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THE CANADIAN MANUFACTURER

AND INDUSTRIAL WORLD

DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

Vol. 19. TORONTO, NOVEMBER 7, 1890. No. 9.

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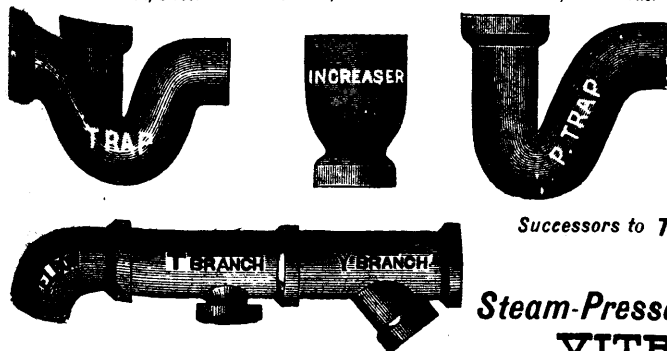
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THE CANADIAN MANUFACTURER.

This journal is and always has been devoted to the manufacturing interests of Canada. It is the only trade journal in Canada devoted exclusively to these interests; and it is and always has been a supporter of Canada's National Policy. It believes that the success of Canada's manufacturing industries depends upon maintaining our system of Protection. It is for Canada first, last and all the time.

Recently those who would subject our manufacturing industries to the domination of foreign manufacturers have been active in raising large sums of money in the United States and elsewhere for the avowed purpose of flooding Canada with pernicious literature, the object being to break down our financial system and force upon us Unrestricted Reciprocity, thus laying the country open to be flooded with the manufactured products of the United States, the ultimate, intended and inevitable result being the annexation of Canada to that country. Already moneys thus contributed are being expended in spreading broadcast all manner of deceptive and misleading literature, including what is called a "broadside of cartoons" sent out from the anti-Canadian headquarters of Mr. Erastus Winman in New York City. This literature is spoken of as being a means of "educating the people" in the political heresy here alluded to.

As it has always heretofore done, the CANADIAN MANUFACTURER proposes to take part in this educating process, with this difference, that the sentiments it promulgates will be of

that patriotic description which will teach that loyalty to Canada is the first great duty of all Canadians; and that our commercial independence can only be attained through the existence and prosperity of our manufacturing industries.

A country that manufactures for itself prospers.

To enlarge and extend the field of usefulness of this journal, and to place it within the reach of all who may be interested in its teachings, the subscription price will hereafter be one dollar per year, cash in advance. This is a large reduction from the previous price, which was two dollars per year. But in making this reduction there will be no change in the size or number of the pages, nor in the frequency of its publication. In the future, as in the past, it will be issued twice a month; and all subscriptions sent in during the current year, accompanied with the money, will secure the sending of the paper until the end of the year 1891.

An inspection of its advertising pages will show that the patrons of the CANADIAN MANUFACTURER include many of the most active, energetic and enterprising manufacturers and business men in Canada. It is well to associate with these men, and those other business men whose names are not enrolled with theirs are invited to make their business known to our readers by placing their announcements herein.

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CANADIAN IRON.

SPEAKING of the visit to Canada of the British and other delegates to the International convention of iron and steel manufacturers, the *Toronto Globe* says the event will be of considerable importance to us; and calls attention to the fact that the Belmont iron mine near Peterborough, Ont., is estimated to contain a million tons of magnetic ore within a hundred feet of the surface, from which it would be easy to produce 400 or 500 tons a day. It gives a description of the surroundings and the facilities for shipping the ore to market; and alludes to the impossibility of developing the mine under existing conditions, the American duty of seventy-five cents per ton being prohibitory. "Whilst Ontario is thus suffering for want of a market," exclaims the *Globe*, "sections of the United States would be greatly benefited by the free admission of our ore," and that "millions of dollars worth of iron ore from Ontario could be placed annually in the American market if the duty were abolished." Attention is directed to the report of the Ontario Mining Commission as corroborative of what is said regarding the extent, richness and value of Canadian iron ores.

What has been said regarding the Belmont mine, and what the Royal Commission have said regarding Canadian ores generally is either true or not true. Regarding the Belmont mine it is claimed that the ore contained in it is suitable for making high grade Bessemer iron; and that it can be laid down in Cleveland Ohio, duty paid, for \$3.90 per ton. The Royal Commission say that the iron ores found on the

north shore of Lake Superior, in Canada, are fully the equal of those found on the south side, in the United States, for making Bessemer iron; and that they could be mined and shipped quite as cheaply. These are broad assertions, and considering the character of the gentlemen making them, are entitled to the fullest credence. Why, then, do these vast and valuable deposits of ore remain unworked? The *Globe* would have us believe that it is because the only market to be found for the ore is the United States, and that this market is closed against us because of the duty. Waiving the question of a possible home market, and conceding that there are plenty of men of judgment and experience, and who have capital to invest, it is more than strange that these mines should remain unworked. As we have repeatedly shown, first class Bessemer ores are worth from \$6 to \$7 per ton in Cleveland; and if the Belmont ores can be laid down there, duty paid, for \$3.90 per ton, the transaction would indicate that the shipper was realizing a profit of from \$2 to \$3 on every ton of it that he could produce: and as the owners of the American mines in the Lake Superior district also make a large profit in their shipments, there can be no doubt that an equal profit could be realized from shipments from the Canadian mines in that region. The fact is, the American duty should not have any deterrent bearing on the question of the shipment of Canadian ores to that country.

What is it then that operates in that direction? The *Cleveland Iron Trade Review* has stated that several years ago shipments of so-called Bessemer ores were sent to that city from Canada, but they contained so much sulphur as to make their use impracticable. We learn that these shipments were not made from the Belmont mine, although they were mined in eastern Ontario; but be that as it may, the fact that sulphurous ores were sent to Cleveland, the shippers claiming that they were suitable for making Bessemer iron, when in fact they were not, gave an unsavory reputation to all Canadian ores. It is unfair to suppose all Canadian ores to be of the same character as those unfortunately sent to Cleveland; and Canada is now unjustly suffering from that cause. Owners of other mines, notably those of the Belmont mine, have proven by frequent analysis that certain Canadian ores are quite as valuable for making Bessemer iron as any American ores; but the difficulty seems to be in inducing American furnace men to give them a fair trial. It is contended that if this were done it would be quickly demonstrated that these Canadian ores were all that is claimed for them.

What, then, is left for Canadians to do to ensure the development of our iron mines? The *Globe* tells us that "six good iron mines would supply all the ore necessary to made all the iron and steel used in Canada." The annual consumption of iron in Canada is equivalent to about 300,000 tons, all but about 35,000 tons of which is imported. Possessing such untold wealth in our iron mines and finding it impossible, as we are told, to ship the ores to the United States because of the duty; and also finding it impossible to induce American capitalists to invest in them because of the unsavory and unjust reputation they have acquired, it would seem that it would be well to open up and operate even the six large mines the *Globe* speaks of, and in that way supply our own home market. This would demonstrate very conclusively the value of our ores; and if it proved that they were what they are

represented to be, no doubt capitalists would quickly appear who would make big money shipping to the American market, reaping a profit of several dollars a ton for all they could produce. If it could be shown that an earnest effort was to be made in the direction of manufacturing 200,000 or 300,000 tons of pig iron in Canada, no doubt the Dominion Government would assist the enterprize either by increasing the duty or the bestowal of a bonus sufficient to guarantee its success if the inducements now offered were considered insufficient. By all means let us have the iron-making industry revived in Ontario and pushed with life and vigor.

Ontario is more interested in this iron making question than any other Province of Canada. The Provincial authorities are evidently of this mind, as is shown by their having spent so much money in the investigations of their mining commissioners, and by the efforts they have made to induce the delegates to the iron and steel congress to visit our mining regions and with their own eyes observe their extent and value. This Commission have shown how extensive and valuable our deposits of iron ore are; and how cheaply iron can be made here in Canada, showing that the best quality of charcoal pig, suitable for the manufacture of car wheels, can be made in many sections of Ontario for from \$9 to \$15 per ton; while it is also shown that similar iron, used in a malleable iron works here costs from \$27 to \$35 per ton, the article frequently being as high as \$40. It is difficult to reconcile these facts. We have the facilities for manufacturing charcoal iron at a cost of \$10 per ton, and yet we pay three or four times that much for what we use. We have a market requiring an annual supply of 300,000 tons of iron, and we import within 30,000 tons of that quantity. The Ontario Government pay liberally to demonstrate the value and extent of our iron deposits, and the outside world evidently declines to believe what is told on the subject: and the Dominion Government offer liberal protection to encourage an industry that does not materialize. In this emergency it would seem right and proper for the Ontario Government to assist in the establishment of the iron industry by offering liberal bonuses for a term of years for all iron manufactured in the Province. Perhaps this would have the desired effect. It is certainly worth the trial.

WOULD BRITAIN OBJECT?

The *London Times* is reported as saying:—"Should Congress offer Canada Reciprocity, we cannot blame the Canadians if they succumb to the temptation." Quoting this remark, the *Toronto Globe* says that "although Reciprocity would involve discrimination against Britain, Britain would not object." A few days ago Mr. Erastus Wiman delivered an address before the New Haven, Conn., Chamber of Commerce, in which he endeavored to enlist his hearers in his scheme of Unrestricted Reciprocity between Canada and the United States. Among other arguments he used were these:—

"The cheap raw material, which it is possible for New England to obtain only in Canada, is quite as essential to success in competing for the South American markets as subventions or reciprocal advantages. The near-by supplies of iron, of coal, of fish and other food products in the Maritime Provinces would be immediately available under Reciprocity with Canada, and would give New England an advantage in manufacture of

incalculable value. Reciprocity with Canada would also mean a development in that country equal to that of the United States, in which markets would be created for New England manufactures which would readily absorb the surplus of production, and which would have the advantage of free admission to so large a portion of the British Empire, while goods from Great Britain would be burdened with a tariff equal to that of the United States. * * * In order to secure these advantages and give to the United States the influences which, as a nation, it should possess over the whole of this continent, it is necessary to obliterate the trade barriers that now cut it in two parts."

It may be that the United States will offer Reciprocity to Canada; possibly, in the judgment of the *London Times*, Canadians would not be to blame if they succumbed to that "temptation," and it might be that "Britain would not object," but it is not at all probable that any of these circumstances will occur.

Mr. Wiman holds out to the New England manufacturers the hope of "cheap raw material, which it is possible for them to obtain only in Canada," but he failed to remind his hearers that it remained with their Government, not with Canada, to make these things free to them. Mr. Wiman's solicitude is entirely in behalf of the New England manufacturers, who would be provided with a market "which would readily absorb their surplus production," i.e., a slaughter market; but he discloses no anxiety for Canadian manufacturers, who would be driven to the wall by the process.

What would Britain say to a condition that would give to these New England manufacturers "free admission to so large a portion of the British Empire, while goods from Great Britain would be burdened with a duty equal to that of the United States?" There is considerable ferment in Britain now anent the McKinley tariff, and yet the *London Times* and the *Toronto Globe* think that "Britain would not object" to see the American tariff wall extended entirely around Canada: the proposed Reciprocity giving absolute Free Trade between Canada and the United States, while all importation of British merchandise into Canada would pay duty as stipulated in the McKinley tariff.

What does Mr. Wiman mean when he suggests that Reciprocity would "give to the United States the influences which, as a nation, it should possess over the whole of this continent?" Simply this—that Canada would sink and abandon its political connection with the Mother Country, and either become a part of the American Union or assume no higher position than that of some of the insignificant Central or South American Republics. Canada will not accept this alternative.

A MATTER OF BUSINESS.

In an editorial, entitled "Our Quarrel with the States," the *Toronto Globe* says:—

"Another collision may possibly occur over the exportation of Sudbury nickel ore. The United States Government has obtained an appropriation of a million dollars from Congress for the purpose of purchasing and experimenting with nickel as an alloy in the manufacture of steel plates for ships of war. In the McKinley Bill Congress has provided for the free admission of nickel matte and ore, but nickel metal is taxed ten cents a pound. Certain Tory papers are urging the Dominion Government to get Parliament to clap an export duty on nickel ore

with a view to promoting the manufacture of the metal at Sudbury. Of course Parliament would have a perfect right to do this, but it is tolerably clear that the Sudbury mines would not benefit by it. What would probably happen is that the Washington authorities would go to New Caledonia for their nickel ore under an arrangement with France, or help to develop the nickel mines said to have been found in Nevada. In addition, they might be trusted to hit back at us through the tariff. The Ottawa Ministers * * * would be foolish to mar the prospects of Sudbury merely in order to be revenged upon the Yankees."

Until the recent experiments made at the Annapolis navy yard in which the great value of nickel as a component part of armor plates for war vessels was demonstrated, the one or two small deposits of nickel in the United States were nearly sufficient to supply the commercial demands of that country, the shortage being drawn from France, the product of the New Caledonia mines. Insignificant as was the domestic supply, and as incapable of large production as the American mines were known to be, the American Government had for years levied a high duty upon all importations of nickel. There was no discrimination in this duty, the levy being against the metal itself, against the metal contained in the ore, and against that contained in the matte—fifteen cents per pound. In the earlier days of the recent Congress an attempt was made to place nickel ore upon the free list in the interest of the American owners of the Sudbury mines, but the Protectionists raised such strong opposition to the proposition that it was abandoned. Later, however, when the Annapolis test had been made, the American Government suddenly remembered that the nickel they would probably require was not to be had in their country, so they forthwith induced Congress to place nickel ore and nickel matte upon the free list and reduce the duty upon refined metal to ten cents per pound. The removal of the duty upon ore and matte was to encourage the importation in those forms; it being well understood that, with a certain demand for a million dollars' worth from one customer alone, the contiguous Canadian mines would supply the raw material to extensive refining works in Ohio; and the retention of the duty on refined nickel would shut Canada out of any participation in the profits arising from the refining business. We have heard of extreme selfishness being likened to the hog that climbed into the feeding trough with four feet in its desire to exclude the others which also wanted to get their snouts into the food: and this reminds us of our American friends in this transaction. They not only want the Canadian nickel, but they do all they can to render it impossible for Canadians to derive any benefit whatever from the riches of their own country.

"What would probably happen," exclaims the *Globe*, "is that the Washington authorities would go to New Caledonia for their nickel ore under arrangements with France, or help develop the nickel mines said to have been found in Nevada." Nonsense. Does the *Globe* imagine American statesmen to be fools? Why should they haul ore thousands of miles—from the Antipodes—when better ores can be had within a few hours of their own doors? If they require these ores so badly they could have secured them without hindrance by putting nickel metal upon their free list as well as ores and matte. It is true this would have permitted the refining industry in Canada; but that is what they objected to. Under the circumstances, if they would rather go to New Caledonia for ores than to place

nickel metal on the free list, Canada will do well to let them go and encourage their going by imposing the export duty. As to the nickel mines "said to have been discovered in Nevada," there seems to be no more reason to suspect the existence of nickel in that State than the existence of tin, which, although much wealth has been expended in developing the mines, do not appear to have produced enough of the metal to make a fish horn.

OUR NICKEL MINES.

OUR esteemed contemporary, the *Empire*, in company with many other papers, falls into the lead of this journal in demanding that something be done looking to giving to Canada some benefit arising from the presence of our large nickel deposits in the Sudbury district. Nearly all the papers that have made suggestions concerning the matter think with us that an export duty should be levied upon all nickel ores and matte taken out of the country. Of course this can only be done by the Dominion Government; but the *Empire* suggests that the restriction should come from the authorities of the Province of Ontario. It says:

Any nickel mines in Algoma which are not yet alienated are the property of the people of Ontario, and Mr. Mowat will, under the circumstances, be responsible for a gross neglect of their interests if he allows another nickeliferous mine to be appropriated except on condition of manufacture within the country. Ontario has a right to enjoy this benefit from its valuable property. Our people cannot be deprived of this advantage except by a reckless sacrifice of their property, which would involve a gross breach of trust. The naval powers must come to us for nickel for their war ships, to say nothing of the certain demand for other purposes, and to surrender this wealth, with its attendant advantages, for the bare price of digging it out and carrying it away to enrich foreigners instead of our own people would be utterly indefensible.

We are aware that at the recent sale of timber limits in this province it was stipulated by the Ontario Government that the timber that might be cut upon those limits should be manufactured into lumber in Ontario, and not be taken out of the country as saw logs. The suggestion of the *Empire* is that no nickeliferous mine, now the property of Ontario, be alienated "except on condition of manufacture within the country;" and that "Ontario has a right to enjoy this benefit from its valuable property."

The right of the Ontario Government thus to place a restriction upon exports is questioned. Apparently this is a right that lies exclusively with the Dominion Government; and it is readily seen that much trouble and confusion might result from an attempt by any other power to exercise it. If the Ontario Government may thus restrict the timber business and the mining of nickel ore, it might also lay an embargo upon the export of manufactured lumber, of refined nickel, or any other products of the Province: and if it had a right to restrict exports it might claim the right to restrict imports also. In other words, it would be assuming functions that belong exclusively to the Dominion Government.

