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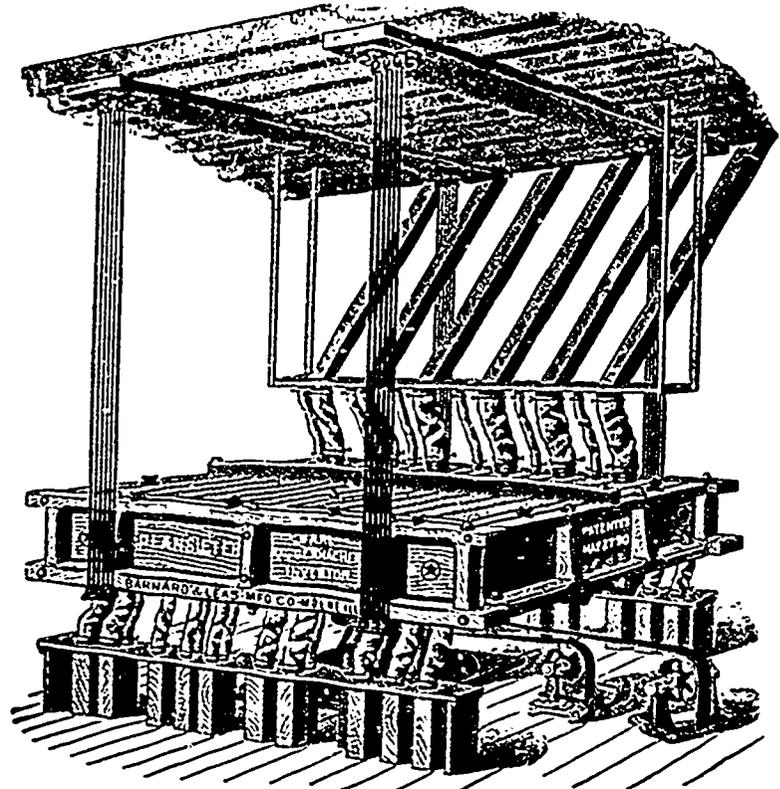
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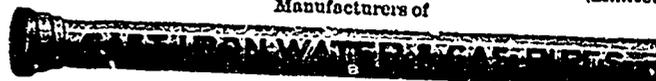
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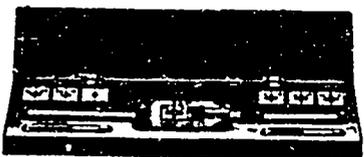
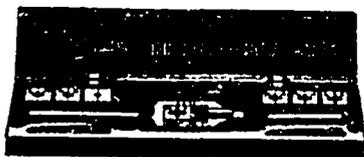
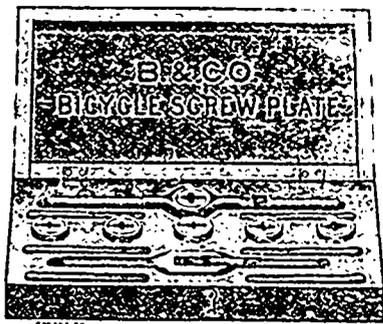
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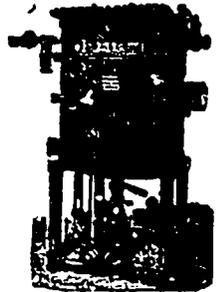
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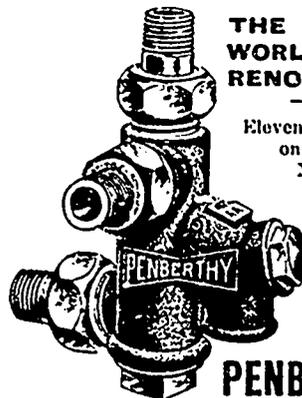


