. All the capital, it is said, has been subscribed for the immediate construction of a stone pulp mill on the banks of the Peribonac at the White Falls. Both the Mistassini and the Peribonca rivers flow into Lake St. John, from north and east.

An examination of the last annual report of the Department of Lands, Forests and Fisheries of Quebec, shows that the region selected for these works is one of the best in Canada. The territory of the Lake St. John District covers an area of 19,200,000 acres. Of this less than 500,000 are under cultivation, the remainder being covered by forests. The principal woods growing on this great area are spruce, balsam, white birch, cypress and pine. White, black and red spruce constitute more than seventy-five per cent. of the timber. In the Peribonca quarter the spruce is rather small for sawlogs, but is of the best size and quality for pulp. Taking five cords to the acre as a low limit of the average yield of spruce in the whole St. John district, the Commissioner of Lands and Forests estimates that the supply can be so fostered as to be inexhaustible.

In the Peribonca region, where the mills referred to above are being built, there is an

area of 8,300,000 acres of white and black spruce that will easily run five cords to the acre. Thus, there are 41,600,000 cords ready grown, which can reproduce itself at such a rate as to sustain perpetually a large number of big mills.

As to water power, there is any amount of it in the Lake St. John region. On the great Peribonca, where the company's mills are being built, there is a series of falls on a section of the river five or six miles long that aggregate 301,025 h.p. These falls are even in number, and the short section of the stream on which they occur begins just at the terminus of the steam navigation from Lake St. John, which is only fourteen miles from that body.

From mills on the great Peribonca and Mistassini pulp and paper could be carried

in steamboats to Roberval, and thence shipped to Chicoutimi or Quebec. The means of transport already exist. In the hands of a powerful company it would be much more advantageous to connect the mills and the port of St. Alphonse by means of an electric railway. This, at least, is the opinion of the superintendent of that region. In the opinion of the same official it would be possible to produce over 500,000 tons of paper a year ad infinitum.—The Toronto Correspondent of The Paper Mill.

The immense areas of timber lands, the extra-remarkable quantities of spruce wood now awaiting the advent of the axeman, and precisely 301,025 h.p. which can be developed within six miles on the Peribonca river, will probably allow of a liberal discount for imagination.

# The Underwood Typewriter



Visible Writing from start to finish.

The descriptive pamphlet, or any stenographer using the Underwood Typewriter, will explain why 1,000 of these machines have been sold in Canada in one year—more than all others put together.—Visible writing and the tabulator are winners.

SOLE CANADIAN AGENTS,

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15 Adelaide St. East, TORONTO, ONT.

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President.

JARROLD CHITTENDEN,  
Treasurer.

Established 1849.

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Capital and Surplus, \$1,500,000

Offices Throughout the Civilized World.  
EXECUTIVE OFFICES,

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Correspondence Invited.

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Winnipeg, Man.	

THOMAS C. IRVING, Gen'l Manager Western Canada,  
TORONTO.

JOHN A. FULTON, Gen'l Manager Eastern Canada,  
TORONTO.

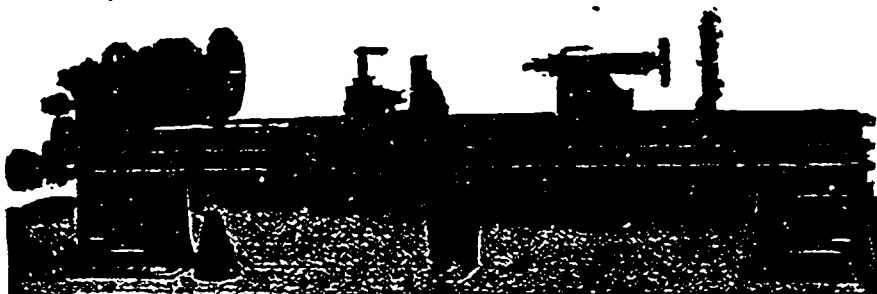
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### General Machinery

HAMMERS,  
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With them the Future is Assured.  
They are no Experiment.

Thousands have been running in the United States, and a large number are now in Canada. Sales steadily on the increase.

“The Mills that refuse their opportunities will find their future utility serving as picturesque ruins in the landscape.”

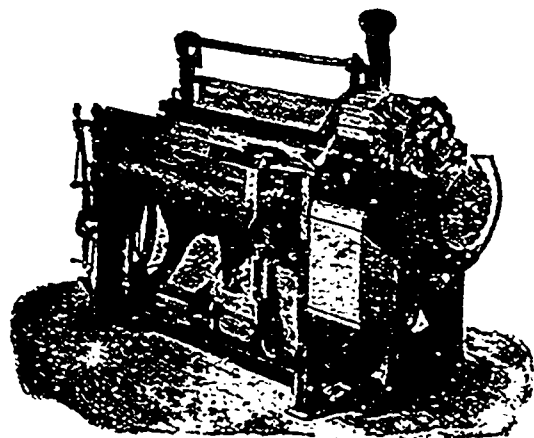
We also Manufacture the Best Warper at present  
Known—also Spoolers.

Write for particulars and quotations. Address

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VALLEYFIELD, P.Q.

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THE NORTHROP LOOM.