Stress is laid upon the fact that at least one very important nickel mine at Sudbury is the property of American capitalists, and that this valuable property has been surrendered to them with its attendant advantages, "for the bare price of dig-

ging it out and carrying it away to enrich foreigners," which condition is "utterly indefensible."

This, in our opinion, is not the proper light in which to view this matter. Canada abounds in extensive deposits of valuable minerals; but these are valuable only under development. It is a matter of small importance to Canada who they are who invest their wealth in this development. From the fact that but few of these deposits have as yet been worked, and that chiefly by others than Canadians, it may fairly be inferred that at present Canadians are not prepared to invest in them. What is needed is capital; and whether this can be brought into the country by Americans or Englishmen, or Germans or any others, for the development of these deposits, it should be and is gladly welcomed. We want the capital.

But when capital is invested in Canadian mines it becomes Canadian capital; and it is the right and duty of the Canadian Government to see to it that while the investors are protected in their enterprises, the country does not materially suffer from the exhaustion of its mineral wealth. In the case of our nickel deposits it may be said that Canada occupies a unique position. These deposits are very extensive and exceedingly valuable; and the working of them, including the manufacture of the refined metal, should give employment to armies of workmen. With the exception of the mines in New Caledonia, the French penal colony in the Southern Pacific ocean, and a few small mines elsewhere, Canada possesses the storehouse from which the world must draw its supply of nickel. In disposing of this nickel Canada will be well and satisfactorily remunerated if the ores that are drawn from her deposits are fully and entirely manipulated in Canada, and nothing but the refined metal taken away. It will not be satisfactory to stop at the smelting of the ores and the production of matte only. What Canada should have is works for refining the metal and putting it in condition ready for commercial uses; and the only way at present to secure this desirable end, is to impose an export duty upon all forms of nickel except the refined going out of the country.

IMPOSE THE DUTY.

ACCORDING to the *Cleveland Iron Trade Review*, the American owners of Canadian nickel mines snap their fingers and laugh at the idea of their being hurt in any way by any export duty the Canadian Government may levy upon nickel ores or matte when being taken out of the country. In discussing the question, our contemporary quotes what another American journal had said on the subject, which was to the effect that the United States was not necessarily dependent upon Canada for nickel; that that country contained extensive and sufficient deposits of the ore; that countries other than Canada and New Caledonia also possessed valuable deposits, and that the million dollars voted by the United States Congress was much more than necessary to buy all the nickel that country would require for many years for making armour plates for its navy. It also quoted what this journal had said regarding the duty of the Dominion Government imposing an export duty on nickel ore and matte, and says:

"To all of this the shrewd and wide awake American owners of Canadian nickel deposits will doubtless listen with interest

—and indifference Whether Canada or the United States build works to consume their product; whether the English or American Government gets ahead in ordering a supply for armour purposes, the sale of their product is assured; and therein lies the superior business tact of the average American pusher."

If the Canadian Government place an export duty on nickel ore and matte as in the opinion of many it should do, these American owners of Canadian mines, who are said to be "pushers," would not view the matter with the indifference our contemporary suggests. The sale of their product might be assured, but it is certain that product would not realize as much to them to the extent of the duty as they would otherwise expect. That is, if they persisted in manufacturing the refined metal in Ohio instead of Ontario.

The refining of the nickel in these Canadian ores means the investment of large capital in buildings, machinery and appliances, and the employment of large numbers of men, many of whom would necessarily be skilled artisans to whom large wages would be paid. This investment of capital and employment of labor should be in Canada, and the Dominion Government could force it if it desired to do so, and in this way give to Canada a fair return and remuneration for the mineral wealth taken from her. If these American pushers of superior business tact preferred to erect their works in Ohio, Canada could be recouped by the export duty alluded to. With the export duty imposed, these "pushers" would have the opportunity to choose between the establishment of their works in Canada, taking the refined metal away without restriction, or paying the duty.

There can be no hardship involved in imposing this export duty. If the machinery necessary in such works was not manufactured in Canada, the law as it now stands would admit it duty free. Every thing else is as cheap or cheaper in Canada than in the United States; and the saving of freight on refined metal over crude, or ore, would be an important item.

By all means let the duty be imposed, and let the refining works be erected in Canada.

EDITORIAL NOTES.

THE Mexican Government have placed an import duty of \$500 a carload on cattle from the United States, in retaliation for the McKinley Bill. The mills of the gods grind slow, but they get there allee samee.

WILL you walk into my Unrestricted Reciprocity Bill McKinley parlor? said the Yankee spider to the Canadian fly. But the Canadian fly is suspicious and exclaims, Those who go up your winding stairs to visit your gorgeous parlor, will ne'er come down again.

EVERY few days a small party passes through up to Dauphin. They are mostly from the United States. We have heard it stated that these are all Canadians returning to their allegiance. Such is not the case, fully one-third of the number were born and bred in the United States and in coming north are not at all actuated by sentiment.—Neepawa, Man., *Register*.

In our last issue we republished an item from the *Cleveland Iron Trade Review* in which it was stated that the statement

that good Canadian Bessemer ore could be laid down in Cleveland at \$3.90 per ton, duty paid, rested upon the assertion of Mr. T. D. Ledyard. In another column will be found a communication from Mr. Ledyard which bears upon the subject.

MR. ERASTUS WIMAN, 314 Broadway, New York, U.S.A.:—Dear Sir,—Will you kindly send a copy of your "broadside of cartoons" recently issued by you to the *Toronto Globe*. Close inspection of the pages of that paper fails to discover any knowledge on the part of the editor that he has received your favor. R.S.V.P.

"On equal terms, Reciprocity with Canada is out of the question."—General R. P. Porter, Superintendent of the United States Census.

Which means that if Canada wants Reciprocity with the United States it must be by Annexation. Declined with thanks. Canada is no pauper beggar for the smiles or favors of Uncle Sam.

AN American bell foundry concern, advertising their goods in a Canadian paper, makes this announcement: "No duty on Church bells." We regret to state that this is true. But we do not like the ring of it: and it is not of the sort of music that encourages the manufacture of church bells in Canada. Like the steel rail business, the industry can never be established here while the article is on the free list.

To the *Toronto Globe*:—Esteemed contemporary,—Have you seen or heard of a certain "broadside of cartoons" sent out by Mr. Erastus Wiman from his headquarters, 314 Broadway, New York, U.S.A., to the country storekeepers and merchants in Ontario, in which certain prominent Canadian statesmen are lampooned, and which the recipients are requested to post in conspicuous places in their establishments "as a means of education?" Please reply.

A SHIPMENT of August cheese, amounting to about 6,500 lbs., was made to-day from the Manitou cheese factory to Winnipeg. The consignment was sold at ten cents per lb., giving the patrons a trifle over seventy cents per 100 lbs. for their milk. Several small lots of cheese have been disposed of at different times during the summer, the highest price received being twelve cents for May cheese, and the lowest nine and a quarter for July make. The product for September and October, amounting to 10,000 or 12,000 pounds, will remain in the factory for future disposal, and as the prospects are good it is expected that an advanced price will be realized on this lot.—Manitou, Man., *Mercury*.

THE Canadian Minister of Customs was waited upon this week by representatives of the National Dispatch and the Canada Atlantic road, asking permission to bring car wheels into Canada free of duty to replace wheels which may be broken on cars in Canada. This concession is not allowed to Canadian railroads in the United States, nor to the manufacturers of car wheels in Canada, and consideration of the matter by the Government was thought to be necessary. The Minister suggested that a formal request be made, when action would be taken upon it.—*American Manufacturer*.

The Minister of Customs has, very properly, declined to grant the desired permission. Canada is engaged in the manufacture of car wheels.

THE Tariff Bill introduced in the French Chamber of Deputies on Saturday last, discusses in its preamble the protective

tendency among the nations of to-day, and special reference is made to the high tariffs of the United States, Canada and the South American States. The compliment is a doubtful one, but another nation is about to put itself in a position to share it. Russia recently raised her import duties twenty per cent., but this was only a provisional step pending the adoption of a new tariff, which a government commission is now arranging, and which, according to the *Novoe Vremya*, will be the highest in Europe.—*Mail*.

Protective tariffs are the order of the day among enlightened nations. Great Britain will again come to it.

"THE only way for Canada to secure the United States market of sixty-four millions of people is to become part of the American Union."—*General R. P. Porter, Superintendent of the United States Census*.

General Porter evidently does not understand the situation. Canada is not dying for Reciprocity. For years she has had a standing offer to the United States to have a free exchange of certain natural products, but it has not been accepted. American manufacturers will never be allowed unrestricted access to Canada in competition with Canadian manufacturers. No, not just yet awhile. Neither will Canada ever become a part of the American Union. This is a frozen fact imparted in strictest confidence.

GENERAL R. P. PORTER, Superintendent of the United States Census Bureau, was recently in England, and in a newspaper interview had this to say about Canada :

Canada is bumptious, and at times irritating. That little neighbor of ours wants to secure, in return for the market of five or six millions of people, one of sixty-four millions. What Canada does or does not is not a matter over which the American people spend many sleepless nights. To assume that the McKinley bill was intended as an indication of unfriendliness to Canada is grotesque. On equal terms, Reciprocity with Canada is out of the question. The only way for Canada to secure the United States market of sixty-four million of people is to become part of the American Union.

Tra la la.

THERE are some things that the average farmer can comprehend. He can comprehend the fact that before the N.P., when he had occasion to buy a self-binder he had to plank down at least \$300 for it, the money coming from wheat sold for about eighty cents a bushel. Now he can purchase a better machine for half the money, while his wheat is worth quite as much or more than it was then. He can also comprehend that in the good old days of a tariff for revenue only he had to pay about \$75 for a farm wagon, while now a better wagon can be had for less than half the money. He can now, under Protection, buy a suit of clothes for \$10 that would have cost him \$20 before Protection. In the good old days he had to pay from eight to ten cents a pound for common fence nails that can now be had for three or four cents. Our farmers are well-fed, well clothed, live in comfortable houses and are laying up money.

MR. MUNDELLA, M.P., has added his voice to the chorus of English authorities who have taken advantage of the McKinley Bill talk to tell Canadians that if they proclaim Free Trade they will be masters of the situation. Unfortunately, Mr. Mundella does not go into particulars. There are two nations with which Canada largely deals: England, partly because commerce follows the flag and partly because she enforces no duties against

Canadian products, and the United States, from its proximity to our doors. The United States has done what it can to shut its markets against us and all the world, and a Free Trade tariff in Canada will not open the door by an inch. With English manufacturers we could no more compete than any other nation which admits England's industrial superiority. We would have a much livelier competition at our own doors, however, and cheapened goods would mean, as they did before, cheapened wages, and, perhaps, no wages at all. That England is crying out against the McKinley Bill is evidence that Free Trade theories are not proof against the facts of Protection when Protection is generally put in force against the products of Free Trade countries.—*Gazette*.

It is now shown that the Dominion Metal Company, who own nickel mines at Sudbury, are and have been making frequent shipments of nickel matte manufactured by them to England and the Continent of Europe, where the article is in strong demand. It is also stated that the United States Secretary of the Navy is or has been in communication with the Dominion Metal Company asking quotation of prices for matte from which to manufacture nickel for the armor plates for the American navy. It will be noticed that the Secretary does not ask for prices for refined nickel, but for matte. The American tariff imposes a duty of \$200 a ton on refined nickel, but matte is free. The Dominion Government should impose an export duty on nickel matte going to any country where prohibitory or hostile duties are levied upon Canadian products. Whatever moneys might accrue to the Dominion Treasury from this export duty might well be devoted to paying premiums upon exports of refined nickel.

CARLYLE said in his graphic way: "The ultimate question between every two human beings is—Can I kill thee or canst thou kill me?" Beyond doubt this has been the ultimate question between every two neighboring nationalities from earliest time, and will be for all time to come. Scotland and England carried on tariff and other hostilities until Scotland became absorbed into the British Empire. In these contests it follows from the nature of things that the weaker combatant usually comes out second best, proving the doctrine of the survival of the fittest. The *Globe* offers these facts as reasons why Canada should surrender to the United States. It is too early in the contest to admit that the United States will necessarily survive as a nation and Canada go under. A thousand years or so hence may determine the question. The union of Scotland and England is no precedent for Canada and the United States to follow—certainly not for Canada—nor will she. There is a nobler and higher destiny in store for her, and her sons and lovers will work it out.

THE following items appeared a few days ago in the news columns of the *Montreal Herald*:

Capt. Reed, of the Dominion Line, told a *Herald* reporter yesterday that the incoming steamships of their line are all well loaded, the freight business having increased somewhat on the other side. Their homeward bound steamers also have all they can carry. Grain is somewhat behind in coming down from the inland points, but there is plenty of meat, cheese, etc., to handle. Capt. Reed stated that it looks as if they could not handle all the cargo that is offering for their Bristol route this fall, so great is the press for space.

The German steamship *Steinhoff*, Capt. Spliedt, has arrived in port, and from her deeply loaded appearance it is evident

that the dearth of freight on the other side has disappeared. Capt. Spliedt confirmed this opinion when asked by a *Herald* reporter. The steamer brought an immense quantity of wire in coils, and that, together with boxes of glass, comprise a large percentage of the Steinhof's cargo.

In its editorial columns the *Herald* is a weeping Jeremiah over Canada's lack of foreign trade; but its news columns tell a different story. Such items as the above are published by it about every day.

MR. JOHN CHARLTON, in his recent speech at Port Perry, Ont., said that he interpreted the N.P. to mean that, while the Canadian farmer must compete in the great free markets of the world—with the ten cents per day labor of India—he is forced to buy at higher prices in protected markets. There were several features of the question, however, that Mr. Charlton did not touch upon, but which would have been interesting to the farmers in his audience. Canadian wheat is protected to the extent of fifteen cents per bushel against Indian wheat grown at a cost for labor of ten cents per day. According to General Booth, of the Salvation Army, ten per cent. of the population of England are paupers, steeped in the depths of want and distress. England has Free Trade, but ten per cent. of her people are unable to obtain food, even wheat from India grown at a cost of ten cents per day for labor. General Booth says that unaided these poor people, depending upon their earnings, would starve to death in a month. This in Free Trade England. Canadian farmers had better buy at what Mr. Charlton calls "high prices" in protected markets, selling their wheat at protected prices, than compete with India.

A SILLY and uninformed correspondent of the *Globe*, protesting against the "Jingoism" displayed in the Public schools of Toronto in celebrating the battle of Queenston Heights, says: "What if the Americans were to take suddenly to celebrating the battle of New Orleans? We should say it was a piece of Yankee swagger, such as would always be abhorred by the truly brave." The poor, ignorant writer should visit the United States on the eighth of January, the anniversary of the battle of New Orleans, when General Andrew Jackson thrashed the British. The occasion is never neglected, and the victor is now known in many parts of the country as Saint Jackson. It was this that made him President of the United States; and, although the good saint has been in glory many years, in those parts of the country where the Democrats are in the ascendancy, Jackson is still voted for for President. The great American national song, "The Star Spangled Banner," was written in commemoration of a battle between the British and American forces at Fort McHenry in Baltimore harbor, and it is sung on all occasions, but no Britisher ever takes exception to it, nor is the singing of it by American school children considered as "sowing the seeds of international hatred and bitterness" in their breasts. Canadian children will never be scyophants.

In 1891 we are promised the opening of the world's first great ship railway. The event will be one of vast interest to the scientific and to the commercial world, for if it proves a success in actual practice there seems to be little doubt but that this method of transporting cargoes overland in bulk will be adopted in many places. The actual cost of construction and conveyance is, according to Captain Eads and other well-known

engineers, far less than the building of Canals. The ship railway in question is now under construction across the narrow strip of land which divides the St. Lawrence river from the Bay of Fundy. At the Bay of Fundy end the work of building a huge dock capable of lifting a vessel and cargo some forty feet, is under way, while at the St. Lawrence end equally extensive preparations are being made of a slightly modified character. There are seventeen miles of land to be traversed between the two, and in a year or two we are promised the spectacle of seeing ships of 2,000 tons or more lifted bodily and carried on trucks with innumerable wheels across hill and dale. Some 500 miles of travel are thus to be saved, and the Canadian Government has largely subsidized the undertaking. Its prosperity and mechanical success will be watched with peculiar interest.—*New York Commercial Advertiser*.

The general information conveyed in this item is correct, but our learned contemporary is away off in his geography when it connects the Bay of Fundy and the St. Lawrence river by a railway only seventeen miles long, while several hundred miles intervene.