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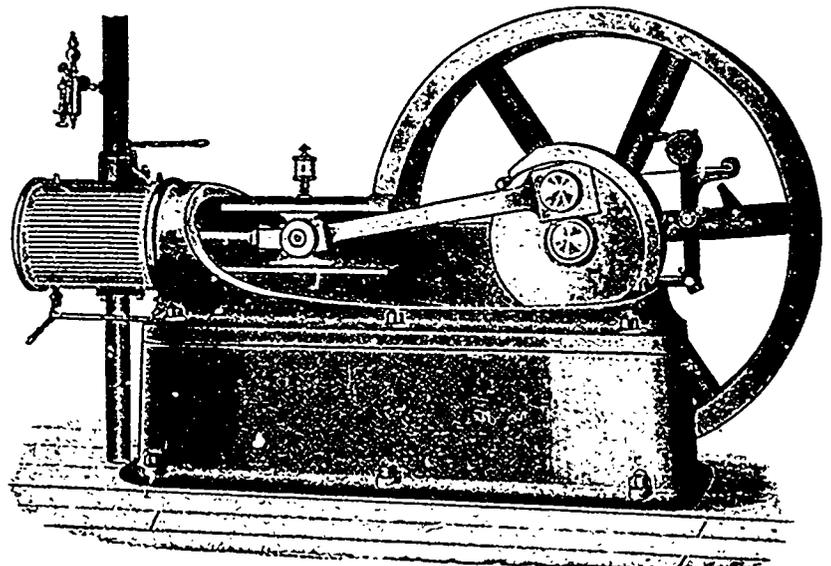
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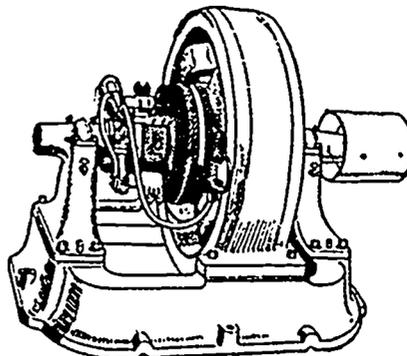
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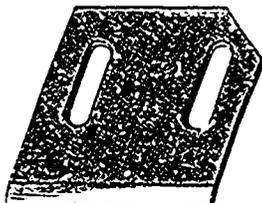
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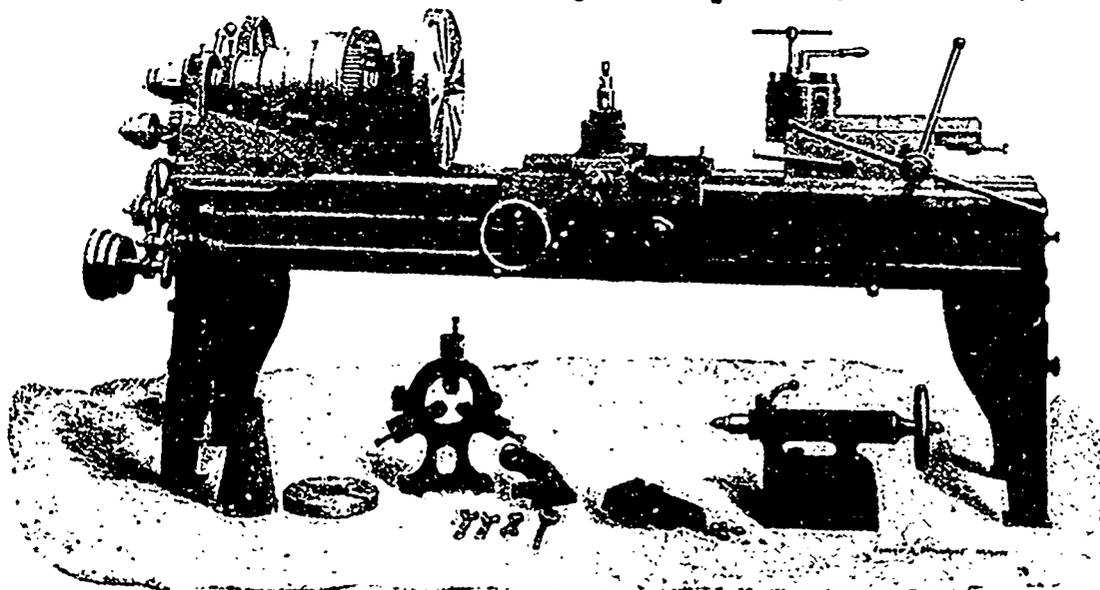
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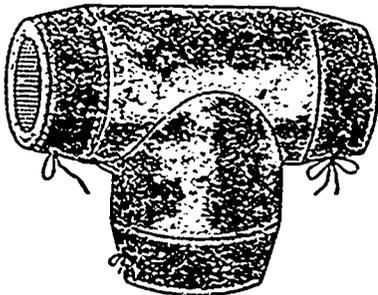
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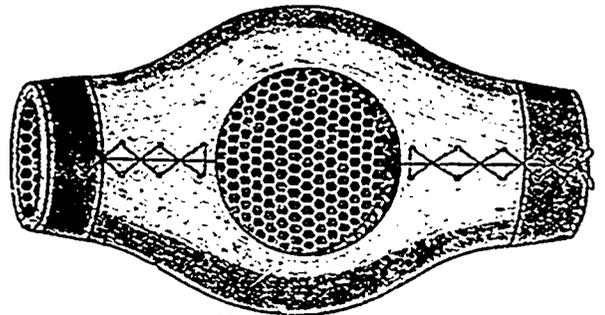