# THE Canadian Manufacturer

ESTABLISHED IN 1880

Is devoted to the development of Canadian Trade—Foreign and Domestic.  
The only trade journal published in Canada reaching

## ALL CLASSES OF MANUFACTURERS

Blast Furnaces, Iron and Steel Works, Rolling Mills, Electric Light Plants, Manufacturers of Electric Machinery and Appliances, Pulp and Paper Mills, Lumber Mills, Furniture and Woodenware Factories, Flour Mills, Cotton and Woolen Mills, Manufacturers of Iron and Woodworking Machinery, Steam Engines and Boilers, Pumping and Mining Machinery, etc.

### The Captains of Industry Department

Contains Pointers of Value to every Manufacturer and Dealer in the World who desires to sell his goods to Canadian consumers.

### The International Bureau of Commerce Department

Contains Lists of Articles enquired for by buyers in Foreign Countries whose names and addresses can be given.

### The Editorial Department

Is devoted to the intelligent discussion of topics of general interest, looking to the advancement of Industrial Pursuits both at Home and Abroad.

### As an Advertising Medium

It is not equalled by any Trade Journal in Canada.

PUBLISHED ON THE FIRST AND THIRD FRIDAYS OF EACH MONTH.

**J. J. CASSIDEY, Editor and Manager**

*SUBSCRIPTIONS:—Canada and United States, \$1.00 per year. All Other Countries in Postal Union, Eight Shillings Sterling per year, including postage.*

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McKINNON BUILDING, - - TORONTO, CANADA.

Cable Address: "CANAMAN."

Western Union Telegraphic Code used.

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**AVOIDABLE LOSSES IN MINING.**

All losses in mining are not unavoidable, observes the mining editor of the San Francisco Chronicle, but there are avoidable losses which usually figure in paying mines where a percentage of the mineral contained in the material treated escapes the processes in use. Of late years much of the ingenuity of mine managers has been directed to devising means of arresting this waste.

It has been demonstrated through a series of carefully made assays that two-fifths of one per cent. of the copper contained in the ore passed through the mills of the Calumet and Hecla mine of Michigan escapes in the tailings. The loss amounts to only eight pounds of copper to each ton of ore worked, but it aggregates \$1,500,000 a year at the present price of copper. Another mine in the same district saves less than 1 2-10 per cent. refined copper at the mill, while forty per cent. of the copper actually contained in the stamp rock escapes. The problem which the managers of these mines are endeavoring to solve is the preventing of such losses. If it is solved, it will make a material addition to the earnings of the corporations. As it now stands, the loss is classed among those that are avoidable.

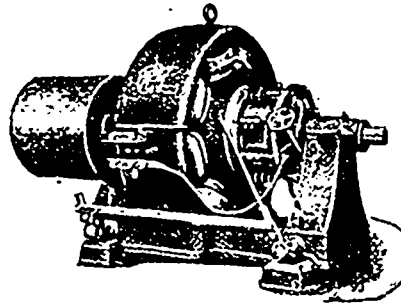
Most of the extravagant waste in the earlier treatment of the ores of the Comstock lode was avoidable. The bed of the Carson river is full of material containing wealth untold which ought never to have been allowed to escape. Perhaps some day an intelligent effort will be made to recover it.

It is estimated that the slimes of a few quartz mills operating in the Sumpter district in Oregon carry off at least \$500 worth of gold per day which flows into the Powder river. This is all avoidable loss. It is estimated that twenty-five per cent. of the actual contents of the ore of one of the most productive gold mines in the district passes off in the tailings. Now the energies of the mine-owners are being directed to prevent it and to recover what has already gone into the bed of the river.

In California there are innumerable examples of avoidable losses in mining which are gradually coming to light with a closer study of the economics of mining. For example, from \$2 to \$3 of the assay contents per ton of one of the largest gold quartz mines in the southern part of the State has been steadily passing out of the mill into the tailings. It has been carefully computed that 1,000,000 tons of tailings have accumulated from past operations in the mill waste. A cyanide plant capable of treating 300 tons per day has been installed, which yields a net profit of \$1 per ton per day from the treatment of this mill waste. It is intended to increase the capacity of the plant to 1,000 tons per day, and as the mine turns out about 800 tons of ore every twenty-four hours, it will take many years to work off the big pile, which will yield a revenue more reliable than the direct product of the vein, for that fluctuates as all ore bodies do, while the mill loss remains unchanged.

A Grass Valley quartz mine was operated for forty-five years before any successful method of stopping the losses due to the escape of gold in the mill slimes was discovered. Then an ingenious inventor evolved an appliance which returned him a revenue of about \$500 a month after paying the company a royalty. This was all obtained from material that had been previously allowed to run off as waste and

**The Jones & Moore  
ELECTRIC CO.  
ELECTRICAL CONTRACTORS**



**DYNAMOS, TELEPHONES, SLOW  
SPEED MOTORS, MOTORS, SUPPLIES,  
DIRECT CONNECTED DYNAMOS.**

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

**20 and 22 ADELAIDE W.,  
TORONTO.**

**ROBERTS & CO., PATENT  
SOLICITORS**  
PEOPLE'S BANK  
BUILDING, MONTREAL.  
Twelve Years' Examiner in U. S. - NO PATENT  
Patent Office. Write for Red Book. - NO PAY.

**TALISMANIC BELT DRESSINGS  
WILL INCREASE YOUR POWER**



Prevents Belts Slipping.

Prolongs Life of Belts.