A KINGSTON, Ont., correspondent of the *Cleveland, Ohio, Marine Review*, showing how the New American tariff will benefit Canadian shipping, says:—

A phase of the McKinley Bill and its effects on Canadian commerce, which has not been touched on yet, is its effect on the transportation of grain down the St. Lawrence river. As is generally known, our barley was sent across the lake in vessels to Oswego, from which point it was distributed throughout the United States, and where it was required by maltsters. It now looks that in the near future the Americans will not get our barley, even though they are willing to pay a much larger figure than they paid prior to the passage of the McKinley Bill, and for this reason: Last year the Government distributed throughout the Dominion seed grain of what is known as two-rowed barley, a cereal which is in great demand in the English market. In many places it grew and thrived to such an extent that the prospects are that in a few years it will be generally grown in this country. It will find its way to England, and the result will be that the McKinley Bill will prove for Canada a blessing in disguise. The grain will all go down the St. Lawrence river to Montreal for ocean shipment and this extra freight will demand extra tonnage, which will be provided, and the St. Lawrence route greatly improved. Capt. Gaskin, of the Montreal Transportation Company, stated that, in his opinion, when the growth of two-rowed barley became general it would increase the St. Lawrence trade by fully 6,000,000 bushels per year. These are bright prospects.

UNCLE SAM will not permit a man resident in Canada to work in the United States; he will not permit a Canadian officer to work on an American vessel; he proposes to enact a law which will declare that no alien can hold real estate in the United States; he has endeavored to give Canada a death-blow by means of the McKinley Bill; he has worried Canadian railways and has made all sorts of threats against them; he has prohibited Canadian vessels from carrying goods from one American port to another, and has in various other small and mean ways endeavored to annoy and distress Canada. What does he get in exchange? He gets free Canadian logs, which take with them the men who should be manufacturing them in this country. He gets a nickel mine, owned by an Ohio company, which proposes to give the American Government the first choice over all other Governments in the purchase of the products of the mine. Are we not just a trifle too generous with our small-souled neighbor?—*Hamilton Spectator*.

Decidedly so. Our American friends, however, seem to be well satisfied with what they do in the direction indicated by the *Spectator*: and if such things work well for them, why

would it not be well to try and see if some of them would not work well for us? How would it do to pass a law declaring that no alien could hold real estate in Canada? This would do for a starter, and under it certain American owners of Canadian nickel mines might become good citizens of Canada. At any rate we can impose an export duty on nickel ore.

ENGLISHMEN know that England and Scotland and Ireland and Ireland have profited beyond calculation by free exchange, and that even the very limited Reciprocity established between England and France by the Cobden treaty of 1860 proved highly beneficial to both.—*Toronto Globe*.

England, Scotland and Ireland are political divisions of the United Kingdom. Maine, Texas and California are political divisions of the United States. Canada is no part of the United States. England and Scotland never had "free exchange" while they were separate nationalities, and they did not profit by such exchange until they were united under the British Crown. "The least said about Ireland having profited by free exchange with England the better—the chronic distress in that unfortunate country tells a different tale. The lesson the *Globe* teaches in alluding to England, Scotland and Ireland is that if Canada wants to profit "beyond calculation" it must be by becoming a political division of the United States—that is, by Annexation. Maine, Texas and California profit beyond calculation by "free exchange," but these are political divisions of the United States. What does the *Globe* mean by Reciprocity between England and France? It is silly to speak of the existence of "Reciprocity" with England (perhaps the *Globe* means Great Britain) when that country has Free Trade. The "favored nation" clause of the treaty between these countries may have proved highly beneficial to Britain, but France does not think so, for that treaty, now about expiring, is not to be renewed.

A PATRIOTIC New Yorker sought to provide himself with a handsome "Stars and Stripes." Upon applying to a firm of flagmakers in his own city he found that the lowest price at which he could obtain the best flag of the required size was \$67.50. This was too much, so he sent to England for the article. The cost there was \$29.20, and the duty levied on the import was \$19.94, making a total of \$49.14. The flag, moreover, was made of a quality of goods not to be bought in the United States at any price. Writing to the press about the transaction, the gentleman says: "I suppose it will not be considered patriotic (another name nowadays for prejudice) to have imported this flag, and to have contributed to Uncle Sam's depleted treasury, instead of to the home manufacturer's, but I have thereby saved \$18.36, and have obtained a superior flag."—*Mail*.

There never was a more ridiculous pack of nonsense printed than the above, and it carries its contradiction on its face. The cost of the flag in England was \$29.20, and the duty \$19.94, making the total cost \$49.14, which would be \$18.36 more than the price of the home made-article. This difference is about 37½ per cent. above the foreign cost, duty added. Now if the foreign flagmaker could sell Stars and Stripes to Americans, duty paid, at a profit of 37½ per cent., he could soon run American flag makers out of their own market, which, we believe, he has not yet done. Then the yarn about the quality of the material is too thin, even for a flag. It is well known that American bunting is the equal of any made,

and it is certain that if any better were made elsewhere it would be offered for sale in the United States. The fact is, American bunting costs no more than English bunting.

IN a circular recently sent out by Secretary Nicholls, of the Canadian Manufacturers' Association, allusion was made to the fact that money was being collected in the United States for the purpose of creating a sentiment in Canada averse to Protection, and in favor of annexation to the United States. A small pictorial paper called *Grip*, published in Toronto, is enlisted in this business, its cartoonist devoting his talent to producing pictures calculated to place Canada in as unenviable light as possible; and some of these cartoons have been assembled and published in large poster form, and sent broadcast throughout the country, all at the expense of Mr. Wiman and his Yankee friends. These pictures are exceedingly stupid; and it is surprising that, having determined to invest the money in this way, the managers could not have discovered something new, original and entertaining wherewith to amuse the people. The picture being sent out is accompanied by the following circular:

314 BROADWAY, NEW YORK, U.S.A.,
October, 1890.

DEAR SIR,—The enclosed broadside of cartoons, from the clever pencil of J. W. Bengough of *Grip*, is a rare compilation of humor in the great question now before the Canadian people.

I will take it as a personal favor if you will place this poster in a conspicuous place in your establishment, that it may be a means of amusement and education to your customers.

I will gladly reciprocate this kindness when opportunity offers. An acknowledgment by postal card, addressed as above, will be esteemed by

Faithfully yours,
ERASTUS WIMAN.

SPECIAL ADVERTISEMENTS.

Advertisements will be accepted for this location at the rate of two cents a word for the first insertion, and one cent for each subsequent insertion. Subscription \$1.

TISDALE'S BRANTFORD IRON STABLE FITTINGS.—We lose no job we can figure upon. Catalogue sent free. The B. G. Tisdale Co., Brantford, Canada.

A DYER.—Blue vats and fancy colors in wool and piece. Fast carriage green cloths, tricots, flannels, etc., etc. Am at present engaged in the States, but desirous of coming to Canada. Address, GUBELINUS, this paper.

FOR SALE.—In town east of Toronto, Two Set Woolen Mill, fully equipped and in good running order; never-failing water-power, main building stone, 50x150 feet, three stories; picker house, brick, 24x30, two stories; railway and water convenient for shipping, will sell with or without machinery. For further particulars address this office.

FOR SALE in Kent County, Michigan, the Buchanan Mill property consisting of a first class lumbering mill the exten-

sive water power in connection with it including the entire power furnished by the river with real estate on both sides of sixteen acres, situate one mile from Main Street of Lowell, a rich farming country surrounding an excellent location for paper mill, furniture factory, woolen mill and the many uses that require power. Also a splendid home and farm of 87½ acres with buildings, fruit, evergreens, etc. For further information call at the premises of JAS. R. BUCHANAN, Lowell, Michigan.

TO MANUFACTURERS.—The most desirable factory site in vicinity of Toronto, or equivalent cash bonus will be given free to suitable parties who will erect a factory thereon. Correspondence invited. Address GEO. F. COOK, 92 Church Street, Toronto

TO MANUFACTURERS.—The Town of Thorold, Welland County Ontario, is a splendid site for manufactures of all kinds, and reasonable encouragement will always be given for the settlement of bona fide industries. It is situated on the boundary between the Counties of Lincoln and Welland; population, 3,000; lighted by electricity (public and private circuits); electric street railway connection with the City of St. Catharines, four miles distant; nine miles from Niagara Falls; the New and Old Welland Canals, also the Welland (G.T.R.) and Niagara Central Railways, all run through the town; water power from the canal; bonded debt small; situation, on the brow of the mountain; overlooking Lake Ontario, most picturesque; public health not excelled; five churches; first-class High school, also two Public and one Separate school. Any information desired will be cheerfully given by application to JAMES LAWSON, Mayor.

The Canadian Cultivator, published by Mr. George H. Bradford, Sherbrooke, Que., is a new advocate for public favor, the October number being the initial one of the enterprise. As its name indicates, it is devoted to the interests of the farm, garden and household.

The Dundas Star is a new journalistic applicant for public favor. It is published weekly at Dundas, Ont., and it thinks it will probably be Conservative in politics. That is, it will be if the Conservative leaders consult the publisher, and govern themselves accordingly.

The Cleveland Iron Trade Review has sent us the iron and steel schedule of the new American tariff law (McKinley Bill), in which the new rates are compared with the old. The pamphlet is in convenient form for reference, and will be exceedingly useful for that purpose.

The New England Magazine is making itself very attractive to Canadian readers. Its September number was preëminently a Canadian number, and the interest which that number aroused will be held by the fully illustrated article in the new November number, on "Fifty Years of a Canadian University," by J. J. Bell, M.A., Queen's University, Kingston, which celebrated last year its fiftieth anniversary, is the subject of this article, which is enriched by pictures of the old and new homes of the University, a view of Kingston, and portraits of Chancellor Fleming, Principal Grant and the leading professors. It is an article which will have interest to many in Canada besides the graduates of Queen's University.

The London Advertiser is making offers for subscriptions that are remarkably liberal, and that will certainly bring a rich reward. For only \$3 the daily edition (eight to twelve pages), including that excellent eight-page monthly, *Wives and Daughters*, will be forwarded for one year. *The Western Advertiser*, appearing each week in twelve to sixteen-page form, has been vastly improved of late. It will be sent with *Wives and Daughters* from now to the close of 1891 for only \$1. Besides paying agents a liberal commission the publishers offer \$500 in gold to the most active workers. This is no lottery or "allotment" scheme, but is a straight business offer for

honest work. Sample-papers and terms to agents will be sent on application to Advertiser Printing Co., London, Ont.

The popular Horticultural journal, *Vick's Illustrated Monthly Magazine*, will close its thirteenth volume with the December number. Its circulation is large and increasing, and it makes its monthly visits to all parts of the country, exercising, educating and refining influence wherever it goes. On garden work, flower cultivation, house plants, fruit culture, there is no higher authority. Each number contains a handsome colored plate of flowers or fruit, and its editorial and correspondence are of the highest interest and practical value to all who cultivate gardens, fruit grounds or house-plants. Some of the best writers in the country contribute to its pages, and the volume for 1891 will contain each month what will be worth many times its cost to its readers. Its editor, Charles W. Seelye, is thoroughly experienced in his work, and its publisher, James Vick, is doing essential service to the community in issuing this beautiful magazine. Price, \$1.25 a year.

The "Quintessence of Socialism," by Prof. A. Schaffle, former Minister of Finance in Austria.—Translated from the eighth German edition under the superintendence of Bernard Bosanquet, M.A., formerly Fellow of University College, Oxford. Paper, 15 cents. *The Humboldt Publishing Co.*, 28 Lafayette Place, New York. This number of *The Humboldt Library* is from the pen of one holding high rank among the economists of Germany, as well as in the political councils of the Empire of the Hapsburgs. What we need at the present time is an accurate knowledge of what Socialism really is, for there is no gainsaying the fact that it is a mighty movement of ideas fast razing to the ground the old order of things. Recent events in Germany give striking attestation of its stupendous power. If, therefore, we desire to get a thorough knowledge of the subject from a scientific standpoint, we must read "The Quintessence of Socialism."

The twenty-second volume of *Alden's Manifold Cyclopaedia* embraces the titles from Legal to McClure. The great merits of this work—its freshness, fullness, accuracy; its combination of dictionary with cyclopaedia; its convenient form, and the high degree of skill with which it is being directed—seem to increase with each succeeding volume. Among a great number of interesting topics treated in this volume, we notice Letters and Articulate Sounds; Libraries, about seven pages; Light; Lithography; among the important places are Leipzig, Leyden, Liberia, London, Long Island; among States, Louisiana; in the line of biography we find Leibnitz, Lessing, Pres. Lincoln, Liszt, Livingstone, the explorer, Locke and Longfellow. As an educator in the family or school, or assistant in the office or the library, this work is invaluable, and its cost is so extremely low as to place it easily within the reach of all. Specimen pages and easy instalment terms of payment may be had on request. John B. Alden, publisher, New York, Chicago and Atlanta.

Good Housekeeping, which has hitherto been published as a fortnightly, will soon discard that rather inconvenient arrangement and fall into line as a monthly, taking a magazine form. Some new features will also be introduced, among which mention may be made of a series of articles on "Ten Mornings in the Kitchen," by Miss Parloa. The number for October 25th ends the eleventh volume, concluding, also, the valuable series on "The Head, the Hands, the Feet," which has been running through a dozen numbers. The publishers, Clark W. Bryan & Co., Springfield, Mass., show a laudable determination to advance the merit and the popularity of this already admirable home visitant. Regarding the change in form, which will be with the January number—to be issued early in December—it will contain more than double its present number of pages, and will be more convenient than it now is. The price of copies and subscriptions will then be twenty cents a number, or \$2.40 for a full year, instead of \$2.50 as now, thus placing all on an equal footing, with no distinctions between those who buy from the news-stands and those who subscribe at the publication office.

The answer of the publishers of Webster's Unabridged Dictionary to the attempt of pirates to steal their thunder by issuing cheap phototype reproductions of the antiquated edition of 1847, is the publication of a new and completely re-edited and enlarged edition of the authentic Unabridged, which, as a distinguishing title, bears the name of "International." The publishers have expended in the last ten years over \$300,000 in the preparation of this new book before issuing the first copy, and the improvements of the various editions since that of 1847 have cost over three-fourths of a million of dollars for editing, illustrating, typesetting and electrotyping alone. This new Dictionary is the best book of its kind in the English language. It unlocks mysteries, resolves doubts and decides disputes. The possession of it and the habit of consulting

it will tend to promote knowledge, literary taste and social refinement. For every family, the members of which have mastered the art of reading, the purchase of Webster's International Dictionary will prove a profitable investment, and the more they advance in knowledge and cultivation the more they will appreciate its aid and worth.

A MAN of truly heroic make was Dr. Samuel Gridley Howe, whose life-story is told by his daughter, Mrs. Florence Howe Hall, in the November *Wide Awake*; the article takes its title, "A Modern Hero," from Whittier's noble poem of which Dr. Howe was the subject; the article is accompanied by a portrait of this great champion of the blind and of all distressed souls. "Golden Margaret," by James Purdy, an episode of the Civil War, is the initial story of the number; further on appears a Southern dialect tale of great strength, "Lucy Pervear," by Margaret Sidney. A Western story, "How Tom Jumped a Mine," is from the pen of M. E. S. Stickney. Miss Risley Seward gives part II. of a true ancestral war-romance, "A Story of 1812," with Commodore Perry for one of its heroes. Mrs. Frémont contributes the last of her series, "The Will and the Way stories." An excellent school-tale, "Herbert Pender's Translations," is by William B. Chisholm. Miss McLeod's Acadian story, "Boy Blue of Grand Pré," is one of the most interesting of the Canadian series. "Crinoids," by H. H. Ballard. "Thanksgiving at the White House," by M. S. Mrs. Claffin's "Margaret-Patty Letter," "A Mother Goose Plum Pudding," and several poems, together with the "Men and Things," pages of anecdote, conclude a good number. *Wide Awake* is \$2.40 a year. D. Lothrop Company, Publishers, Boston.

CANADIAN IRON ORES.

To the editor of THE CANADIAN MANUFACTURER :

SIR,—In corroboration of what I have said regarding Ontario iron ores, and in reply to the *Cleveland Iron Trade Review*, I would quote the following statement, made under oath to the Ontario Mining Commission, by Mr. W. J. Rattle, M.E., of Cleveland, Ohio, an eminent iron expert.

Mr. Rattle says: "There is no question but that they have the true formation for iron ore bearing rocks in Darling township. We found specular ore in several places on the range; in one place we were shown a vein of magnetite thirty-five feet in width. At another place we saw hematite at least fifteen feet wide and traced it 200 feet. I should judge that it was a very good quality of ore."

"I am very well satisfied with the outlook for ore in Ontario, and judge the ores to be of good quality. I think the prospects are such as to justify reasonable development. This applies both to magnetic and hematite ores. We were on three magnetic ranges, one of which had a great deal of sulphur; the others had not."