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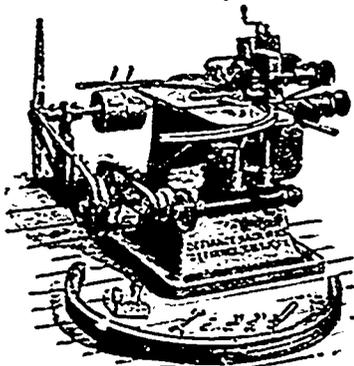
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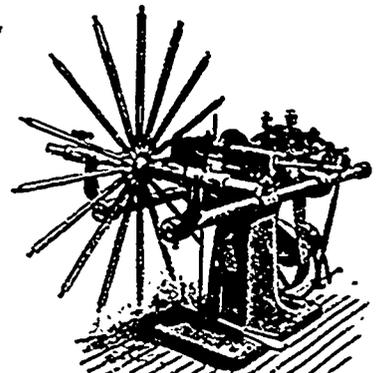
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MORE AS TO NICKEL.

Interest in the agitation for an export duty on nickel and copper ores and matte is increasing daily, and bids fair to result in the imposition of the duty before the present session of the House of Commons shall have reached its end. The big Canadian company that have organized, and promise to establish Canadian nickel steel works if they are thus protected, are putting forth every effort to get the facts of the case before the country, and before the country's legislators. The American syndicate who now control the output of

Canadian nickel are opposing them by means of anonymous circular letters and representations made by various apparently independent persons, but who are in reality interested, directly or indirectly, in the Canadian Copper Company, this curious concern, whose practice it has been to go to Ottawa with love for Canada in its heart and then crack jokes with Congress on the gullibility of the Canadian government.

We are glad to see that even The Toronto Globe has at last ventured out of its shell and expended editorial ink in discussing the nickel situation. It points out very truly that at Sudbury and in antipodean New Caledonia are the only nickel deposits of market value in the world, and that every natural condition favors Canada as the basis of supply to the market. Referring to the American import duty on refined nickel, it says:—

That it is aimed at preventing refining in Canada is clear, for this is the only quarter from which competition could come. That this should long be endured can scarcely be expected. At the same time, there is a general disposition to recognize the enterprise and success with which the American company have carried out their work at Sudbury, and we think that public opinion would not support the placing of an export duty on nickel as a mere embarrassment to its operations. While that is the case there can, nevertheless, be no question what Parliament would do were a company to come to it fully equipped for the work of mining and refining nickel. Free entry for nickel or an export duty on ore and matte would be so just a cry that it could not, and should not, be resisted.

The Globe is more lenient toward the Canadian Copper Company than THE CANADIAN MANUFACTURER is inclined to be. True, the United States considered the effect on Canada when it placed a tariff on refined nickel. It displayed great consideration for us—consideration lest we should possibly be able to compete with the Canadian Copper Company. Why should we be less considerate now? The Canadian Copper Company have paid for their plant a score of times by its profits. Even if an export duty on matte should close its doors it would be at no loss that it could not well afford. As for its employes—the newly organized nickel-steel company will doubtless be glad to secure the services of every man of them. Stevenson Burke, President of the Canadian Copper Company, told the Ways and Means Committee of the United States Congress on Jan. 8th, 1897, that if the United States put an import duty on nickel ore or matte it means refining in Canada or elsewhere. Under those circumstances we scarcely can agree with The Globe's fears for the Canadian Copper Company's embarrassment if we were to impose an export duty on nickel matte.

The last sentences of The Globe's opinion cover the existing situation very concisely and clearly, and we must congratulate our contemporary on the ground it has taken and express our hope that it will be no idler in the struggle, but continue to give the benefit of its influence to the effort to obtain what it considers just; namely, an export duty on nickel ore and matte. Mr. S. J. Ritchie, whose pen has been particularly active in the nickel controversy, and who is, par excellence, the best authority we have on nickel, pointed out to The Globe that it was not sufficient to have the nickel import duty removed by the United States, but that we must have an export duty on Canadian matte or not a pound of nickel steel would ever be made in Canada. The tax in Canada would not injure England, because England imports none but refined nickel and has been getting it from the United States who

secured the matte from Canada. There is no reason why we should not supply England with our own nickel.