"What We're On We'll Cling To."  
**TALISMANIC BELT CLINCH—For Leather Belts  
TALISMANIC RUBBER FACING—For Rubber Belts  
TALISMANIC ROPE PRESERVER**

**JOHN W. BOWDEN, & CO.  
67 Adelaide St. E. Toronto, Ont.**

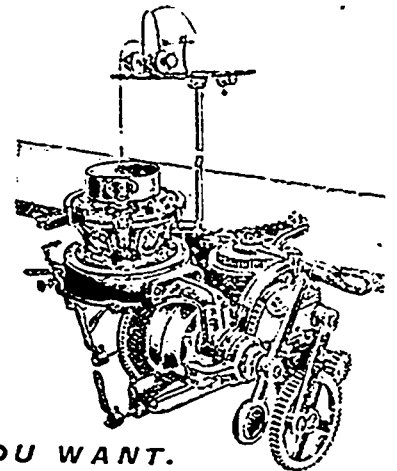
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TORONTO**

Sells "BRANSON THREE-QUARTER  
AUTOMATIC"

**KNITTING MACHINES**

AND ALL OTHER KINDS OF  
Hosiery and Underwear **MACHINERY**

ASK US FOR WHAT YOU WANT.



**Paper Mills and Pulp Mills**

And all Users of ENDLESS FELTS get the  
Best Value by ordering from

**Hamelin & Ayers,  
LACHUTE MILLS, QUE.**

We are now prepared to make all grades, from the finest Bristol Board to the coarsest Sulphide Fibre. With our 24 looms, and all other machinery to match, we are in a position to fill all orders promptly.

When ordering state kind of Paper or Board made, and speed of machine.

You will not be asked to pay for Felts that are not satisfactory. Every Felt is tested in our factory, and is shipped with our guarantee.

**CAPACITY 1,000 SQUARE YARDS DAILY.**

ADDRESS

**HAMELIN & AYERS, Lachute Mills, Quebec, Can.**

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become irrecoverable in the beds of the adjacent water courses. For nearly half a century an avoidable loss of from \$6,000 to \$10,000 a year had been permitted to go on in this one mine alone. What has been the total loss of the operated quartz mines in California during the period of their operation from a similar avoidable cause would make an interesting computation for some patient investigator.

In unwatering the copper mines of Copperopolis it has been discovered that all the iron rails and the workmen's tools left in the works when abandoned over thirty years ago have through a well-known chemical process been since transmuted into copper. The incident proves that there is an avoidable loss in every gallon of the drainage of these mines that is allowed to escape without being subjected to a very simple treatment which was discovered after these mines were closed down and which when applied to the drainage of the big copper mines of Montana proved a large source of revenue to the owners. In future it is more than likely that much of the profits of mining in California will come from processes applied to prevent avoidable losses of the mineral contained in the ores worked.

#### THE PLESSISVILLE FOUNDRY.

De la Fonderie de Plessisville, manufacture de Fontes et Toutes Sortes de Machines, Appareil de Beurrerie et Fromagerie, Plessisville, Que., of which Mr. F. Hurtubise is manager, informs us that within the past two years their business has increased so rapidly that they have been obliged to build an additional foundry and machine shop. Their men have been working overtime nearly the year round and yet they are behind time with contract orders of which they have enough ahead to keep them busy till next February.

The following list shows some of the recent deliveries of machinery by this concern:—

Rev. J. O. Normandin, Carleton, Que., cheese factory outfit.

Joseph Boutin, St. Theophile, Que., pony matcher and planer.

David Smith, Forestvale, Que., complete saw mill outfit and pulp wood machinery.

Philippe Plante, St. Joseph Lepage, Que., cheese factory outfit.

L. I. Frchette, St. Ferdinand, Que., complete saw mill outfit and wood working machinery.

Nap. Gooubout, St. George's, Windsor, Que., engine and boiler.

Dicknor & Tremblay, St. Epiphane, Que., cheese factory outfit.

A. Lemire, Wotton, Que., twenty-three large stump and stone pullers.

J. A. Nadeau, Maria, Que., engine and boiler.

Rousseau & Demers, Shawinigan, Que., large variety shaftings and pulleys.

Arthur Morin, Lac a la Tortue, Que., cheese factory outfit.

Z. Cloutier, St. Pierre Montmagny, Que., cheese box machinery.

H. Turcotte, St. Pierre Broughton, Que., pony planer and matcher.

J. H. Frchette, St. Malachie, Que., cheese factory outfit.

F. Paradis, St. Alphonse, Que., boiler for creamery.

Plessisville Electric Co., Plessisville, Que., two 125-h.p. boilers and machinery for power house and water wheel.

J. D. Lacerte, Plessisville, Que., 100-h.p. boiler.

E. Dionne, St. Mathieu, Que., shingle machine.

V. Pepin, St. Francois, Que., cheese factory outfit.

Phos. Breton, St. Camille, Que., pony planer and matcher.

L. Tremblay, St. Ambroise, Que., shingle mill.

L. Parent & Bro., St. Germain, Que., engine and boiler.

Levesque & Berubé, St. Gabriel, Que., car load saw mill machinery.