"In one district I visited, I do not believe there is any sulphur in the ores. I believe you have a magnificent outlook for iron. I have been intimately connected with the smelting of iron since 1872. I think these Ontario ores would be easy to smelt, as much so as our ores from Lake Superior. You have ample supplies of ores here to make the best quality of steel rails, and in sufficient quantities to start a blast furnace."

Before the same Commission Mr. W. B. Folger, of Kingston, Ont., says:

"The Glendower mine is in a position to take out 400 to 500 tons a day. At a depth of 200 feet the vein is from twenty to forty feet wide, the ore averaging 60 per cent. iron. It shows upon the surface for fully half a mile, and the foot and hanging walls are better defined as we get deeper down."

Capt. N. D. Moore, well known as one of the most experienced prospectors in the Gogebic iron district of Michigan, says:

"I am favorably impressed with the occurrence of iron in the Kingston district. I believe there is plenty of ore here of good quality. While the veins may not be as large as those of the Lake Superior district, I think that as far as length and depth are concerned they are as good. As to quality, I think they compare very favorably with Lake Superior ore."

The above evidence applies to the Kingston district which is a very important one, but there are many other portions of Ontario which contain excellent ores.

The price at which ores can be mined and delivered to market depends very much on the nature of the deposit. The width of the vein and the freedom of the ore from rock matter are important factors. Some Ontario iron mines could produce ore ready for market at \$1 per ton, while in others it would cost double as much.

Yours, etc.,

T. D. LEDYARD.

TORONTO, Oct. 22, 1890.

Manufacturing.

This department of the "Canadian Manufacturer" is considered of special value to our readers because of the information contained therein. With a view to sustaining its interesting features, friends are invited to contribute any items of information coming to their knowledge regarding any Canadian manufacturing enterprises. Be concise and explicit. State facts clearly, giving correct name and address of person or firm alluded to, and nature of business. Subscription \$1.

THE Halifax Distillery Company is being organized at Halifax, N.S., with a capital stock of \$400,000, for the purpose indicated by the name.

THE planing and shingle mill of the Beck Manufacturing Company, at Penetanguishene, Ont., was destroyed by fire October 16th, loss about \$3,500.

MR. FERDINAND AHRENS has secured the factory in Orillia recently occupied by the Acme Manufacturing Company, and will engage in the manufacture of veneers.

THE Canadian Pacific Timber and Lumber Company is being organized at New Westminster, B.C., with a capital stock of \$500,000 to engage in the saw mill business.

THE Dominion Cotton Mills Company will be incorporated, with headquarters at Montreal, with a capital stock of \$100,000, for the purpose of manufacturing cotton goods.

THE Vancouver Candy Factory, Vancouver, B.C., now being built, and of which Mr. S. McHugh will be manager, will have capacity to manufacture two tons of candy per week.

MR. JAMES GOLDIE, proprietor of the People's flouring mill, Guelph, Ont., is making considerable improvements to his mills, which will increase their capacity to 700 barrels a day.

THE Brantford Furniture Company, Brantford, Ont., has been incorporated with a capital stock of \$25,000 for the purpose of manufacturing furniture, fancy wood-work, mantles, etc.

MESSEES CLIFF & FORRESTER, Lucknow, Ont., manufacturers of furniture, have been voted a loan of \$5,000 from that town and will enlarge their factory, and put in new engine, boilers, machinery, etc.

THE elevator capacity of the Canadian Pacific Railway Company, at Fort William, Man., is being largely increased. An annex is being built which will have capacity to hold 1,300,000 bushels of grain.

MESSEES J. G. ALLAN, of Hamilton, Ont., and R. J. Hay, of Cleveland, Ohio, are erecting a factory in the former city for the manufacture of foundry facings. They expect to have it in operation in a few weeks.

MESSEES REID & CURRIE, bridge builders, New Westminster, B.C., have been awarded the contract for the construction of an iron bridge over the Nickolmeckl River, B.C., for the Westminister and Southern Railway.

MESSEES CAMPBELL & STEVENS, proprietors of the Kent Mills, Chatham, Ont., are adding a corn meal plant at a cost for machinery alone of \$8,000, and which will have capacity to manufacture 200 barrels meal per day.

THE Calgary Woolen Manufacturing Company, with headquarters at Calgary, N.W.T., will be incorporated with a capital stock of \$25,000, to take over and operate the woolen mill near that place; and to crush and grind grain also.

THE Canada Pipe and Foundry Company, Montreal, are furnishing that city with 2,000 tons of cast iron pipe from four to twelve inches diameter, at a cost of \$77,000, which is \$7,992 less than the lowest offers of foreign manufacturers.

THE Crossen Car Company, Cobourg, Ont., has just completed and shipped thirty narrow gauge freight cars for the Hall's Bay Railway, Newfoundland. This is a new road but recently commenced, extending from Placentia to Hall's Bay.

A DISASTROUS fire visited Kinmount, Ont., October 27th, the saw mill, owned and occupied by C. J. Smith, being destroyed. The mill, storehouse, boarding house, supply store, 2,900 cords of wood and 20,000 ties were consumed. Estimated loss about \$12,000.

MESSRS. GOLDIE & McCULLOCH, Galt, Ont., in their advertisement in page 291, enumerate some of the special bargains they are offering in the way of steam engines, boilers, machinery, etc. Those who may be in need of any such goods should communicate with the advertisers.

A COMPANY is being organized at Winnipeg, Man., with a capital stock of \$50,000, to manufacture a steam plow invented by Mr. C. P. Brown, of that place. The incorporators include Hon. J. C. Schultz and Mr. C. P. Brown, of Winnipeg, and Hon. W. E. Sandford, of Hamilton, Ont.

THE Menasha Wood Split Pulley Company, of Menasha, Wis., have recently filled orders for their hickory pulleys from Cedarburg Woolen mills; Minnesota Furniture Company, Soudan, Minn.; Piedmont Pulp and Paper Company, Piedmont, W. Va.; and Jonesboro' Cotton Mills, Jonesboro', Tenn.

THE Ball Electric Light Company, Toronto, placed an electric plant in the penitentiary at Kingston, Ont., which has been inspected and received by the Government. There are twelve lights ranging from ten to thirty-two candle power. Fifteen miles of wire was used. The premises are finely illuminated. The plant cost \$15,000.

THE prospectus is issued of the Halifax Sugar Refinery (limited) capital £150,000. The company is formed in England to buy the Woodside refinery, which can produce eighty tons of refined sugar per day, and it is claimed ought to yield an annual profit of at least £25,000. It is proposed to pay £60,000 for the Woodside property £40,000 in cash and the balance in shares or cash.

THREE buildings, comprising a part of the iron-working establishment of Messrs. Abbott & Co., Montreal, were destroyed by fire October 20th, loss about \$40,000. The buildings destroyed were the machine shop, nail mill and horse-shoe factory. The large and costly roller mill escaped. Over ninety hands are thrown out of employment. The works will be rebuilt immediately.

THE new roller flour mill established at Nicola, B.C., by A. E. Howse, the second one to be completed in that province, has a capacity of fifty barrels per day. It is operated by water power. The mill is a Geo. T. Smith short system. The machinery was furnished and set up by Preston & McKay, Boissevain, Man. The settlers of the Nicola district gave a bonus of \$1,500 for the mill.

AN electric company has been awarded a contract for lighting the coal mines near North Sydney with the incandescent system. The company is to put in twenty-five lights, some of which will be 800 feet under ground. This will afford absolute safety from fire damp, and give the miners a better light to work by than formerly. Sydney Mines will be the first mine lighted with electricity in Nova Scotia.—Amherst, N.S., *Gazette*.

MR. CHARLES P. CAMERON, of Colborne, Ont., has made an important discovery of silver and nickel on lot 32 in the 2nd concession of the township of Chandos, Peterborough county. The vein of silver is 50 feet wide, and is now being worked. It has yielded as high as \$44 to the ton. The vein in which the nickel is located is 100 feet wide, and it is also being worked with good results.—Belleville, Ont., *Intelligencer*.

THE steamer *Norseman*, which plies between Port Hope and other north shore ports of Ontario and Charlotte, N.Y., is to undergo extensive repairs during the coming winter. The boat is to go on the dry dock at Kingston, where she will be cut in two and her length increased by twenty-eight feet. New compound engines will be put in, by means of which the passage across the lake will be reduced to between three and four hours.

A NEW company, the Kidderminster Manufacturing Company, has lately been formed in England by an amalgamation of some old and well-known English carpet manufacturers, with a capital stock of £350,000 sterling, and employing some 1,500 people. This company propose to start a carpet manufactory in Canada which will employ 400 work people, and for the present the company will confine themselves to the manufacture of Brussels.

THE business of the Nova Scotia Glass Company, at New Glasgow, has been taken over by the Diamond Glass Company, which is composed principally of Western capitalists. The factory, which was closed some months pending the transfer, is now working at its full capacity, with nearly one hundred hands at work. Mr. W. G. Beach, the manager, states that they are now turning out a class of goods which is destined to equal the American article.—*Eastern Chronicle*.

THE Dominion Government have purchased four Mergenthaler

linotype machines for use in the Government printing bureau, and it is altogether probable that a large number more will be ordered as soon as these are in perfect working order. According to the terms of the contract, they are to be placed in running order in the Government printing office by Dec. 15th, and it is understood they will be employed in setting up the debates of the House during the session.

OWING to unavoidable delay in placing the new machinery, the Victoria Roller Flour Mills will not commence practical operations until about November 1st. They have now in the storeroom 750 tons of wheat, the greater part Provincial grown, which is of decidedly better quality than that imported from the other side of the line. The new mills have a guaranteed capacity of 200 barrels per diem, but will, probably, exceed that output by fifty or 100 barrels.—Victoria, B.C., *Colonist*.

THOMAS WALLACE, of Chicago, who claims the title of "King of Oatmeal Mill Builders" is in the city to erect the contemplated works of Brackman & Ker near the outer wharf. Mr. Wallace promises that work will be commenced at once, and the greater part of the machinery will be built here by the Albion Iron Works Company. Mr. Wallace was the builder of the celebrated mills at Timsonburg, Ont., and is paid by The Trust not to engage in mill building in the United States.—Victoria, B.C., *Colonist*.

IN connection with the visit of Mr. Maxwell, an Ontario oil expert, to this province, it is announced that first class petroleum has been discovered upon the farm of Mr. E. Vine, in Petchosin district. No effort has been made to develop the deposit, but there is a probability of a refinery being erected and the manufacture of coal oil being entered into if the find proves to be a lasting well. Mr. Maxwell is now in the northern part of the Island, but on his return to Victoria he will be induced to visit and inspect the prospects on Mr. Vine's property.—Victoria, B.C., *Colonist*.

THE Bell Organ and Piano Company, whose head offices and factories are at Guelph, Ont., will make a large exhibit of their musical instruments at the forthcoming Jamaica Exhibition. Of course, if there are any prizes to be won—gold medals or any thing of that sort—they will be awarded to this concern. Their products include reed and church pipe organs, and upright and grand pianos. The chief European branch of the Bell Company is at 58 Holborn Viaduct, London, E.C., England, other branches being at 6 Bridge Street, Sydney, N.S.W., and at Toronto, Hamilton and London, Ont.

THE William Hamilton Manufacturing Company, Peterborough, Ont., will establish a branch of their works at Nanaimo, B.C., where they will go largely into the manufacturing of mining machinery. This is one of the largest iron working concerns in Canada, the main building of their works in Peterborough being 300x150 feet. The machine shops are 188x70 feet and 225x34 feet; the new foundry is 150x70 feet; blacksmith shop 40x40 feet, and there are also the necessary boiler shop, engine house, etc., and the new machine shop 70x36 feet, in which a quantity of new iron-working tools is being placed.

MESSRS. ROBIN & SADLER, manufacturers of leather belting, Montreal, with branch house in Toronto, inform us that they have just completed a leather belt for the Manitoba Electric and Gas Light Company, Winnipeg, 85 feet long and 40 inches wide. This belt is made of 3-ply heavy leather, each outer ply being in a single strip 40 inches wide, and the centre ply, two strips each, 20 inches wide. This, we are told, is the largest and heaviest leather belt ever made in Canada. Messrs. Robin & Sadler have also recently furnished the works of the Canada Screw Company, at Hamilton, with two similar belts 24 inches wide.

THE Canadian Locomotive and Engine Company, Kingston, Ont., are crowded with work. They are constructing five wheel locomotives for the Canadian Pacific Railway. They will weigh when ready in the neighborhood of fifty tons. They are also building ten heavy standard Mogul engines for the Grand Trunk Railway. Four locomotives, with side tanks, weighing ninety tons each, have been commenced for the Chignecto Marine Transport Railway, Amherst, N.S., and five standard eight wheelers forty three tons weight, will be built to be kept in stock. These with other small contracts are expected to keep the works busy till the middle of 1891. There are three hundred men employed.

THE first cargo of nitrate of soda for the Hamilton Powder Works was landed from the steamer *Montserrat*. Mr. W. J. Young, the manager of the works, says the company intends to make the higher explosives, and for that purpose four more brick buildings will be

erected. The manufacture of the ordinary powder will be commenced within the next two weeks. A large consignment of brimstone is daily expected from Japan. The same journal announces the establishment of a chemical manufacturing concern in that city. Mr. G. H. Blakeway is to manage the manufacturing department, whilst Prof. Livingstone is to superintend the commercial branch of the business. Chemicals and patent medicines will be the leading lines of the concern.—Nanaimo, B.C., *Free Press*.

THE B. Greening Wire Company, Hamilton, Ont., have made a very important addition to their already extensive lines of manufacture, having purchased the sole right for the manufacture in the Dominion of Brown's patent steel wire chain. They claim for this chain that being made of hard drawn steel wire, and the links being formed without welding, a uniformity of strength is obtained that is not possible in the ordinary chain. Actual tests show a wonderful difference between the Brown chain and the welded, a test made of a Brown chain made of No. 8 wire broke at 1,950 pounds, breaking at the end of the link, while the same size of the welded chain broke at 490 pounds. The B. Greening Wire Company will shortly place on the market a line of trace, halter, dog and other chains. Their advertisement appears in another column.

THE Auburn woolen mill, at Peterborough, Ont., is one of the best equipped mills on this side of Lake Ontario, and it will bear good comparison with the first-class woolen mills in the States. The machinery is all of the modern make. The Managing Director, Mr. James Kendrey, believes in having everything up to the times, and where there is any new patent that will benefit and improve the work it is adopted at once. The mill is well protected against fire. Automatic sprinklers are scattered all over the works, and there is a good fire brigade connected with the mill. The work people have enjoyed steady employment for years, and this company has been making a line of fine wool cassimeres that have had a good regular sale, thus keeping the machinery and hands at constant work. Mr. James Kendrey is manager of these works.—*Wade's Fibre and Fabric*.

FURNACE slag, or the refuse of blast furnaces, only some two or three years ago, was an article which was a source of the greatest annoyance to the makers of pig iron, for, as nobody would accept it as a gift, it occupied most valuable ground and at the same time was a most unsightly heap. Since then it has become an article of value and of considerable commercial importance. It has been used for the making and repairing of roads, used as a building material instead of bricks and stone, made into capital cement, and in its molten state converted into bottles the same as ordinary glass. It has also been utilized for boiler coverings and similar purposes, by first being by means of spray blown so as to be quite like flake cotton—indeed, it is known as silicate of cotton. What is there now-a-days that human thought and human ingenuity cannot utilize for some beneficial purpose or other?

Messrs. W. E. Trotter and F. B. Dakin, of St. Johns, Que., and other gentlemen, have gone to England for the purpose of organizing a syndicate who will take over and operate the works of the St. Johns Stone Chinaware Company, the Standard Drain Pipe Company and the Dakin-Earle pottery of the same town, together with the glass factory of Messrs. J. & W. Yuille, of Montreal. It is understood that a company will be formed with a capital of \$2,000,000, that the profits of the various concerns will be pooled, that the present owners will take a fair percentage of the stock and retain for a time the direction of their respective establishments as a guarantee of good faith. The St. Johns people especially are jubilant over the proposed deal, and those who know predict that the output of their potteries will be doubled, if not quadrupled, should the mission of the above-named gentlemen prove successful.

A LATE number of that fine pictorial paper, the *Dominion Illustrated*, contains a various treat both in engravings and letter-press. Both Eastern and Western Canada are represented in the illustrations; the Maritime Provinces by the second tennis tournament; the North-West Territories by the Battleford Cricket Club, and Central Canada by a fine assortment of views of noteworthy scenes. Some of these are of current, some of antiquarian interest. There are some capital illustrations of the Richelieu country—once so harried by Indian warfare. The Montreal Hunt sketches (by Paterson) also deserve attention, as do the pictures of Quebec and Niagara. In the letter-press is an article on Canadian Literature, based on some recent criticism in American periodicals. A poem of Mr. Douglas Sladen anent the McKinley bill is timely, clever and well worth reading. The *Dominion Illustrated* is published by the Sabiston Lithographic and Publishing Co., Gazette Building, Montreal.