The Canadian Nickel Steel Company have laid a brochure before the government. They point out that nickel was only produced in small quantities until the discovery of the New Caledonia mines in 1863, by Jules Garnier, afterwards President of the French Nickel Company, and from whom the metal received the name "Garnierite." Previous to this the world's production was from 100 to 250 tons annually; it rose to 700 tons in 1889, 1,500 in 1890, and about 5,000 tons in 1894. The price in 1860 was \$2.25 per pound, in 1873 to \$7.50, \$6 to \$7 per pound, declining to sixty-five cents in 1892 and to thirty-three cents per pound at the present time. For some years while the prices were high, small deposits at the Gap mine in Lancaster City, Pa., were in operation, the annual output being some 150 tons. These became gradually worked out, and now the entire production of the United States is from ten to fifteen tons per year. Thousands of dollars have been expended annually by officials of the Canadian Copper Company, in searching for the metal at every point showing the slightest indication of its presence, but the result has been the absolute failure to discover even the semblance of a mine that had the slightest commercial value, and to-day, outside of the Sudbury district and the New Caledonia deposits, there are none that could be worked even if nickel was three times its present price. The mines Eveje and Ringerike in Norway, for some years produced at the rate of 100 tons a year from an ore, carrying in the neighborhood of one per cent. of nickel and a small quantity of copper. They are now practically worked out, and at the prices ruling for some years, could not earn one-quarter the cost of production. Some of the Canadian mines, notably the Vivian and Dominion Mineral Company, operated for a time on small deposits, but found that they had been operating at a loss, when the large concerns fixed the price of matte at so low a figure as to make it impossible for any mines, not carrying fairly high graded ore in large quantities, to be worked at a profit in competition with them, and as these companies did not possess refineries to treat the smaller quantities of matte they produced, their shutting down became only a matter of time.

The enormous difference made in the nickel trade by the Canadian Copper Company's operations is shown by the fact that the Vivian Company, using partly New Caledonia ores and partly those of Sudbury, lost in one year over £40,000 sterling, and the French company, "Le Nickel," whose annual earnings in 1892 were 6,000,000 francs, have since that, not only paid no dividends, but have reduced their capital stock from 12,720,000 francs to 6,360,000 francs, and have been losing in operation over one million francs per year.

A very interesting feature of the present Le Nickel situation is that in the report of their Board of Management for 1896, the shareholders are congratulated upon the fact that their American competitors have adopted prices in conformity with the prices charged by Le Nickel. This allows the French company to sell nickel at a narrow margin, but from figures following it will be seen that in selling at the same price the Canadian Copper Company is making an enormous profit. The situation is for all practical interests and purposes a universal nickel trust, controlling the nickel supply of the world.

The brochure concludes with an appeal to the government

for an export duty on nickel ore and matte, but let us turn for a moment to the consideration of other points, many of which have been brought to public notice by Mr. Ritchie. In the first place, the question of distance comes in, if we compare the competition possible between New Caledonia and Sudbury. We find from the map that New Caledonia is about ten thousand miles farther from the European market than Sudbury is. Sudbury matte carries about forty-five per cent. of copper and nickel. Last year the Canadian Copper Company sold 12,000 tons of matte to the New York Refining Company at an average price of \$50.00 per ton delivered in New York. This would mean for each ton 420 pounds of nickel and 500 pounds of copper, which a ton of Sudbury matte contains. Now, New Caledonia ores are not refined or even smelted in New Caledonia. They have quoted a price for the delivery of their ore in New York. New Caledonia ore containing 420 pounds of nickel would cost \$55.44 in New York.

In this case we see that the Sudbury matte is ahead of the New Caledonia ore on this basis by \$4.04.

The cost of smelting the New Caledonia ore would be, say, \$10; this leaves the Canadian matte \$14.04 cheaper than the New Caledonia product.

But the Canadian matte contains 500 pounds of copper besides the nickel and the New Caledonia matte contains none. If we value it at its minimum price, seven cents per pound, (without being refined from the matte), the quantity in the ton of matte is worth \$35. Thus our Canadian matte becomes \$49.04 cheaper than the New Caledonia matte. Or in other words the actual cost of 420 pounds of Sudbury matte nickel in New York would be \$6.40, while the New Caledonia nickel in the ore would cost \$55.44.