A. Gooubout, Chicoutimi, Que., double edger.

J. Bernier, L'Islet, Que., band saw machine.

J. Audot, St. Gideon, Que., vulcan water wheel.

M. Dopré, Victoriaville, Que., engine and boiler.

T. Gaudon, Montfort, Que., shingle mill.

J. Bedard, St. Fabien, Que., boiler.

L. Picard, St. Gabriel, Que., saw mill machinery.

Cauchon & Boily, St. Gideon, Que., saw mill machinery.

Cox & Lambly, Lysander, Que., pony planer and matcher.

C. Church & Son, Labelle, Que., resaw machine.

A. Gagnon & Co., Victoriaville, Que., shaftings and machinery.

L. Larochelle, St. Arson, Que., car load saw mill machinery.

Jos. Frigon, St. Georges Beauce, Que., shingle mill.

J. P. Dupuis, St. Hermonigilde, Que., grinding mill.

Dessureau & Laurier, St. Agathe, Que., car load saw mill outfit.

L. Gosselin, Scott Junction, Que., pony planer and matcher.

B. Dusoreault, St. Jacques des Piles, Que., shingle mill and grinding mill.

S. M. Ferguson, Tide Head, N.B., wood-sawing machinery.

N. T. Turgeon & Co., St. Francois, Que., resaw machine.

Pascal Desbiens, St. Bonaventure, Que., car load saw mill machinery.

Alphonse Cote, Lyster, Que., wood working machinery.

F. Duchesne, St. André, Que., circular saw outfit.

George Martel, Roberval, Que., two car loads saw mill machinery.

La Cie de Pulpe, Jonquieres, Que., six car loads machinery including four water wheels and a ten foot diameter steel conduct made of  $\frac{3}{8}$  and  $\frac{1}{2}$  steel plates, conduct is 150 feet in length with elbows, tees and draught pipes. This contract was successfully completed only a few weeks ago, and if it is taken into consideration that the entire outfit was made and delivered during the last three months, one will have a fair idea of how busy the staff is kept in these works.

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### THE SULPHITE COMBINE.

At the regular monthly meeting of the American Sulphite Manufacturers' Association held in Montreal, last month, arrangements were practically completed whereby all the Canadian sulphite pulp mills would join the Association and aid in maintaining prices on both sides of the Canadian border.

The following is a list of the Canadian mills which will join the Association. Riordan Paper Mills, Hawkesbury and Merritt, Ont., 105 tons, Laurentide Pulp Co., Grand Mere, Que., twenty-five tons, The E. B. Eddy Co., Hull, Que., twenty-five tons; Dominion Pulp Co., Chatham, N.B., twenty tons, St. John Sulphite Pulp Co., Mispec, N.B., thirty tons; Cushing Sulphite Fibre Co., St. John, N.F., 40 tons; Sault Ste. Marie Pulp & Paper Co., Sault Ste. Marie, Ont., forty tons; Maritime Sulphite Fibre Co., Chatham, N.B., forty tons; total, 325 tons.

Out of this total of 325 tons (including the Sault Ste. Marie product when it comes into the market) all but ninety-five tons is marketed abroad. Of the ninety-five tons about thirty-five tons are at present consumed in Canada. This leaves about sixty tons for importation into the United States, leaving the Sault Ste. Marie mill out of the calculations. Owing to the cheapness of the wood and the low priced labor in Canada, it is possible even with a duty of \$3.35 on unbleached fibre for the Canadian manufacturer to market his product in the United States at a profit. There have been instances, says the Paper Mill, where he has sold pulp considerably under the minimum price agreed upon by the members of the Sulphite Manufacturers' Association, which has resulted in unsettling quotations both for the United States and the Canadian manufacturer.

By the action of the meeting alluded to, the American Sulphite Manufacturers' Association now controls the selling price of the output of twenty-one United States mills, amounting to 700 tons, and of seven Canadian mills, amounting to 325 tons, making a grand total of over 1,000 tons per day.

### A POSSIBLE CANADIAN INDUSTRY.

The United States Consul at Lyons, France, writing to his Government says.—

I have had an interview with Mr. Leuret, the manufacturer of artificial pearls from fish scales. He will go to the United States and erect works there as soon as he hears of a locality where the right kind of scales can be had in large quantities. I suggest that a suitable place might be found on the St. Lawrence River, among the Thousand Islands. Some years ago, the State or national authorities cast quantities of spawn into Lake Ontario, among which was the spawn of some salt-water fish. The latter die before maturity, as soon as the water becomes warm. Every summer, many thousands of them are cast upon the shores of the river and islands. They are called by two names—menhadden and alewives. If these were tried and found suitable, works could be built and put in operation there in a short time. The scales should be small and have a silvery sheen. The brighter they are, the higher price they will command. The scales should be removed while the fish are alive, if possible. They should be packed with slime, very little salt being used (about five grams per pound of scales). All organic matter that may cause decay should be removed and the scales left suspended in a mosquito netting until the surplus slime oozes off; then packed in a zinc can of ten or twelve pounds capacity. Tin oxidizes where zinc will not. Scales will rust tin, but not zinc. The opening in the top of the can should not be larger than half a dollar. If larger, the scales will suffer from the heat of the soldering iron. Twenty-five thousand pounds of these scales can be used per year. It is anticipated that twice that quantity may be used in a few years. The price paid will be 80 cents to \$1.25 per pound, according to quality and the amount of shiny matter on the scales. The present supply is from a fish called the bleak or blay. Mr. Leuret thinks that a child twelve years old can easily remove four or five pounds of scales per day.