THE Dodge Wood Split Pulley Company report their business as unusually brisk at the present time, they being pushed to full extent of their capacity getting off special orders received daily from all points throughout the Dominion, from Halifax to Vancouver. They also inform us that their export trade is assuming very extensive proportions, they having succeeded in establishing distributing depots in many of the leading European centres. The company issue a handsome catalogue, also an illustrated paper, fully describing the merits of their celebrated pulleys and their patent system of rope transmission of power, which they mail free on application. This company have opened a general office and stock room at 83 King Street West, this city, where they keep samples and stock of all the different styles of pulleys made by them, and where may also be seen models and illustrations of the many different ways and styles in which their patent system of rope transmission of power can be applied. They invite their friends and customers to visit them at their new quarters. Their factory is at West Toronto Junction.

THE Farnham beet root sugar factory, which was recently resuscitated by a French syndicate, and is now operated under the management of a Mr. Musy, is turning out about one carload of sugar (of all grades) per day. At the start, this fall, the experiment was conducted at a loss, owing to the small percentage of saccharine matter in the beets first delivered to the factory, but since then matters have improved, and the proportion of sugar in beets since received has risen from six to eleven per cent. Thus far the sugar has not been refined in the factory, but has been sold to the St. Lawrence Sugar Refining Company. The experiment has at least demonstrated the fact that the sugar beet can be grown in this country, and sold at a price, \$5 per ton, that will pay both the farmer and the manufacturer. The Farnham company themselves raised a large quantity on a farm in the neighborhood of St. Johns, which cost them, delivered at their works, only \$4 per ton. The enterprise is a most important one, and the question arises, in view of the action of the U.S. Congress in offering a bonus of two cents per pound on all domestic made sugar, whether Canada should not go and do likewise.—St. Johns, Que., *News*.

THE Reliance Electric Manufacturing Company, Waterford, Ont., have just installed an arc light plant in the works of Messrs. W. H. Verity & Sons, foundrymen, Exeter, Ont. They are at present installing a 150-light arc plant sold to the town of Windsor, Ont. They have recently sold a 50-light arc dynamo to the town of Mitchell, Ont. They are now placing a 25-light arc plant in the foundry and machine works of Messrs. John Inglis & Sons, Toronto. They have recently shipped a 25-light arc plant to Messrs. Frost & Woods, Smith's Falls, Ont., for illuminating their extensive agricultural implement works. The 40-light arc plant placed by the Reliance Company in the works of the William Hamilton Manufacturing Company, Hamilton, Ont., will be in operation this week. They have just furnished a 25-light arc plant to Messrs. Bowman & Zinca, Southampton, Ont., to light their tanneries. They are at present wiring the towns of Fergus and Elora, where they have sold electric lighting plants. They have also recently sold as follows: A 40-light plant for lighting the town of New Hamburg, Ont.; a 35-light plant to the town of Parkhill; a 12-light plant to the Brantford Furniture Company, Brantford, Ont.; a 5-light plant to Messrs. Cliff & Foster's furniture factory, Lucknow, Ont.; a 35 light plant for lighting the town of Harriston, Ont., and a plant in the town of Iroquois, Ont. Manufacturers and corporations realize the advantages of the use of electric light.

THE following notice explains itself:

WALKERVILLE, October 12, 1890

DEAR SIR,—For the more convenient management of our varied and rapidly increasing enterprises we have found it desirable to make the separations mentioned below, but in everything but name the proprietary and management will continue unchanged. It will oblige us very much if our correspondents will be careful to avoid referring in the same communication to the business of different branches of our organization, and also to address us under the proper style.

Trusting that the pleasant relations which we have so long enjoyed under the name which we now abandon may be uninterrupted.

We are, Dear Sir, yours faithfully,

HIRAM WALKER & SONS.

The business of Distillers and Maltsters will hereafter be carried on by Hiram Walker & Sons, Limited.
Our Hop, Tobacco and other farms, Lumber Yard, Planing Mill,

Blacksmith Shop, Paint Shop and other similar industries, will be conducted as Walker, Sons & Co.

Our Windsor and Walkerville town lots, dwellings, etc., will be merged in The Walkerville Land and Building Company, Limited.

"Come with me," said Captain Garland to a south-shore mining man, "and I will show you more iron than you ever saw in all your life in one place." An incredulous smile was the confident answer of the bright-eyed Yankee as he consented to undertake the journey. But he had met a man who was no blow-hard and who stood ready to show the goods. They travelled westward from Port Arthur along the line of the Port Arthur and Duluth Railway, and striking off into the forest at an angle to the railway, the Captain took his companion to a vein of iron which made the eyes of the American sparkle with delight. "What do you think of that?" queried the Captain. "Well, I confess you have kept your word," was the honest admission to Algoma's iron wealth. "Come half a mile further," said the Captain, "and I will astonish you." They went on and soon the Captain placed his delighted companion before a mountain carrying a vein of rich magnetic iron sixty-five feet in width. This property is within a distance of sixty miles of the Port Arthur Railway, and it is on the books of the company to run a branch line into the iron beds, and in consideration of their doing so a per ton royalty will be paid to the company. Port Arthur railway people have lots of capital, Algoma has boundless mineral wealth, and "Jim Connee," M.P.P., is determined to develop some of it and reap a portion of the golden harvest therefrom. This magnificent property is in latitude 92 on the Anti-Okon River, and less than sixty miles from the shore of Lake Superior. This is a sample of Algoma's "worthless (?) rocks," as they have been hitherto called.—*Sault Ste. Marie Pioneer*.

CITIZENS who happened to be on the bay Saturday afternoon were doubtless startled by the strange spectacle of a good-sized launch carrying fourteen men about with wonderful speed. There was no smokestack, no oars, and only a muffled whirr told that some machine furnished the power. The yacht was built by Mr. Lorsch, of the Excelsior boat-house, from designs furnished by Mr. G. H. McFarlane, of the Roberts Storage Battery and Electrical Construction Company, 46 Adelaide Street west. The power was furnished by the Robert's storage batteries, driving a Kay shunt-wound three-horse power motor. When connected in series the batteries were capable of developing four-horse-power, and of driving the yacht at a speed of eight miles per hour. Coupled in multiple form the motor will develop three-horse-power, and the charge will last a whole day. The storage jars were of rubber, so that there was no danger from breakage, and the cells can be charged at a cost of twenty cents per hour. With Mr. Roberts at the throttle, as the miniature switch might be termed, the yacht ran to Hanlan's point and back in twenty eight minutes. The screw was stopped, reversed or turned ahead by simply moving the switch. The trial trip was very highly satisfactory, and upon landing, Mr. McAulay, of Kingston, gave an order for a similarly equipped boat. The advantages of this system of motive power are that in using it there is neither dust nor smell, the motor occupies only about a space of two cubic feet, and the batteries are used as ballast. In charging a wire from an electric light plant is run on board. It appears as if storage batteries were going to be the motive power of the future, and so far the Robert's batteries have been used successfully in the place of primary batteries for lighting buildings, railway cars, steamboats and for dental and surgical purposes. Now that the electric yacht has been demonstrated a success no doubt a great many of them will be built.—*Toronto Mail*.

THE possibilities of utilizing electricity in the arts and manufactures seem to be limited only by the lack of apparatus capable of applying its power. One of the latest uses to which it has been put is to facilitate the tanning of skins and hides. Yesterday a number of gentlemen assembled at the factory of Messrs. R. W. King & Co., in whose premises the machinery for electrical tanning is situated, to witness the results of the new system. There were present Messrs. Shaw (of Shaw Bros & Cassils), Cassils, Payan (St. Hyacinthe), Young, Prudent (of the New England Paper Company, and formerly engaged in the leather business), E. A. Whitehead, D. W. McLaren, L. Gallibert, H. G. Wolf and Fedora Boas, who is the agent for the inventors, Messrs. Wormis & Bale, of Paris. The application of electricity to tanning possesses several advantages which are at once apparent. Formerly the skins and hides were placed in pits, to steep in the tanning solution, for periods ranging from six to twelve and fifteen months. These pits occupied a good deal of space. Under the new process the skins and hides are placed in a large revolving drum, about 11 feet 6 inches in diameter, and containing the usual tanning liquor—diluted hemlock. Connected with the axle of the drum is a small cylinder filled with tur-

pentine. The drum is revolved by steam power, and at the same time an electric current, generated by an ordinary dynamo, is made to flow through the liquor. The effect of the current is to open the pores of the hides and so enable the tanning solution to saturate them completely. In this way goat, sheep and calf skins are tanned in twenty four hours, and horse and ox hides in one to five days, according to thickness. On Wednesday afternoon last seventeen hides of Montreal inspection were placed in the drum in the presence of Mr. J. P. Cleghorn and a number of other gentlemen, and these were taken out yesterday, there being present the gentlemen named above. The hides were very thick and the leather produced was of good quality, fully justifying the claims of the inventors of the process of electrical tanning.—*Montreal Herald*.

THE George F. Blake Manufacturing Company, of Boston, and the Polson Iron Works Company, of Toronto, have completed the construction of the new high level pumping engines for this city, and after a thorough practical test, demonstrating their perfection in every detail, have handed them over to the city. The engines were really finished three months ago, but the contractors decided to test them thoroughly before giving them up. The test has been most satisfactory, showing that the engines are capable of a greater capacity than that guaranteed, which is 3,000,000 gallons daily. The waterworks department will commence at once a thirty days' test of the engines. The plant consists of two cross compound high duty engines. The high pressure steam cylinders are 14 inches in diameter, and the low pressure cylinders 30 inches, with 30-inch stroke. The water cylinders are 12 inches in diameter, and have a 30-inch stroke. These engines, running at a speed of fifty revolutions a minute, will deliver 3,500,000 gallons of water in twenty four hours, but they can be run with safety at sixty revolutions a minute, giving a capacity of 4,000,000 gallons a day. The steam power is supplied by three horizontal steel boilers fifteen feet long, having a diameter of sixty-six inches, and carrying steam at a working pressure of 125 pounds. A feature of the pumping engines is that they will pump water much more cheaply than those at the main station, as shown by Superintendent Hamilton's report for the two weeks ending October 25th. According to this official statement 232,769,180 gallons of water was pumped at the main station with 550 tons of coal. At the St. Alban's station they pumped 7,820,813 gallons with 36½ tons of coal. At the high level station there was pumped 24,184,355 gallons with twenty-two tons of coal. In other words, the main station pumped 211 gallons per pound of coal against a pressure of ninety five pounds, the St. Alban's ward station 108 gallons per pound of coal against ninety pounds of pressure, while the high level station pumped 548 gallons per pound of coal against a pressure of seventy pounds. Allowing for the difference in pressure against which the pumps at the main station and those at the high level have to work, the former would deliver about 281 gallons per pound of coal, as against 548 at the high level. With a pumping capacity of 20,000,000 gallons in a year, pumps like those at the main station would, according to the superintendent's statement, use 13,000 tons of coal, while pumps of the same pattern as those at the high level would deliver the same quantity of water with 6,660 tons of coal. Supposing coal costs \$5 a ton, this means a saving by the Blake pump of \$31,700 a year. The high level pumps have been built by the Polson Iron Works Company with the Blake Company, and cost the city \$30,000.

At the recent assizes held at Owen Sound, Ont., the case which excited the most interest at the court was that of the North American Chemical and Mining Company against Mr. R. J. Doyle, to compel the specific performance of an agreement made by the defendant in regard to a property known as the Shallow Lake, some nine miles from Owen Sound. Mr. Doyle some time ago discovered that underlying the shallow waters of the lake in question—in the summer time the bed of the lake is dry, the water passing away through a number of sink holes—there was a fine bed of carbonate of lime; underlying that was a bed of clay, which, when combined with the carbonate of lime in certain proportions, made an excellent cement, equal, if not superior, to Portland cement; that underlying that again was an excellent bed of clay well fitted for the manufacture of fire brick and other things. Mr. Doyle approached parties in Owen Sound with the object of forming a company to work this valuable deposit. Mr. R. P. Butchart and others were induced to put some money into the adventure in order to test the material. One of the gentlemen interested, Mr. William Robertson, civil engineer, was sent to England to ascertain the best mode of manufacture, and to purchase, or arrange for the purchase, of the necessary plant to carry on an extensive manufacture of cement, whitening, brick and putty. It was resolved to form a company with a capital of at least \$60,000. A charter was obtained from the Ontario Government, and everything went on well for some time.

Buildings were put up, a furnace put in and everything was being got in order to prepare material for the market, when all at once a disagreement took place, the gentlemen forming the original company contending that Mr. Doyle had led them into it by the promise of a lease for ninety-nine years, on his being assigned a tenth of the stock, paid up, and being paid a royalty of ten cents a barrel, or fifty cents a ton on the cement manufactured, they to have the privilege of manufacturing cement, whitening, brick, putty and whatever else they could out of the material underlying Shallow lake and its immediate vicinity, some 400 acres in all. On the other hand, Mr. Doyle demanded a royalty of twenty cents a barrel on cement manufactured, or \$1 a ton, and that the company should be limited to the manufacture of cement, alleging that that was what he had agreed to. The examination of Mr. Butchart had not been concluded, when parties expressed themselves as willing to come to an agreement, and that agreement will set forth somewhat as follows: That the company be allowed to manufacture cement and whitening; that they pay a royalty of ten cents a barrel on the material they manufacture; that they will manufacture in the first year 10,000 barrels, in the second 20,000 barrels and in the third 30,000 barrels, and that Doyle have one-tenth interest in the stock of \$60,000. Doyle wanted to have the company bind themselves to an output of 300 barrels a day. The company can manufacture cement and whitening, Doyle to have the privilege of manufacturing brick and putty. The industry promises to be a good one, and very profitable, once a market is secured for the cement, which can be manufactured very cheaply, owing to all the material being at one spot, and that being convenient to water carriage.

The Acadia Powder Works are situated at Waverley, one of the most beautiful spots in Nova Scotia, and cover a large extent of property. The buildings, of which there are about fifty-five in all, connected with the manufacturing and storing of gunpowder and dynamite have to be situated sufficiently far apart to insure safety for the others in case one blows up. Mr. Wilson, the manager, explained the process of manufacture. Eleven buildings are devoted to the manufacture of dynamite. A furnace is used for roasting the infusorial earth, which is used, together with pulverized wood, to mix with the nitro-glycerine, thus making dynamite. Work is carried on in the nitro-glycerine factory for two hours every day, and the day's work was over when we saw it. The glycerine, which comes from Belgium in iron tanks containing half a ton each, is treated with sulphuric and nitric acid. It takes seven tanks of acid to treat one tank of glycerine, and the acid is a lost product, for it has all to be washed out afterwards, and runs into the lake. The mixing process is done in a tank kept at a low temperature by ice on the outside, and a coil of pipes containing ice water on the inside. While this process is in operation the foroman in charge stands over it, thermometer in hand, and from that instrument he never takes his eyes until the work is finished, for if the temperature was allowed to rise beyond the required temperature, an uneasy feeling would prevail. They were washing the nitro-glycerine which had been made that morning in a large iron tank. A strong-limbed colored man was stirring it up violently with a long-handled implement, and every time he did so we could see the light yellow explosive coming up through the deep brown of the acid and water. There was also a can of it on the floor, frozen stiff, for it freezes at a temperature of forty-five degrees. In this building the smell of the acid is warranted to give one a headache, and a nitro-glycerine headache is an experience of a life-time, never to be forgotten. Nitro-glycerine is as sweet as honey, but the person who is beguiled into tasting it pays dearly for his sweets by the inevitable headache. We then went to the building where the materials are mixed. This is done in a sort of round trough, in which large wheels, covered with a smooth coating of gutta percha, to prevent friction, revolve and thoroughly mix the nitro-glycerine with the infusorial earth and pulverized wood; it then passes on to other hands, when it is made into the big brown cartridges of commerce. The cartridge cases are made by girls at their homes. The material is manilla paper, and after they are returned to the works they are treated to a bath of paraffine, which renders them water-proof. The loose dynamite looks like ordinary yellow sugar. The cartridge cases are placed in wooden moulds which fit them, and then the filling process is easily done through a funnel. There are several storehouses for raw materials and the finished products, and a boiler house from which steam heat is provided for warming the building where nitro-glycerine is made. This is necessary, as it freezes at forty-five degrees. There are also two double action pumps used in connection with it to pump the ice water cool, which keeps the tank in which the glycerine and acids are mixed safe one. The process of making gunpowder is neither a pretty nor a black as Ethiopians, and as uncommunicative as wax-black wax

figures. A bath house is one of the most important buildings on the premises, and there the grimy workmen restore themselves to their natural color after the day's work is over. The mills are far apart, and are connected by over a mile of plank walks. First there are storehouses for the raw material—charcoal, sulphur and saltpetre. A wheel mill weighing about twenty-four tons does the grinding, and after that it goes through seven different processes before it finally reaches the packing room. One of these is to subject it to pressure by a hydraulic press, making it as hard as rock, and then grinding it again to granulate it. The sizes are then separated, and it is put into a dry house. The finished product is packed in kegs, which are made at the cooorage, under the charge of Mr. Hugh Graham. Cannisters and card packages are also filled by girls in a comfortable little packing house warmed by steam heat brought from another building. All the mills except the pulverizing department are worked by water power furnished by a stream running from Fish Lake to Lake William. The pulverizing department is worked by steam power. The powder works have a producing capacity of two tons a day, and the dynamite works turn out half a ton a day. There is only one other powder factory in the Dominion, in the Province of Quebec. The Acadia Powder Works supply the Maritime Provinces, and also send some of their product to Ontario. A great deal of dynamite finds an immediate market at the mines near by. The works have been established for thirty years, and, in spite of the fact that several explosions have occurred, only two lives have been lost in that time.—Halifax, N.S., *Critic*.