Where is the competition from New Caledonia which the Mayor of Sudbury is trying to put forward as the cause for the closing down of certain nickel operations in the Sudbury district? Perhaps President Burke, of the Canadian Copper Company, or President Thompson, of the Orford Copper Company, will solve this problem for us? Perhaps?

The New Caledonia Mines Company treated their ores at Havre, France; Isereohne, Germany, Glasgow, Scotland, and Birmingham, England. Recently they removed the refineries to New Caledonia to lessen the expense. They were forced to this by the Canadian Copper Company's competition. Has any one heard of a proposition from the Canadian Copper Company to build refineries at Sudbury, Ont., to lessen the cost of production of nickel from its mines? It certainly should be beneficial to the Copper Company, but—certain officials of that Company might inform us to whose interest it would not be to have any such thing done, and thereby knock out the profits of certain American refining companies.

In 1886, the Private Bills Committee of the Canadian House of Commons struck out the words "or elsewhere" in the company's charter, so that they might be bound to treat and smelt their products in Canada. The Canadian Copper Company have referred to Hon. W. B. Ives, then chairman of that committee, as their authority for denial of this intention. Mr. Ritchie has a letter from Mr. Ives in which Mr. Ives declares that the reason for striking out the words was "with the view of forcing the companies to treat and refine their ores in Canada."

On May 7, 1891, Mr. Stevenson Burke pointed out in

another letter to Mr. Ritchie, that the Canadian Copper Company proposed to refine in Canada all their ores, except such as might be required to supply the demand in the United States. He also referred to the United States tariff as compelling the Copper Company to take matte into the United States and refine it there.

On January 8, 1897, the same Mr. Burke told the Ways and Means Committee of Congress, that the Canadian Copper Company was a purely American concern, having possibly one little Canadian stockholder. He added that all the product was refined in the United States, at a cost, during 1896, of some \$300,000 wages to laborers, and that they (the company) preferred to have that work done in the United States. They preferred to give their people (in the United States) the benefit of it.

Mr. Robert M. Thompson, president of the Orford Copper Company, of New York, which has a contract for refining the Canadian Copper Company's products, on the same occasion, said that he had had an expert at work for a year and knew of no nickel deposit in the United States that could be treated economically. The copper in the Canadian ore made the nickel so cheap. The estate of Senator Payne, the estate of Cornell, of Akron, O., and Stevenson Burke, of Cleveland, were principal owners of the Canadian Copper Company. The total expenditure of their company in Canada was about \$28,000 while in the United States its total expenditure was about \$100,000, monthly. Only one-third of the nickel they imported was consumed in the United States.

Comparison of Mr. Burke in Canada with Mr. Burke in Washington seems scarcely to result in a halo of glory for Mr. Burke, and Mr. Thompson's statements to Congress would appear to be excellent arguments for the imposition of an export duty by the Canadian Government on nickel and copper ore and matte. Ten cents a pound on nickel and two cents a pound on copper would suffice to secure to Canada for all time, a source of commercial strength, and the establishment of an industry that would not only expend millions of dollars yearly in the production of nickel and copper, but also cause the development of our immense iron resources. A very appreciable decrease in the cost of refined nickel would result from the erection of refineries in Canada, and consequently we should be able to make a closer price for nickel steel than it can be manufactured for anywhere else in the wide world. Nowhere else are the conditions duplicated, and the Government will be worthy of all condemnation should it neglect this opportunity, by an act of simple justice, to establish for all time an immense industry which asks no exemption, no bonus, and no privilege, except it be a privilege to enter into honest competition in the world's market without fear or favor to capital or labor.

IN CASE OF WAR.

The coolness between the United States and Spain is rapidly becoming more frigid. Congress is in a condition of uproar. Almost every day some member of it makes an appeal to the country to let slip the dogs of war and intervene with force of arms to aid Gomez in his struggle for Cuba libre against Spanish oppression and Spanish cruelty. Interest is at white heat, and it looks as though war will result. Marsh, of Illinois, is the Chairman of the Committee on Militia in the

House of Representatives at Washington. He has introduced in the House a resolution that is likely to be assented to by the House, and by the Senate, and to which it is not expected President McKinley will refuse assent if it comes to him. Here is Mr. Marsh's resolution:—

That war be and the same is hereby declared to exist between the Government of Spain and her dependencies and the United States and her territories, and that the President of the United States is hereby authorized to use the whole land and naval force of the United States, including the militia and the naval militia thereof, to carry the same into effect.