### A NEW APPLICATION OF POWER.

The astonishing performance of the two new British torpedo destroyers, Viper and Cobra, has called renewed attention to the availability of the steam turbine in large sizes for electrical generation. It is hard to understand why this machine should have been so little recognized as it has been for this use. For the driving of alternating current and polyphase machinery its rotary motion gives it an advantage over any form of reciprocating engine, whether gas or steam driven. It has lately been shown that by the use of a moderate degree of superheat in the steam supplied to it an extraordinary efficiency of operation can be secured, and this coupled with reasonable cost, light weight, small size and absence of vibration, seem to make it ideal for the driving of dynamos. It is true that the high speed at which the steam turbine normally runs makes it impossible to couple it directly to dynamos of the ordinary type, but one has only to remember the dynamo of ten years ago adapted for high-speed operation to recall the perfect ability of constructors to build machines, working with good efficiency and satisfactory output, on higher rotational speeds than those at present commonly in use. Now that the inductor type or the rotating field type of alternating-current generator is coming into general use there is no doubt that the makers of such machines would welcome a motive-power apparatus running normally at higher speeds than those of the reciprocating engine. It is not unreasonable to look forward to generating stations in the near future equipped with inductor alternators direct coupled to steam turbines, running silently and without vibration at high speeds and with great economy, the whole mechanism of the station being confined in much less space and requiring much less attendance than a station of similar output necessarily must have to-day.—Electrical Review.

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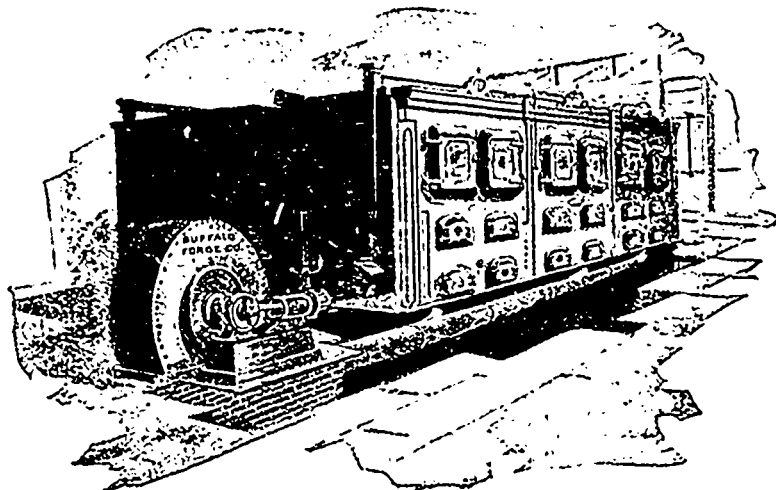
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**A FEW FEATURES OF MECHANICAL INDUCED DRAFT.**

A. W. BAYARD.

The chimney has long been the commonly accepted agent for supplying to the fuel on the grates of steam boilers that amount of oxygen that is demanded for combustion. When we come to examine into the conditions governing draft production, we discover what an excessively wasteful contrivance the chimney is. For years and years it has served its purpose after a fashion, and even to-day it were folly to say that the huge tube had outlived its usefulness. However, the rapidly altering conditions of modern industry are productive of many radical changes in methods and processes. Rapidity is now the order of things, and economy is a vital consideration. As a result of these economic forces the mechanical draft fan entered the field against the chimney. It has won its spurs over and over again, and more than that, it can well be said that before a great while, of making of chimneys there will be an end. Before attempting to bring out the many advant-



Sketch of a Typical Arrangement.  
Buffalo Steel Plate Steam Fan, Applied for Forced Draft.

ages of mechanical draft, however, it would be well to state the case against the chimney.

The active force causing the flow of air and gases is the difference between the weight of the column of hot gases inside of the chimney and the weight of a column of external air of the same dimensions, the height being measured from the level of the grate. Hence for a given chimney this force and consequently the volume discharged increases with the difference in temperature between the external air and the gases. This force is a comparatively small one. Take for instance a chimney 200 feet high with a temperature difference of 500 degrees Fahr. Here the pressure per square inch is less than an ounce, though the theoretical velocity due to this is, of course, quite high, owing to the lightness of air. By reason of the many obstructions to the flow of air, such as the grate, fuel, flues and elbows, as well as the skin or surface friction of the chimney, only a small fraction of the theoretical velocity is attained in practice. It must be remembered, however, that although the draft intensity and the volume of air moved increases with the temperature of the gases, the density decreases at the same time, so that between 600 degrees and 700 degrees Fahr. a temperature is reached

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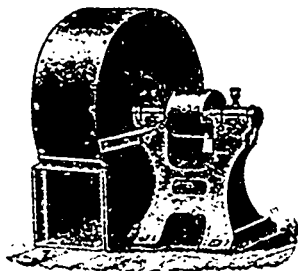
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at which the weight of air handled is a maximum. Hence it will be seen that a chimney fixes once for all the maximum power of the boiler plant. If the heating surface is such as to allow the gases to pass away at a greater temperature than at a critical one for the particular chimney, great unnecessary waste is entailed, whereas if the products of combustion are cooled to a lower temperature by the heating surfaces, the

They occupy a ground space in many cases of great value. They are invariably expensive, and the interest on the fixed capital represented thereby is considerable. Tall chimneys must be protected from lightning, and they sometimes annoy their owners by toppling over when the wind blows more angrily than usual.