NEW COLORS FOR WOOL AND COTTON.

DIAMOND BLACK—This color will no doubt eventually be one of the most important of Aniline Dyes yet discovered, as it is a perfect substitute for Logwood for wool dyeing. The wool is first boiled for one hour in a bath containing from two to two and a half pounds Diamond Black, two to three ounces Chrysamine G. and ten pounds Glauber Salts, rinsed and finished by boiling for twenty minutes in a bath containing two pounds Bichromate Potash or Soda and rinsed. The sole manufacturers of this valuable Dye (The Farbenfabriken vorm Friedr Bayer & Co., of Elberfeld, Germany) have lately reduced the price, so the cost of dyeing is about the same as Logwood (Chips or Extract) and, while the color is just as fast to light, fulling and scouring, has the advantage of being fast to acid, which will make the color very valuable to manufacturers of knit goods and hosiery, as the black produced by Diamond Black will stand perspiration. Another advantage Diamond Black has over the old-fashioned black is, that standing baths may be kept (which reduces the cost of dyeing considerably), only about two-thirds of the dye and mordant being necessary for second and succeeding operations.

For samples and further particulars write to the Dominion Dye-wood and Chemical Co., Toronto, who are sole agents in Canada for the color.

BENZO-BLACK.—This color dyes cotton a fast black at one operation, and is an improvement on Benzo-Black-Blue.

BENZO-GREY.—Produces on cotton a shade the name signifies, which is dyed at one operation with the addition of five pounds Barb Potash or Sal Soda and two pounds Neutral Soap.

BENZO-BROWN, BX, N.B.X.—These new colors have just been placed on the market, and for many purposes are perfect substitutes for Cutch, while having the advantage of being dyed in one bath and the cost of dyeing being less; the cotton is also left softer and more free from electricity.

Benzo-Grey, Benzo Black and Benzo Brown BX, N.B.X. are patented and manufactured only by the Farbenfabriken vorm Friedr Bayer & Co., Elberfeld, Germany, and the Dominion Dye-wood and Chemical Co., Toronto, are sole agents for Canada.

STEROSINE GREY.—This new and valuable color comes to the dyer in the form of a paste, and dyes either cotton or wool, the latter being mordanted with Chrome for fast shades, and for cotton can either be dyed with common salt, or for dark shades with Tartar Sumac and Tartar Emetic.

TITAN PINK—Produces a fast pink on cotton at one operation, common salt being the only mordant required.

TITAN RED B.B.—Dyes a good full red of a bluish cast on wool, which is perfectly fast to light, scouring and fulling. Titan Red B.B. is dyed at one dip.

For further information in regard to Sterosine Grey, Titan Pink and Titan Red B.B. (which are manufactured only by Messrs. Read, Holliday & Sons, Huddersfield, England) apply to the Dominion Dye-wood and Chemical Co., Toronto, who are the sole agents for Canada.

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J. J. CASSIDEY, Editor.

TORONTO LITHOGRAPHING COMPANY.

PERHAPS the most extensive and most thoroughly equipped lithographing establishment in Canada is that of the Toronto Lithographing Company, in the *Globe* building, which extends along the south side of Melinda Street from Yonge to Jordan, this city, the space occupied being three flats each 200 feet long, the large number of windows in the building affording abundance of daylight. Mr. William Stone is the general manager of the company, and Mr. W. C. Jephcott, superintendent.

This company are successors of one of the same name that existed in Toronto previous to 1883, and who carried on business in York Street. At that time the business was not in a very flourishing condition; but under the new management it began to revive and assume importance; and the next year—1884—the concern was removed to the *Globe* building, on King Street, recently demolished in the widening of Victoria Street. At first only a flat was occupied in this building, but the rapid increase of business demanded greater accommodation, until, at the time of the abandonment of that location, the company occupied two flats in that and one in an adjoining building. Even this extensive room soon became too contracted, and it was only when the company removed a few weeks ago into their present quarters did they enjoy the accommodations their very extensive business required.

The gentlemen who manage and direct the business of this company, although young men, are thoroughly familiar with all the details of it, as is evidenced in the phenomenal success that has attended it. No efforts are spared to enable them to keep abreast of the times in their business; and not only are the machinery and processes the most improved, but the specialists in the various departments the best that can be had.

The company's business occupies about one-half of the space in the *Globe* building. The business offices and counting room is on the ground floor at the Jordan Street end; the first and second floors are theirs, and half of the third floor is occupied by the staff of artists and by the wood engraving department. This is a large space, but not too much for the requirements of so extensive a business.

Lithography may be briefly described as a method of producing printed copies of a writing or drawing on stone without the usual process of engraving. It was invented about 1796-8 in Munich, Bavaria, by Aloys Senefelder. As originally proposed by him, it was merely an etching in relief upon stone, a process which had long before been practised both upon stone and metal, although he was probably ignorant of the fact. As early as 1728, Dufay, a member of the French Academy, described and practised a method of etching upon stone. He made a drawing with varnish, and used an acid to eat down the unprotected parts of the stone, leaving the lines in relief, and is said to have produced some exquisite work. About 1788 William Blake, the English painter, invented (or, as he believed, was spiritually taught) a similar process, only he used plates of copper, and in this manner produced his most famous works. Senefelder's use of stone was wholly accidental. Being, like Blake, too poor to pay for printing his works, he endeavored to devise some means of doing this himself from plates etched in relief, and to avoid expense he used smooth slabs of stone instead of plates of copper. Being ignorant of the composition of the varnish used by engravers for their etching ground, he invented a kind of crayon composed of wax and tallow. One day his mother wished him to write out a list of clothes to be sent to the laundress. Paper and ink not being at hand, he wrote the list upon a stone with his crayon. When he was about to clean off the stone, it occurred to him, as it had to Dufay, that the body of the stone could be eaten down by aquafortis, leaving the lines in relief, so that the impressions could be taken in the usual manner. His experiments in this direction were partially successful, although less so than those of Blake. In 1798 he thought of the availability of the chemical principle, which is the foundation of the art of lithography properly so called, namely, the mutual repulsion between oily substances and water. The art was introduced in America in 1821, and was practised by Messrs. Barnet and Doolittle, in New York. For many years, owing to the want of artists, it made little progress on this continent, except for commercial purposes and cheap prints, but it can be justly said that the art has now attained a high state of perfection.

The material upon which the drawing is usually made is an argillaceous limestone. Stones more or less adapted for the purpose occur in various parts of Europe and America, but the best are found in Solenhofen, Bavaria; and these are almost exclusively used in all establishments where fine lithographing is done. The stone is very close grained, the color varying from light buff to pearl grey. The stone being quarried in mass is split into slabs of

from two to four inches in thickness, of required size. If a stone could not be used for more than one job the cost of the work would be excessive. The cost of the stone now is a heavy tax on the profits of the business, and the same stone is often used for many jobs. This is how it is done: When the printing from a stone is all done, and there is no probability of a repetition of that particular order, the impression on the stone is removed. A man with pumice stone rubs its surface and grinds it down, being careful that, when he shall have completed, the surface shall be perfectly even and square. Thus a stone may be used again and again, until it is worn too thin to be handled. If it be a large stone, when it becomes too thin to be handled it is broken, and the smaller pieces continue in use. All the stones, the impression on which are likely to be required again, are carefully preserved in the stoneroom. The Toronto Lithographing Company now have fifty tons of stone on hand. This will give some idea of the amount of capital that is necessary to run the business, taken in addition to the machinery of different kinds. The presses and all the machinery are run by electric motors. In the application of electricity, as in other things, the Toronto Lithographing Company leads the van. It is the first lithographic establishment on the continent to adopt electric motors. The company have spared no expense and overlooked no contrivance that could contribute to the improvement of the art they advance. The company employ nearly one hundred hands altogether, and do an immense business, due to the admirable quality of their work.

STEEL SHIP BUILDING IN CANADA.

DURING the past three years remarkable progress has been made in the ship building industry in Ontario, as well as in British Columbia. Some beautiful specimens of naval architecture are now plying on the great inland lakes of Canada, and it has been clearly demonstrated that within ourselves we possess the capabilities of building all kinds of vessels, from the smallest tug to the greatest passenger steamer. It is to be hoped that soon will be seen on our coasts the same enterprise as is shown by the success attending steamship building on our lakes. Many residents of Victoria may have seen that beautiful passenger steamer, *Cibola*, put together in Montreal in the summer of 1887 and completed at Deseronto. Her dimensions are 260 feet in length, 28 feet beam on the hull and 52 feet over guards; her engines are on the compound, direct-acting principle, capable of indicating 2,500 horse-power. They are models of perfection, and were built at Greenock and placed in the boat by Mr. A. P. Rankin, sent from Greenock for that purpose. This magnificent palace steamer is now plying between Toronto and Niagara, a distance of forty-five miles, and completes the distance in about two and a half hours, and many of our British Columbia friends who have visited that district cannot fail to recognize the *Cibola* as a superior boat.

In the spring of 1888, Wm. Polson & Co., Toronto, instituted the first steel ship yard in Canada at Owen Sound, on Georgian Bay, all completely fitted out, similar to the Clyde yards in Scotland, for the building of all classes of vessels. The first contract entrusted to them was the building of the large propeller *Manitoba*, for the Canadian Pacific Railway Company's lake service, to replace the *Algoma*, which was wrecked on Lake Superior in 1885. The story of the terrible suffering of the crew is yet vivid in the memory of some here. This boat is by far the largest ever built in Canada, and her design has the stamp of perfection and genius. The length of the *Manitoba* is 303 feet, 33 feet beam and 23 feet 6 inches hold. The hull is built of milled steel, and on the upper deck is a long range of houses, containing passenger cabins, dining and drawing saloons extending nearly the full length of the vessel. The propelling machinery is of the compound inverted cylinder type. Her cylinders are 35 inches and 70 inches diameter by 2 feet 0 inches stroke. The building of this large vessel excited great interest in Canada, and loud were the hurrahs of the thousands of people who witnessed the launch. Robert Logan, one of the most popular naval architects on the Clyde, was the designer, and in the Clyde yard designed the *Alberta*, *Athabasca* and *Algoma*. The C.P.R. Co. brought out this gentleman to superintend the *Manitoba*, and Canada and America were loud in their encomiums of her handsome model and her splendid appearance, and to great success. The company built on Mr. Logan's design the huge sidewheel ferry-boat for transporting the cars across the Detroit river, where the C.P.R. and Wabash system meet and connect. This monster steel ferry, the *Ontario*, measures 295 feet in length, 41 feet beam, and the great width of 71 feet over guards. She is capable of carrying an engine and sixteen loaded freight cars, and in strength and shape is especially adapted for breaking through the heaviest ice in winter. The machinery consists of two independent engines, one on

each paddle wheel, the cylinders being feet in diameter by 9 feet 6 inches stroke. The wheels are enormously strong, each weighing eighty tons; and again, from the design of J. P. Rankin, C.E., Wm. Polson & Co. also built the *Sequin*, a large steel barge for carrying lumber for the Parry Sound Lumber Company, and last winter, so great was the success of the building of steel steamships, that Doty & Co., Toronto, established a yard for building a vessel of more ordinary size, and are now engaged on a fine fleet of boats of 140 feet long and 44 feet wide, and carrying 1,000 passengers. There is great activity in this branch of industry, and it may be safely said Mr. Logan is the founder of it, and Canada may well be proud of having one of the best naval architects from the Clyde. He has demonstrated the fact that there is no saving by bringing boats from the Old Country; they can be built here cheaper, and in his speech to the engineers and architects, he says: "You have in your own Dominion an industry that will eventually prove a blessing to the mechanic, and a great convenience to your country. I do not know a place better adapted for building steel boats than the Pacific coast—a country that cannot fail to figure very prominently in the future annals of Canadian history." The rapid growth of British Columbia, and the great increase of her commercial interests, indicate an increase of demand for means of transport, and in addition to being an encouragement for the emigration of first-class mechanics, it ought to be the greatest steel ship yard in America.—Victoria, B.C., *Colonist*,



NOTICE TO CONTRACTORS.

SEALED TENDERS addressed to the undersigned, and endorsed "Tender for Pumping Plant," will be received at this office until Friday, the 21st day of November, next, inclusive, for supplying, setting in place and delivering in complete working order, the Pumping Plant in connection with the Dry Dock, now in course of construction at Kingston, Ontario, according to plans and a specification to be seen at the Resident Engineer's Office, 30 Union Street, Kingston, and at the Department of Public Works, Ottawa.

Tenders will not be considered unless made on the form supplied and signed with the actual signature of tenderers.

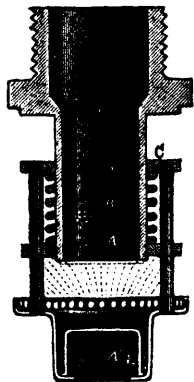
An accepted bank cheque, payable to the order of the Minister of Public Works, equal to five per cent. of amount of tender, must accompany each tender. This cheque will be forfeited if the party decline the contract, or fail to complete the work contracted for, and will be returned in case of non-acceptance of tender.

The Department does not bind itself to accept the lowest or any tender.

By order,
Department of Public Works, Ottawa, 23rd October, 1890.