In the Senate, Vice-President Hobart has his hands full suppressing demonstrations that follow resolutions for war, for recognition of Cuba's independence, for armed interventions to secure Cuban independence, etc. Senator Mason, of Illinois, is no less warlike than his colleague of the Lower House. In speaking to the report of the Maine Court of Enquiry, he said:

We can hide no longer under the Executive wing. He can neither declare war nor refuse it. Congress alone can declare war. I for one am ready to vote now. You may continue to cry "peace, peace," but there can be no peace while Europeans own and butcher their slaves on the same continent where our flag floats. But there are those who say that the court does not fix the responsibility. It was not necessary. The "peace at any price" man cannot escape so. The law fixes the responsibility. We were in Spanish waters and over Spanish soil. The harbor is owned and controlled by Spain. The explosives in that harbor were owned and controlled by Spain. If it was a torpedo it was a Spanish torpedo; if it was a mine, it was a Spanish mine. No explosives have been on sale in Havana for over a year to private citizens; if it was gun-cotton, it was Spanish gun-cotton; and if it was dynamite, it was Spanish dynamite. The power to explode it was controlled by Spain. A Government acts only through its agents and officers, and they control the discharge of their cannon. It was owned, located and exploded by Spain, and Spain must answer. Let us awake. Shake off the Chinese narcotic that locks us in drowsy indolence, murmuring "peace at any price." Awake as our forefathers did at Concord and Bunker Hill—awake to glorious war against a nation that burns homes and murders women and children—awake to glorious war that seeks no gain for us in treasure or territory, but a war to drive the oppressor from the continent, to wave the Cuban flag in the sky forever, and a war that will help us for generations to come, by giving notice that the honor of our flag and the lives of our citizens must be respected among the nations of the world.

The Spanish press advises preparation and uncompromising refusal of all intervention. In the meantime regiments of colored infantry are being mobilized by General Miles, commander of the United States army, who is locating these troops at the Dry Tortugas. They would be the best qualified forces to land and engage the Spanish in Cuba. The endeavors of the United States to purchase warships, and many other indications are afoot to point to the ultimate declaration of war between Spain and the United States, and the declaration will come first from the United States unless Spain makes a very quick move.

Much speculation has been of late indulged in as to what attitude European powers would observe in case of conflict, and it seems to be the general conclusion that they would all stand aside and let Uncle Sam and Spain fight it out between themselves. The European correspondents of American journals have thus announced and argue out very conclusively their reasons for believing that such will be the case. Of

course, in the mind of the general public, that terminates the matter and leaves no room for discussion; but yet, are there not events that point rather to a different working out of the problem, if we look up the history of the past few days, or weeks?

The Chinese situation first had something definite to work from in the chaos of counter claims when Great Britain calmly declared that certain Chinese ports must be kept open for commercial purposes. The world's eyes were turned upon the Lion as they wondered at the nation that thus coolly threw down the gauntlet. And even while they watched for the next move of the powers of Europe they heard the declaration of the United States in favor of the policy of Great Britain in China. Yet the students of international amity appear to have completely overlooked this. Perhaps their eyes may be opened when they read to-day that the American fleet which left for the Philippines has put in an appearance in Chinese waters, apparently ready to lend Great Britain a helping hand in case need of it should arise. So much in earnest of the United States' desire to assist Great Britain to keep China open to the trade of the world.

From the other standpoint there is also something to be said. We are told that the North Atlantic squadron of the British navy is lying at Bermuda. Nothing very startling about that. Quite true is it that Great Britain's ships have lain hundreds of times in the same harbor, and hundreds of times again will they be there. But at this particular time they are lying there with steam up ready to move immediately upon the receipt of orders. What important and sudden move does Great Britain expect to make that she is thus holding ready for instant despatch so formidable a fleet of warships? Would it be at all strange if Great Britain should be preparing to protect her own trans Atlantic commerce? Immediately upon the declaration of war Spanish warships would, undoubtedly, blockade American ports and seize upon any and all ships ingoing or outward bound.