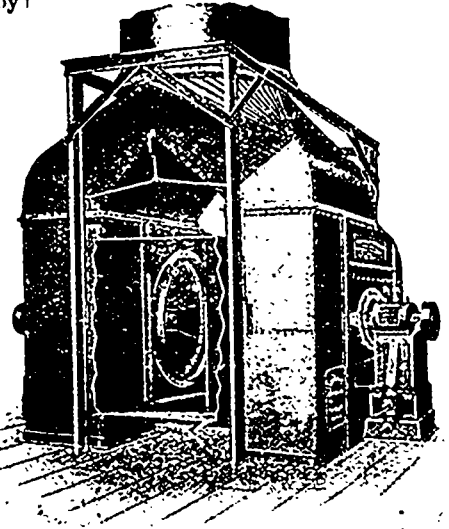
A chimney, once built, in addition to limiting the boiler capacity, as we have seen, is subject to atmospheric conditions which cause a fluctuation of its draft. An increasing external temperature not only lowers the draft intensity, but it also increases the volume of air which must be handled in order that a given weight of oxygen may be supplied to the fuel. Varying barometric and hygrometric conditions likewise have their effect. For instance, the effective heat of the furnace is reduced by an amount necessary to vaporize the moisture entering with the air, and hence when the amount of moisture is great it would necessitate an increased rapidity of combustion and consequently a more rapid supply of air in order to secure the proper furnace temperature. For this the chimney is unable to provide.

source of waste of a chimney, and is due to finely divided particles of carbon in the gases becoming chilled below their ignition temperature before coming in contact with oxygen, or in other words, is due to imper

Buffalo Forced Draft Dampers-- with accessories for operating and regulating.

intensity of draft, the rapidity of combustion, and hence the furnace efficiency, is correspondingly reduced. If considerations of economy demand an economizer or feed water heater, it is found that to obtain the necessary draft a chimney more than 200 feet high is necessary.

Large chimneys require heavy substantial foundations, often with extensive piling.



Buffalo Induced Fans, with double enclosed engine, connections to stack, supporting frame work fan wheels overhung, water-cooled bearings.

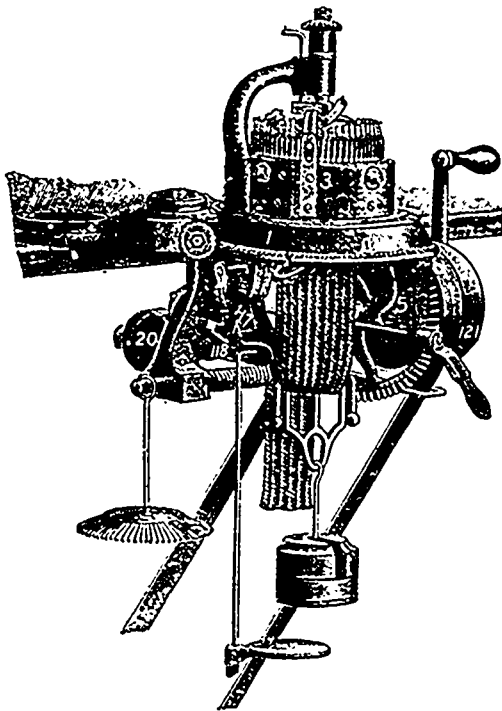
When we speak of a chimney it almost invariably calls to mind the picture of a stack belching forth dense volumes of smoke. This may be termed as an inherent

defect of a chimney, together with its inability to efficiently burn low grades of fuel, arise from a defective air supply, that is, it is the same old story of

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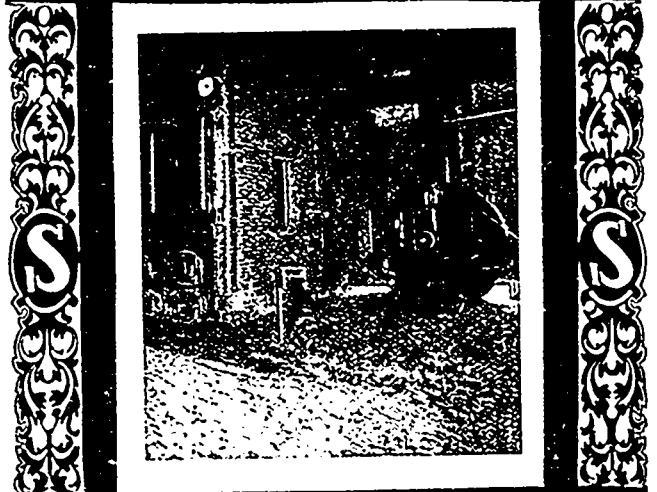
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inability to meet increased demands, such as the varying conditions of boiler practice impose.