A. GOBEIL,
Secretary.

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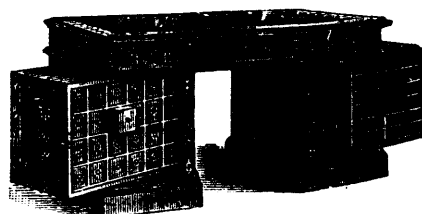
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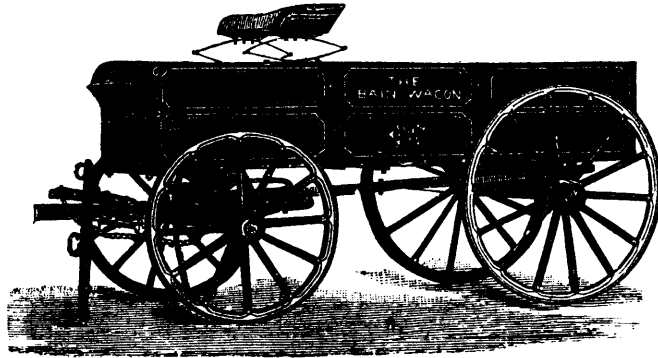
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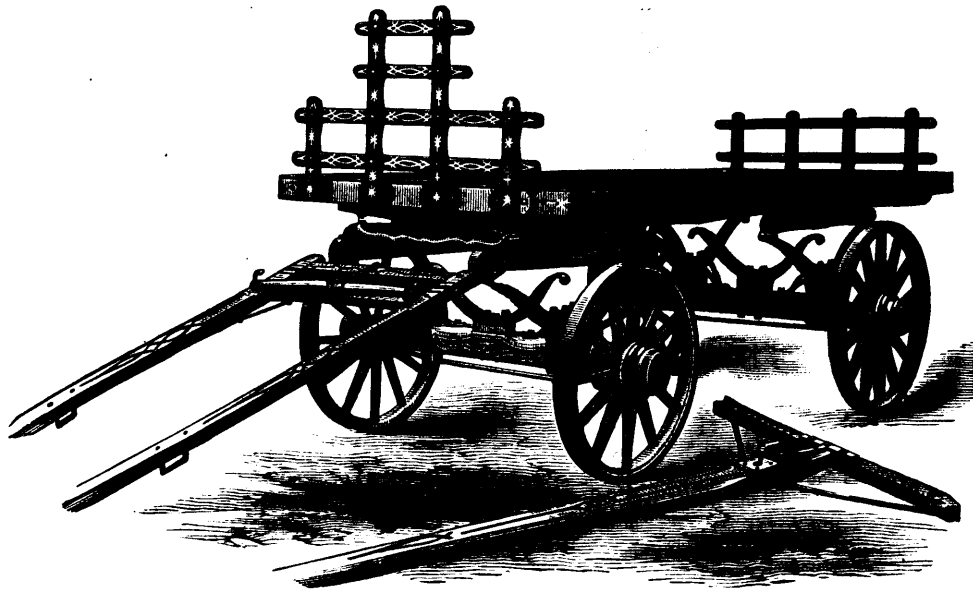
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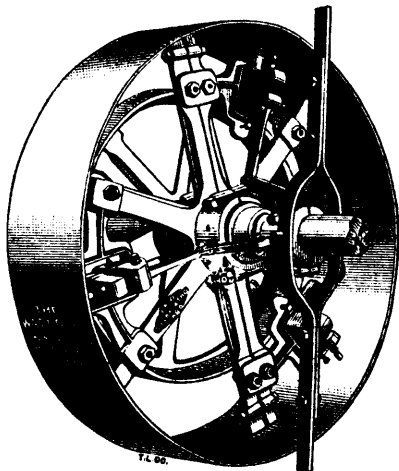
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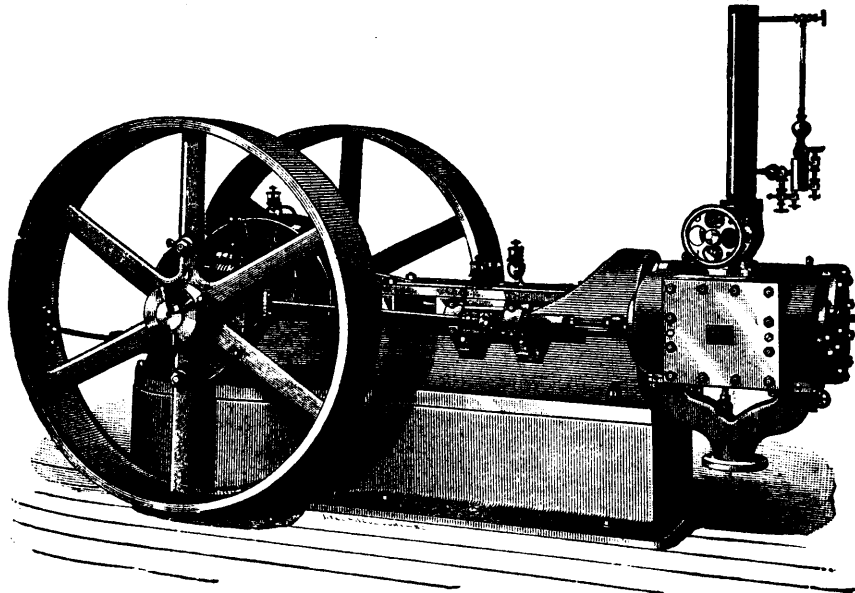
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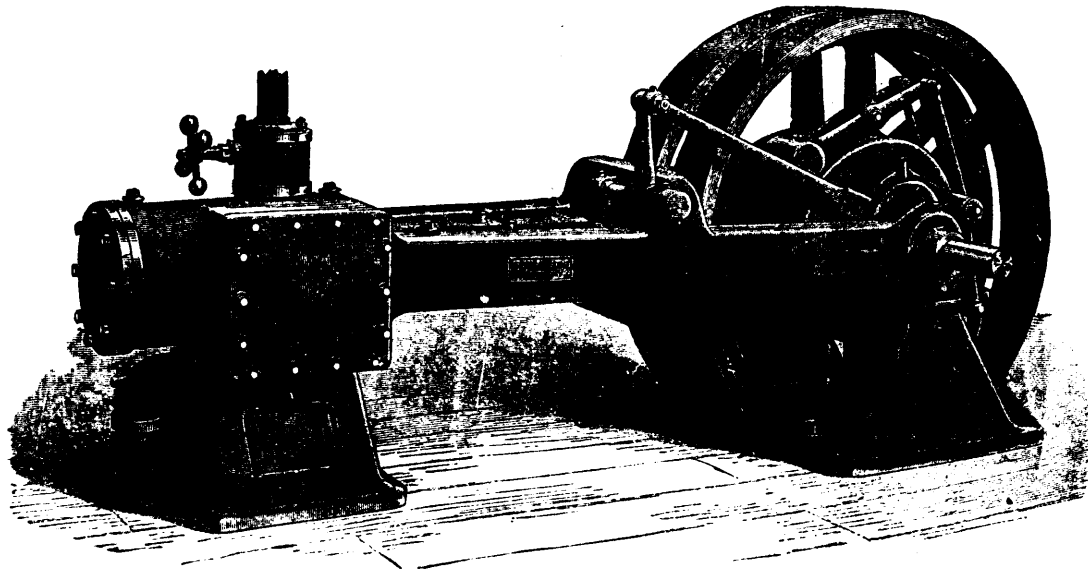
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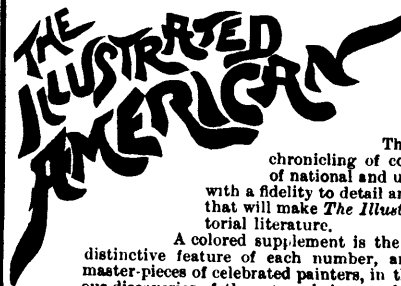
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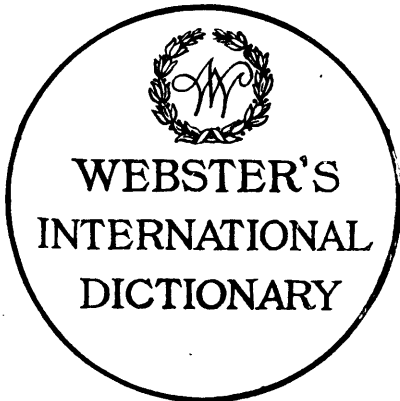
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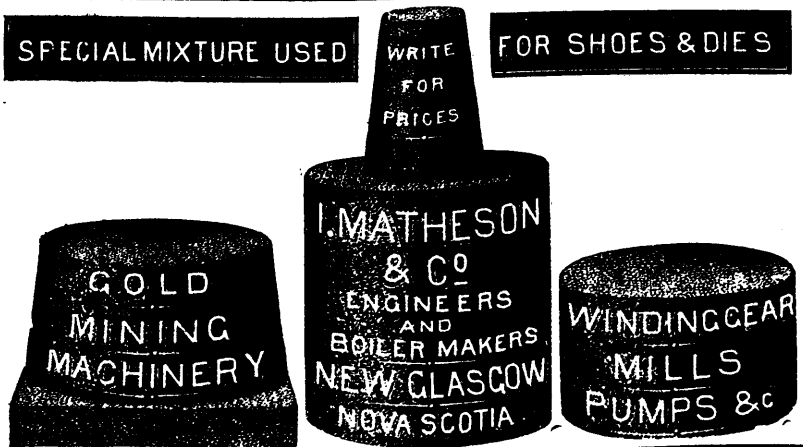
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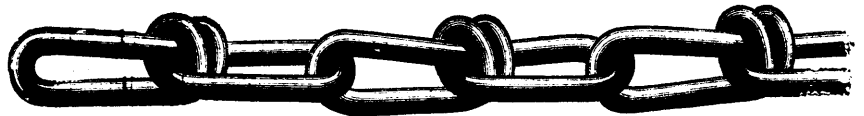
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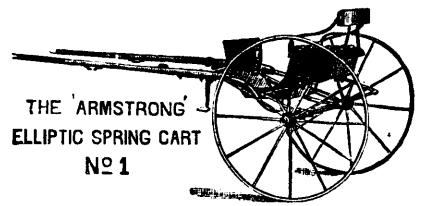
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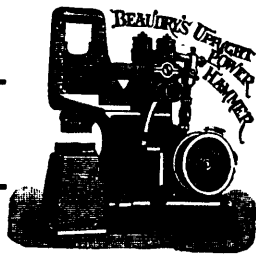
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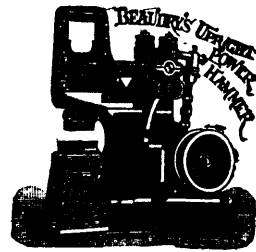
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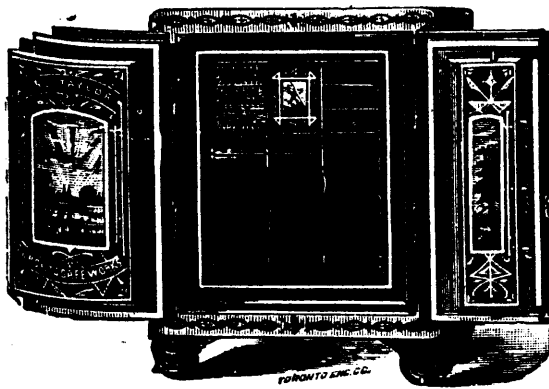


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The direct route between the West and all points on the Lower St. Lawrence and Baie des Chaleurs, Province of Quebec; also for New Brunswick, Nova Scotia, Prince Edward, Cape Breton and the Magdalen Islands, Newfoundland and St. Pierre.

Express trains leave Montreal and Halifax daily (Sunday excepted) and run through without change between these points in 27 hours and 50 min.

The through express train cars of the Intercolonial Railway are brilliantly lighted by electricity and heated by steam from the locomotive, thus greatly increasing the comfort and safety of travelers

New and elegant Buffet sleeping and day cars are run on all through express trains.

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Passengers for Great Britain or the Continent, leaving Montreal on Thursday morning, will join outward Mail Steamer at Rimouski the same evening.

The attention of shippers is directed to the superior facilities offered by this route for the transport of flour and general merchandise intended for the Eastern Provinces and Newfoundland; also for shipments of grain and produce intended for the European market.

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D. POTTINGER

Chief Superintendent

N. WEATHERSTON,

Eastern Freight and Passenger Agent, 93 Rossin House Block,
York Street, TORONTO.

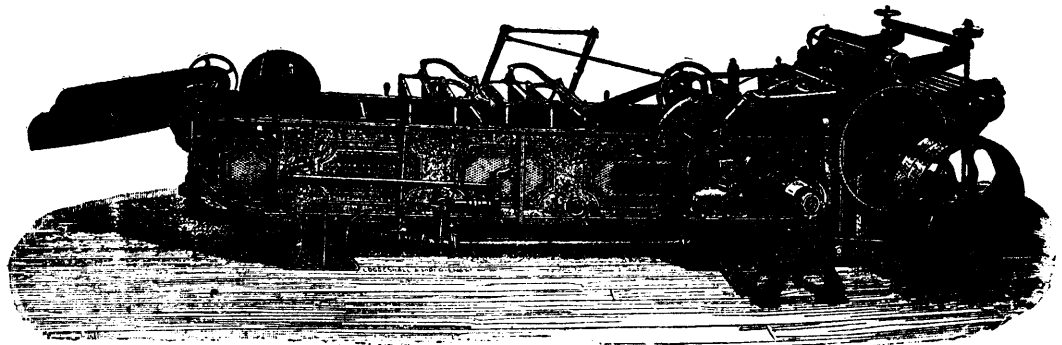
RAILWAY OFFICE, MONCTON, N.B., June 18, 1890.

IMPROVED WOOL WASHER

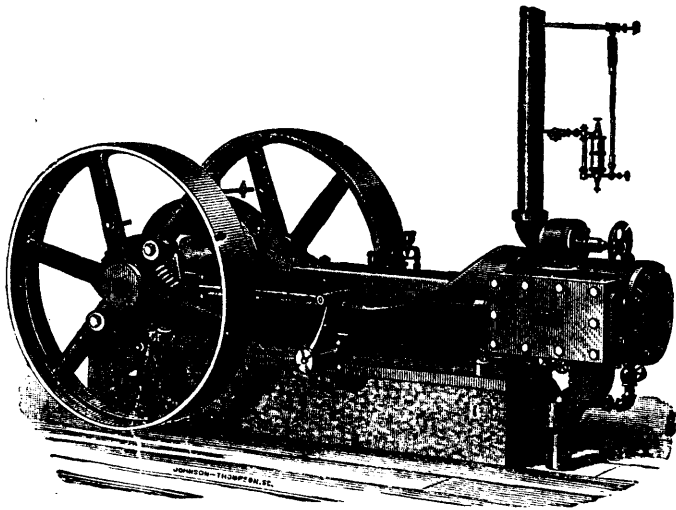
BUILT BY
C.G. Sargent's Sons

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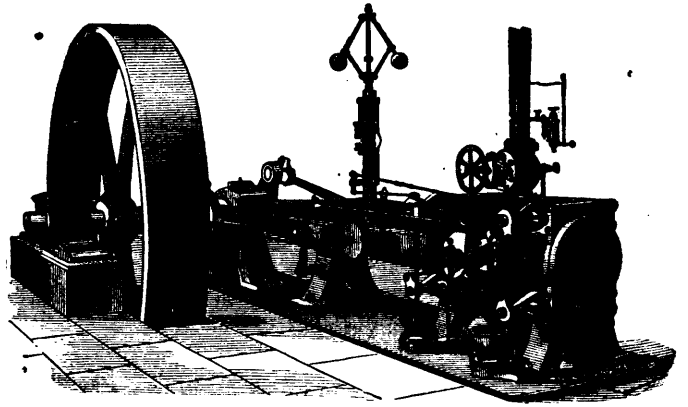
Builders of Wool Washers,
Burr Pickers, Wool
Dryers, etc.



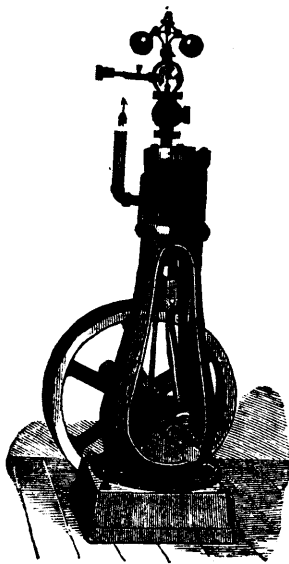
The above represents our New Hydraulic Wool Washer, superior to Rake Machine. Send for Illustrated Catalogue.



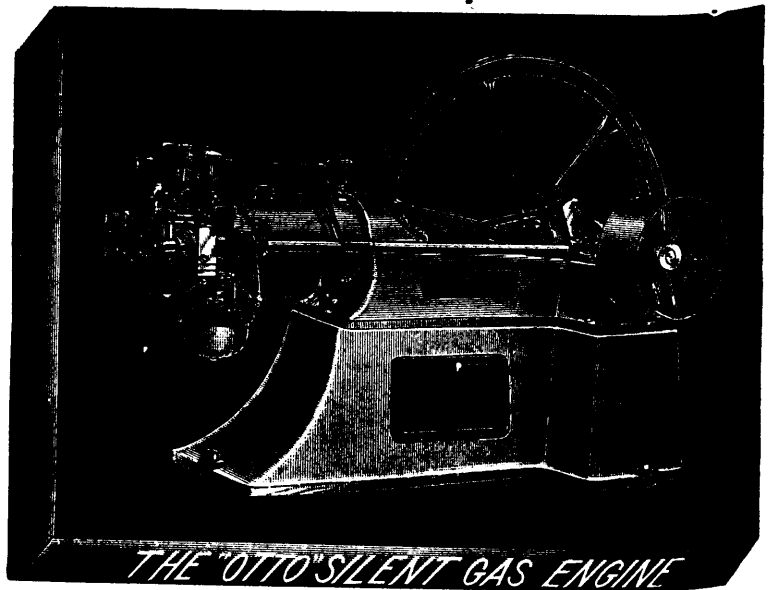
Armington & Sims Electric Light Engines.



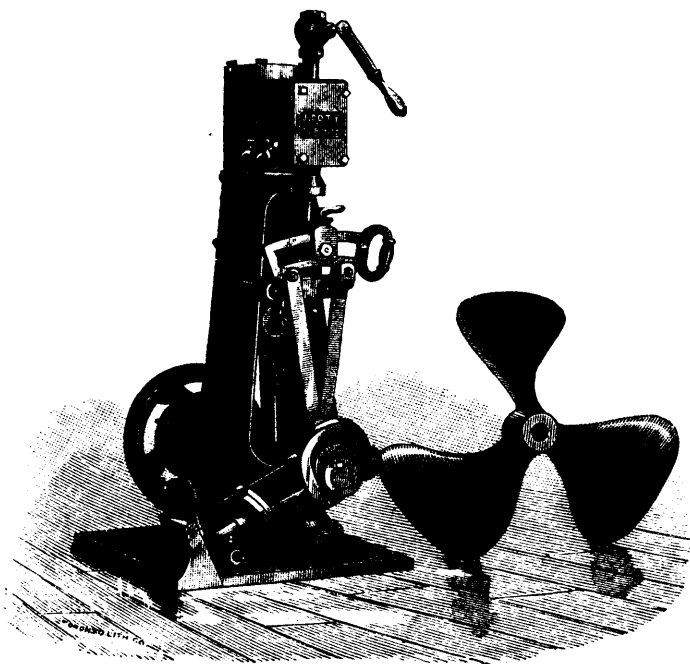
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WITH PATENT BUSHING SYSTEM

Best Belt Surface, Lightest, Strongest, Best Balanced, and Most Convenient Pulley in the World.