In that case New York would, of course, be the greatest sufferer. During the fiscal year 1896-7, exports of domestic merchandise from that port amounted to \$382,610,975, or nearly four times those from any other city in the United States. The total domestic exports of the United States during the same period were but \$1,032,007,603, showing that New York exported over one-third of the total. Of the total of these exports the United Kingdom took \$478,448,592, and other British possessions (exclusive of Canada) took \$46,433,339, a total of \$524,052,237 of supplies which Britain annually requires from the United States. New York exported foreign merchandise during the same time to the value of \$9,068,932. The total foreign exports of the United States were \$18,985,953, so we see New York sent nearly half of the whole amount. Of this total the United Kingdom took \$4,821,806 worth and other British possessions (again excluding Canada), took \$394,481 worth, a grand total of \$5,216,287.

Then take up the exports of the United Kingdom and other British possessions, to the United States during the same year. We find that of the total imports into the United States from all countries of \$764,730,412 New York received goods to the amount of \$480,603,580—over half the total. The United Kingdom sent to the United States goods to the amount of \$167,947,820. Other British possessions (minus

Canada) sent \$45,171,935, which means goods from Great Britain and her colonies to the extent of \$213,019,755.

Now, what do we deduce from all this? Let us make a comparison or two and see what conclusion it forces us to.

New York city exports over one-third of the total domestic merchandise exported by the United States. Then, at the least calculation, she must send \$175,000,000 of goods to British territory (not including Canada). New York sends out over one-half the foreign merchandise exported by the United States. Then it must send at least \$2,500,000 worth to British possessions. New York receives much more than half the total imports of the United States. Then New York must receive about \$110,000,000 of British goods. Thus at a very moderate estimate, and leaving out Canada's immense trade, which is principally conducted by rail, there is at least \$287,000,000 of trade for which Great Britain must keep open the port of New York free from blockade by Spanish warships.

Is it at all beyond the bounds of possibility—rather is it not a probability that a British fleet ready for instant service at Bermuda, is there for no other purpose than to prevent the Spanish from blockading New York? History tells us of the deeds of Spanish buccaneers and privateersmen on the high seas when they sacked and scuttled many treasure ships and merchantman. Their greatest opportunity to damage the United States would be by the adoption of such methods of attack. They would blockade New York and seize upon every ship that tried to run the blockade. That would mean great loss to British trade, and there is no surer way to rouse the Mistress of the Seas than by infringing, no matter how little, upon her commerce. The protection of New York under these circumstances becomes imperative. It would be unnecessary to protect other Atlantic ports because the whole traffic might be easily conducted through New York. The necessity of such action is still more apparent when we consider that the volume of trade along this particular line would be so immensely increased by reason of New York being the only safe port of entrance and exit. Great Britain's action would be in the interest of many other nations who would take advantage of the privileges her armed forces were offering them, and continue to trade with the United States, via New York. Is it likely that Great Britain would allow her commerce to lose three hundred million dollars a year because Spain undertook to blockade New York? Or is it likely that she would undertake an ocean patrol and invite the Dons to keep away from New York and do their fighting elsewhere? Is it likely that such action would cause opposition from other countries? Or is it likely they will be rather inclined to support Great Britain's stand? Here is food for reflection for the European news gatherers who supply news to the United States public. It may also be in order for such hairbrained publications as the New York Journal to rejoice that their jingo fulminations and vapors at the time of the Venezuela scare did not result in permanently antagonizing Great Britain. Had such been the case where would the United States and its boasted commercial supremacy be with a horde of Spanish privateers destroying every dollar's worth of her foreign trade. Our short-sighted United States friends should visit some international oculist, and, if possible, secure a set of powerful glasses to assist their, at present, very imperfect international vision.

EDITORIAL NOTES.

The Ottawa Government have announced that they expect to lay the budget before the House of Commons on April 5th. It will likely deal with some tariff alterations and they are expected to be considerable. The nature of the changes has, of course, not been made public but we shall have something to say concerning them in our next issue.

The prospects for an amicable arrangement between the Canadian Pacific and American roads to maintain schedule rates is farther off than ever. The Northern Pacific and the Great Northern railroads in conjunction with the Grand Trunk, have announced a wholesale cutting of rates for the far Northwest. Each of these roads, it is announced, has made a cut of 50 per cent. all along the line. Unless the Canadian Pacific recedes from the position it has taken the disastrous rate war will be prolonged to the detriment of the roads immediately affected. From a rate of \$67.75 and \$73.00 respectively to Seattle, Wash., and Portland, Ore., a cut has been made to \$30 and \$35. Business has been very bad, and even at the cut rates all the roads admit they will have to go begging for business. The outlook is not encouraging.—Daily Financial News, (N.Y.).