The chimney is purely and simply a device for moving air, and for such purposes a more wasteful mode could hardly be devised. Since heat is convertible in a definite ratio into mechanical energy, we can easily compare the work accomplished with that which is expended. Assume, for example, an interior temperature of 500 degrees Fahr. and an exterior temperature of 32 degrees. Then a simple calculation will serve to show that the heat in one pound of the gases above 32 degrees Fahr. is equivalent to sufficient mechanical energy to raise its own weight approximately a height of 90,000 feet. If therefore the chimney is but 100 feet high, only one nine-hundredth part of the heat is utilized. In other words the efficiency of the chimney is about one-tenth of one per cent., the remaining 99.9 per cent. overcoming the flue and chimney friction, escaping as radiant heat or being discharged at the top as sensible heat of the gases. This latter factor is by far the largest, of course. We can from this also see that the efficiency of a chimney increases as its height; a 500 foot chimney would transform into useful effect one-half of one per cent of the energy supplied it. If now we replace the 100 foot chimney by a fan, the efficiency of this arrangement, with boiler and engine, may well lie somewhere between three and four per cent., or from thirty to forty times as great as the chimney, a figure which will be greatly increased if the fan engine exhaust is utilized. This brings us, therefore, to a consideration of draft production by mechanical means.

The first and crudest method of forced draft production was the steam jet. This is

a device of exceeding wastefulness, and will not here be considered. The use of fans for draft purposes may be classified under the heads of forced and induced draft.

The first of these two methods consists of forcing air under the grates of the furnace, and may be applied either by the closed ash-pit or the closed stoke-hole system, the lat-

sure to a main blast-pipe, from which the branch pipe lead off to dampers similar to the one shown in the second cut, which are placed in the bridge walls. Such is forced draft.

Mechanical induced draft consists in the application of fans between the boiler and the stack for the purpose of effecting a



A Central Power Station, with induced draft, economizers, etc.

ter being extensively used in naval practice. Forced draft is usually installed to provide for an increased steaming capacity, to help out an overloaded chimney, or to enable low grades of fuel to be successfully employed. Of the cuts herewith appended, the first illustrates the application of forced draft to a battery of boilers by the closed ash-pit system. The three-quarter housing Buffalo steel-plate fan driven by a direct connected engine, supplies air under pres-

sure to a main blast-pipe, from which the branch pipe lead off to dampers similar to the one shown in the second cut, which are placed in the bridge walls. Such is forced draft. Mechanical induced draft consists in the application of fans between the boiler and the stack for the purpose of effecting a rapid movement of the gaseous products of combustion. By thus reducing the pressure in the smoke connections of the boiler, the effective draft pressure is increased, resulting in an increased supply of oxygen to the fuel. In other words, for the chimney is substituted a mechanical agent, at once vigorous, positive and flexible. Having seen how much more efficient than the chimney the fan is, it is only natural to expect a material saving by the use of the latter.

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With a chimney the gases cannot be cooled below a certain point, which means unavoidable waste of heat in the shape of escaping hot gases. With a fan, however, the minimum temperature has no effect upon the draft, and hence a great deal of heat may be utilized by passing the gases through an economizer or other heat-absorbing device. By a proper application of an economizer and induced draft fans to a boiler plant, a saving of from ten to fifteen per cent. may readily be effected.

Turning to the furnace, it is found that the most important losses there are due either to too little or too much air. Average coal requires for perfect combustion a theoretical air supply of about twelve times its own weight, but in practice it is found that to provide for a certain amount of oxygen which escapes combustion utilization, a varying percentage of excess must be supplied. If too little oxygen is furnished, the coal burns to carbonic oxide, and in doing so develops less than one-third as much heat as it would if it obtains enough air to burn to carbonic acid. Here then is an important source of loss from insufficient air. On the other hand too much air is productive of loss. In general, the higher the furnace temperature the greater is its efficiency. If, now, a greater volume of air enters than is necessary the heat developed cannot raise the greater volume to as high a temperature, in addition to which the increased amount of moisture entering with the air acts to decrease the temperature and heat-imparting power. This increased volume must also move at a greater velocity and consequently give up less heat. Hence too much air means loss all around. Again during the progress of combustion the hot gases in the furnace evolve finely divided particles of carbon; if oxygen is supplied to these while they are hot, they are burned, but if they are chilled below their temperature of ignition they pass off unburned as smoke. The panacea for all these ills is of course a proper supply of air in which the excess is just that required for most efficient combustion, and this state of affairs can most readily be brought about by means of a fan. Induced draft acts to cause a more intimate commingling of the oxygen with the fuel, for it allows a thicker bed of coal and thus decreases the excess of air needed; it also increases the rapidity of combustion. For these reasons the furnace temperature and hence its efficiency is increased, with a proper proportioning of the heating surface.

Another advantage of no small importance accruing from the use of induced draft is the ability to make use of low grades of fuel, which could not otherwise be employed. In places where both anthracite and bituminous is available, a mixture of seventy-five per cent. of the former with twenty-five per cent. of the latter produces the best and hottest fire, with the practical elimination of the smoke nuisance, a matter of some weight within the limits of certain cities. In addition to these points, mechanical induced draft provides for future increase of capacity. More steam at any time may be had by an extra turn of the fan engine throttle, and in this way also absolute independence of atmospheric conditions is secured. Or, if desired, the boiler pressure may be maintained constant by an automatic device regulating the fan engine, so that a decreasing boiler pressure due to increased steam consumption or otherwise, causes the fan to speed up.

If now we add to the list of fan virtues already enumerated the further fact of low

first cost, it must be admitted that the array is a convincing one. The cost of fans, engines, connections and short light stack represents but a small fraction of the outlay necessary for a chimney. For a foundation fans need little or nothing, in fact they can be placed above the boiler floor level and ground space thus economized. In addition to low first cost, the maintenance cost is low, and, in fact, if the fan engine exhaust is utilized for heating or other purposes, as will usually be the case, this expense becomes almost nothing.