EVERY PULLEY A SPLIT PULLEY.

The hole in every pulley can be readily bushed to fit any sized shaft. Bushings furnished with each pulley. Guaranteed to give from

30 TO 60 PER CENT MORE POWER THAN ANY IRON PULLEY.

Strong enough for any power required. Made in any size and width, from twelve inches to sixteen feet diameter.

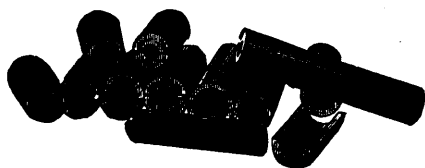
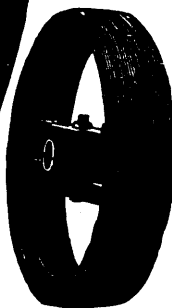
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We will furnish a Pulley for any service for 30 days free of charge, if it does not meet the warranty. Prices as low as any other good Pulley. Send for Catalogue, Price List & Guarantee

70 PER CENT. LIGHTER THAN CAST IRON

And 50 per cent. Lighter than Wrought Iron or Steel Pulleys.



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Gentlemen: You ask why we use the Dodge Patent Pulley. I answer because we consider them the cheapest, most convenient and satisfactory in all particulars.
Yours truly, S. R. STIMSON, General Manager.

OFFICE OF NEWTON WAGON CO., BATAVIA, ILL., Feb. 17, 1885.
Dear Sir: Replying to your favor, will say that after using the Dodge Wood Split Pulley for a year or more we are satisfied they are a good thing, if not the best Pulley made, and shall use them hereafter in preference to any other we know of.
Yours truly, NEWTON WAGON CO.

We have sold these pulleys for one year, and they have been put to every kind of service, and their popularity is wonderful. We refer to the following users for proof of the above statements: Pillsbury & Hulbert Elevator Co., Minneapolis; R. M. Pratt & Co., Elevators; Northern Pacific Elevator Co.; The Pacific Elevator Co.; Minneapolis Harvester Works; Minneapolis School Furniture Co., M. & St. L. R. R. Co.; Willford & Northway; Washburn, Crosby & Co.; St. Paul Electric Light Co.; St. Paul Roller Mill Co.; Minneapolis Brick Co.; N. W. Mfg. & Car Co., Stillwater, Minn., and very many others.
SHATTO & DENNIS, MINNEAPOLIS, MINN.

THE WORLD'S INDUSTRIAL AND COTTON CENTENNIAL EXPOSITION, NEW ORLEANS, MARCH 19, 1885.
W. H. DODGE, PREST. DODGE MFG. CO., MISHAWAKA, IND.
Dear Sir: I have a number of your Patent Wood Split Pulleys in use here at the Worlds Fair and Cotton Centennial Exposition, driving Dynamos for Electric Lighting. They are doing heavy work, and are held upon the shaft by the compression of wood on iron. They hold firmly, and do not slip. I have watched with a great deal of interest the many Pulleys of your make running at this Exposition; and I think them the best Pulley I have ever seen. I believe them to possess the following points of merit over any other Pulley: All Pulleys being split or in halves; best belt surface; best shaft fastening; best method of utilizing Pulleys to shafts of different sizes; best balance; lightest on the shaft; strong, and I believe durable. I heartily recommend them.
Yours very truly, S. H. GILMAN, Chief Consulting Engineer.

Waste of Power.

According to the best scientific authority it costs one horse power to keep in motion one ton of metal or weight; thus for every unnecessary 2,000 pounds weight on your line shaft, cost you one horse power. To maintain a horse power costs from \$25 to \$125 per year. Any manufacturer who will take the pains to investigate the unnecessary weight by Heavy Iron Pulleys, too tight belts, etc., will be surprised to find the enormous waste of power consumed in this manner. 60,000 Dodge Patent Wood Split Pulleys now in use. Our capacity being now equal to 100 Pulleys per day, we shall hereafter keep in stock for immediate shipment all sizes.

Send for Illustrated Circular and Reference List.

THE DODGE WOOD SPLIT PULLEY CO., TORONTO.

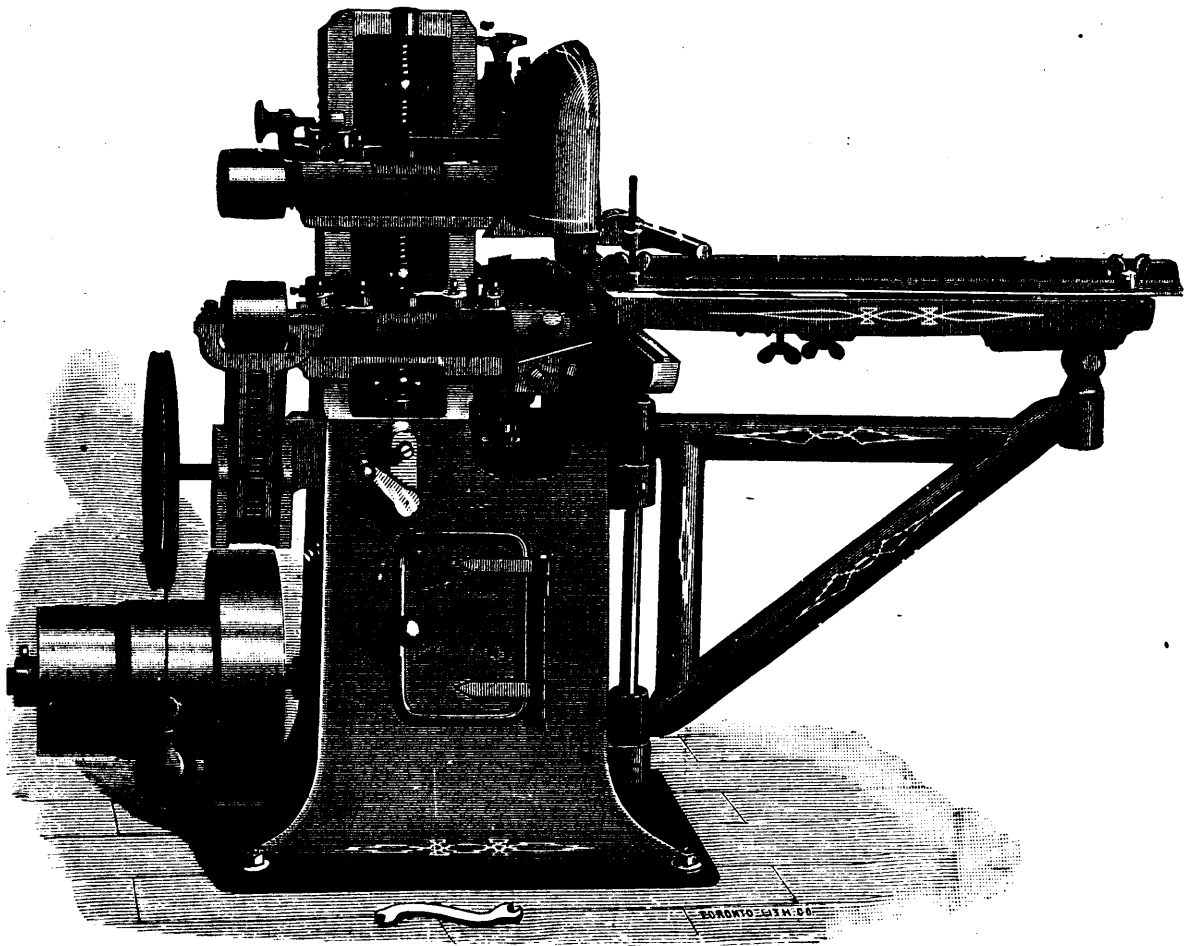
FACTORY.—
West Toronto Junction.

GENERAL OFFICES.—
83 King Street West, City.

TAKE NOTICE:—Our List of Prices for the DODGE PATENT WOOD SPLIT PULLEYS is for ALL SPLIT-PULLEYS.

We beg you will note this fact when comparing our List with others which are for SOLID RIM, and NOT for Pulleys in HALVES.

NEW AND IMPROVED *Pedestal Tenon Machine.*



This is an entirely new style of Tenon Machine. The frame is cast in one piece, and the working parts stand solidly on a pedestal, avoiding all vibration.

The Cutter and Cope Heads are connected and are moved all together, or separately, as required. The Upper Head and Boxes also adjust horizontally to suit shoulder of tenon, the Cope Knives moving with the Heads to prevent re-adjustment.

A special feature in this machine is the Bed, or Carriage, which is at once light and strong. The outer end works on rollers and is moved very easily.

In cutting the tenon the Bed and Carriage move entirely past the Heads and Cutters, the operator having full control of the work. It has also the advantage of leaving the Heads and Cope Knives clear, and of ready access by the operator.

The Carriage is so arranged that it cannot tip over the Slides nor be thrown into the Cutters, and is also supplied with extension bar for long stuff, as in all Tenoning Machines.

This Machine is supplied with single or double Copes, as ordered, and for furniture work it is without Copes, and with an adjustable cut-off Saw.

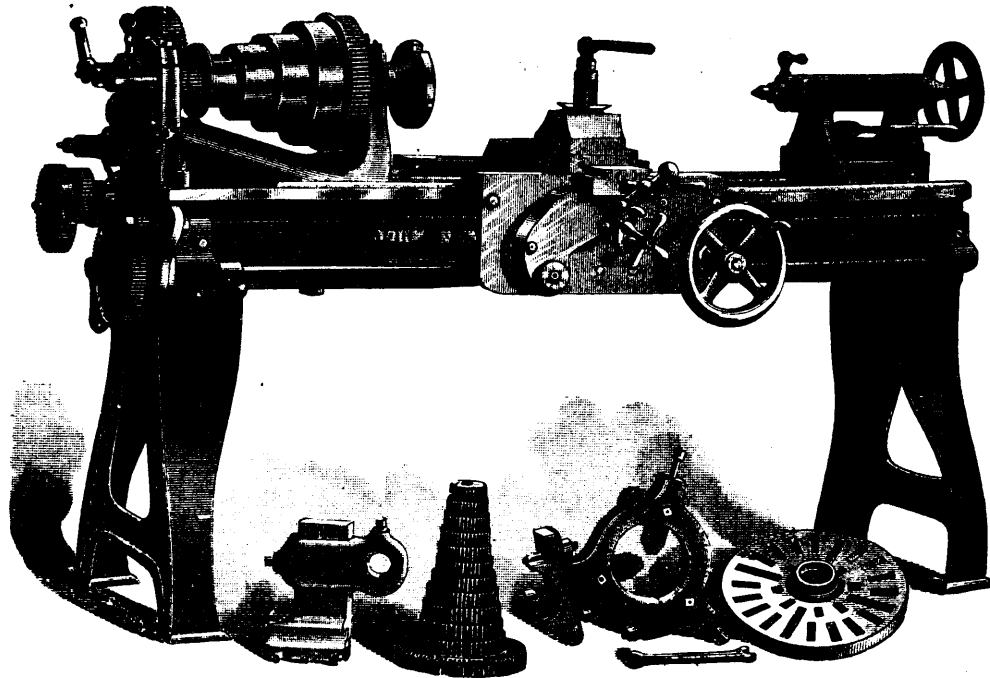
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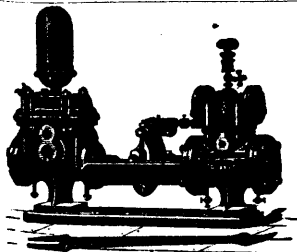


BOSTON,
FEDERAL STREET

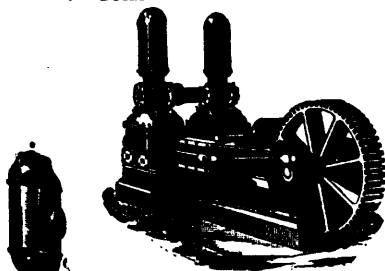
NEW YORK
95 & 97 LIBERTY STREET.

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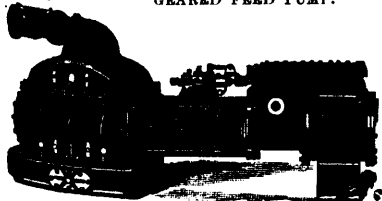
These goods may be seen at the Permanent
Exhibition 63 to 69 Front Street West, Toronto.



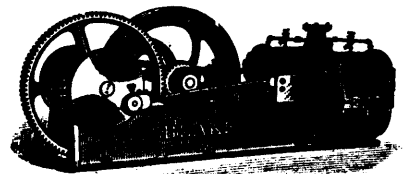
BOILER FEED PUMP.



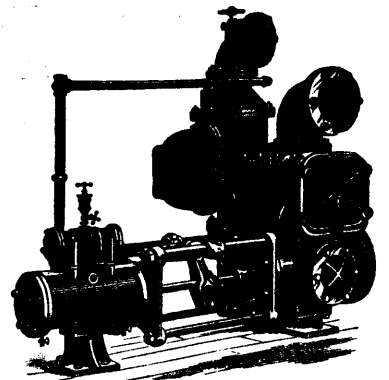
GEARED FEED PUMP.



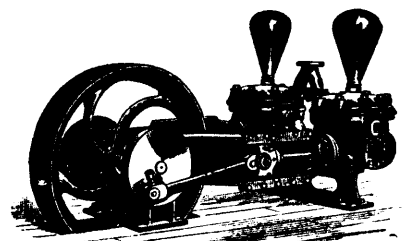
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AIR COMPRESSOR.



AIR PUMP AND CONDENSOR.



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NEW GLASGOW, NOVA SCOTIA

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Particular attention given to the manufacture of Rake, Cultivator and Harrow Teeth, and other Agricultural Spring Steel Forgings.



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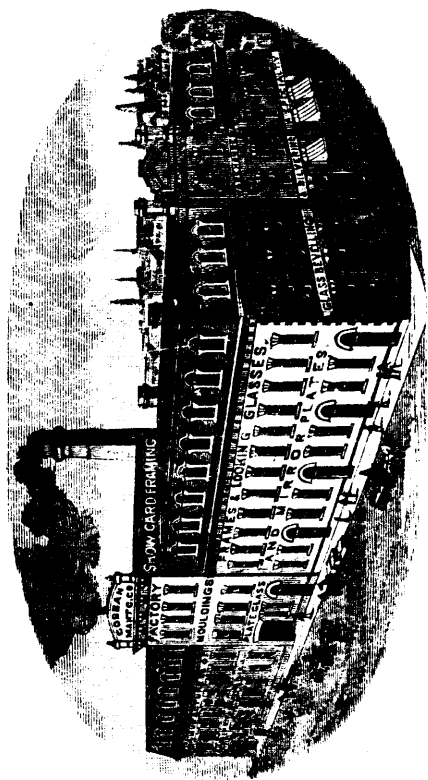
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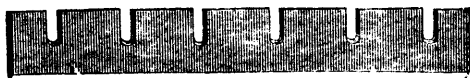
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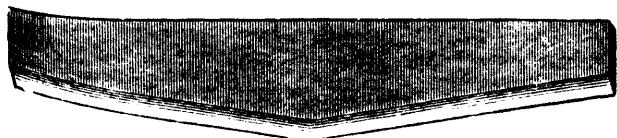
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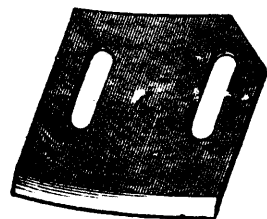


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And other irregular shapes.

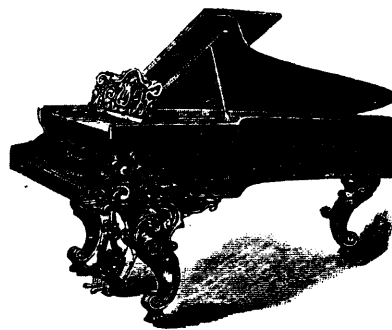


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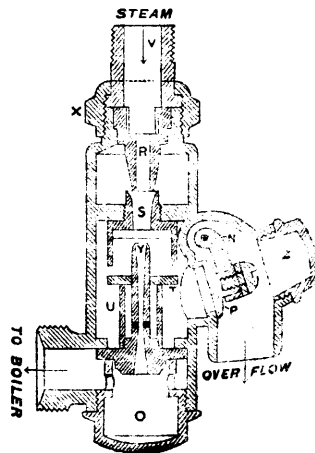
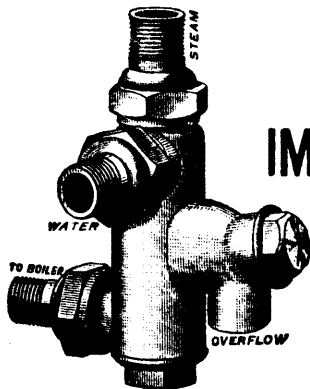
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