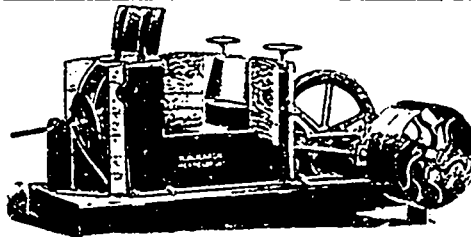
The third figure shows a type of Buffalo duplex mechanical induced draft apparatus with double enclosed engines, connections to stack, overhung fan wheels, and water cooled bearing. This last feature is rendered necessary by the heat of the gases. The gaseous products of combustion pass to the apparatus through the connection shown broken in the cut, enter the fans in a direction parallel to their axes and are

discharged circumferentially from the fan wheel upward into the sheet iron stack. A damper is furnished to regulate the proportion of gases handled by either fan. The last figure shows such an apparatus applied with economizer to a battery of six boilers. Automatic stokers are also shown, with which system mechanical draft goes hand in hand. The plant illustrated here is typical of advanced boiler practice.

In conclusion the writer wishes to record his acknowledgment to the Buffalo Forge Co., of Buffalo, N.Y., Mechanical Draft experts, from whose installations these cuts have been obtained.

**WHERE SPRUCE WOOD ABOUNDS.**

From the Labrador peninsula on the east and along the northern shores of the St. Lawrence the spruce grows abundantly in Canada, and extends over that great triangle between Hudson's Bay and the Atlantic.



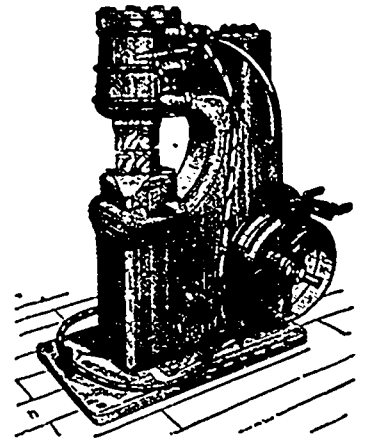
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Ontario has abundance of pulp spruce, and it stretches northward almost to where the Mackenzie River flows into the Arctic Ocean. On the Pacific coast along the mountainous bays of British Columbia the spruce grows more abundant as exploration is pushed northward. The Douglas fir, although partaking more of the nature of balsam than spruce, is a good pulp wood, and the trees, towering 250 feet in the air, and measuring from 30 to 50 feet in circumference at the ground, have made the timber of the coast famous. In northern Ontario pulp spruce is the most abundant forest growth, and the surveyors, although charged specially with the duty of discovering and estimating the pine, feel obliged to make constant mention of the more abundant timber. Of 150 reports examined the greater number refer to the surprising extent and value of the spruce growth, although the primary object of the reports was to discover the location and value of the pine preserves of the province. The largest spruce trees of this district measure about seven feet in circumference. The references to the abundance of spruce are the more significant, as they were made before it was known to be the best wood for the production of paper pulp. In Quebec the early reports of surveyors also testify to the abundance of spruce, although at the time they were made it was regarded as an inferior forest product. This forest growth, which modern science has made so serviceable to man, is abundant around James Bay and extends northward on both sides of Hudson Bay, receding a few miles from the coast, and reaching almost to the shores of Hudson Strait on the east and the Arctic channels on the west. The great peninsula of Labrador, a thousand miles long and about the same in width, larger in extent than Great Britain, France, and Germany combined, although abundantly wooded, is but a small part of our pulp spruce area. In New Brunswick there is also abundance of this important raw material, and several pulp mills are in operation, their total capacity being about 140 tons per day. Successive reports of geological surveys show that this tree, the most abundant in the province, has the faculty of reproducing itself, without any forestal supervision, where it has been removed by fire or other destructive agencies. In Nova Scotia there are four or five large pulp mills in operation, and the development of the industry was comparatively early in that province. The climate is moist and exceptionally favorable to the growth of spruce, which is still abundant and apparently capable of meeting all demands within the measurable future.

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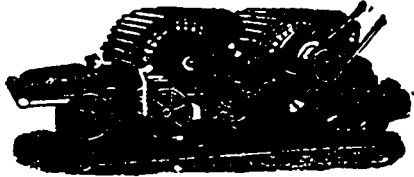
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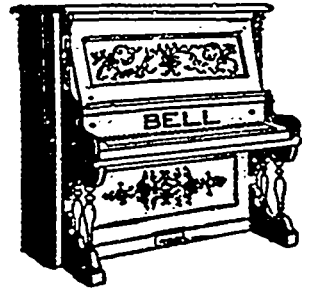
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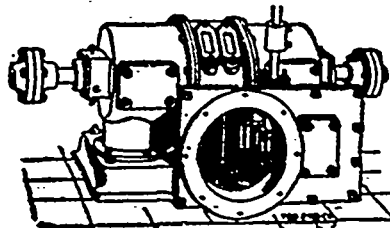
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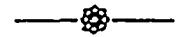
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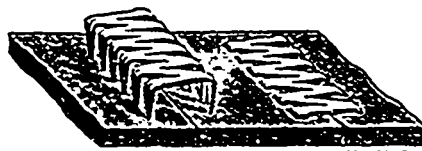
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