Especially for the American roads - a term in which our contemporary evidently includes the Grand Trunk. We have not heard the C.P.R. complaining of lack of business. In fact we have been under the impression that they were putting on extra trains to carry the crowd.

In the eyes of the Government the binder twine question may be very unimportant, but to the Consumer's Cordage Company it is quite the other way. The Company adjourned its regular annual meeting to await the action of the Government, and it is said that unless the tariff be reimposed the company will go out of business.

The plain truth is that our efforts to invade Canada in the war of 1812 were disgraceful failures, and, although in duels between frigates, our naval officers gained great renown, our navy was virtually extinct at the time when the peace of Ghent was concluded.—New York Sun.

The millennium next!

Representative Lewis, from Washington, who was in Ottawa for several days last week, has returned home with the conviction that there is no annexation sentiment in Canada.—Ottawa Tribune.

It is to be hoped that Mr. Jay Hamilton Lewis will spread abroad among the people of the United States the impression with which The Tribune credits him. The idea of Canada showing any disposition not to accede to demands from Washington was a surprise to him, but it didn't surprise him half as much as some other events may before Jay Hamilton's hair gets any grayer.

Mr. W. A. Hastings, vice president of the Lake of the Woods Milling Company, reports a shipment of flour to Australia on March 10th and another shipment on April 7th. This effectually disproves the statement that Australia had stopped importing Canadian flour. A great field for trade opens up along this line, inasmuch as Mr. Hastings admitted that his company had been purchasing flour to supply the demand, and were considering the erection of another mill at Montreal.

To the Treasury Department at Washington we are indebted for a comprehensive statement showing the amount of domestic merchandise of the United States which during the calendar year of 1897 passed through Canada in bond from one point in the United States to another. The statement shows that every State and territory in the union has contributed to the trade in one or both directions. The amount of domestic merchandise of the United States so shipped during the year is shown to have been 5,351,350 tons, requiring for its transportation 443,375 cars. And yet the United States allows gentleman of the J. Hamilton Lewis stamp to threaten Canada with the loss of her bonding privileges in the United States? How long would the American merchant stand such dictation to his pocket book?

That some Germans are beginning to count the cost of retaliation upon the United States for its recent tariff enactments seems evident from protests which German wine-trade papers are making against increased import duties on American wines. The Deutsche Wein-Zeitung, published at Mainz, on the Rhine, in a recent article opposing increased import duties, as proposed by the Union of Agriculturalists, points out the disparity between the volume of German import trade in American wine and the export trade in German wine to the United States. According to that authority, the total German import of American wines in 1897 was only 5,237 double hundredweights, whereas there was exported from Germany to the United States 56,400 double hundredweights. These data, as the Wein-Zeitung observes, show that the import of American wines is not of very much importance to the Germans, and that there is no reason to jeopardize the export of German wine to the United States by agitation or law. Bradstreet's observes that the Wein Zeitung takes the above stand, while at the same time combating the idea common among some American papers, that American wines are necessary to German wine makers for blending purposes. It states that the quality of the German wines exported to America would not admit of any cutting, because the higher percentage of alcohol contained in American wines would mar the quality of the German brands.

An order in Council, dated December 18, 1897, has been gazetted authorizing the Minister of the Interior to issue permits to persons who may erect sawmills in the Yukon territory upon payment in advance of a bonus of \$100 and a stumpage of \$2 per thousand feet on the timber when it is manufactured, with the provision that the permit may be cancelled at any time after four months after the date it is issued, if the Minister is of opinion that the limit is not being worked in a bona fide manner. An order in Council, dated February 28, 1898, amends the above, and provides that a license to cut timber may be issued to any person who is the first applicant, or it may be acquired at competition, as the Minister of the Interior may direct, that a bonus of no less than \$250 shall be paid for each square mile, that an area of a berth shall not exceed five square miles, and a berth shall not be less than one mile in breadth, that no more than five berths of five square miles shall be granted to any one person or company, that a license to cut timber on a berth shall be issued yearly, that the licensee shall erect a sawmill within a certain period to be fixed by the Minister.

Mr. A. H. St. Germain, the North Toronto gentleman who proposes to establish an auto-car line from Toronto to Richmond Hill, has received intimation from the English firm whom he had engaged, that they would not have the electrical conveyances ready as soon as expected. The order has consequently been placed with a Canadian company and the work will be done by Canadians. This should serve as an admonition to those who think they cannot have fine electrical apparatus built in Canada. The advertising columns of THE CANADIAN MANUFACTURER will at all times inform them where they may get their work done reasonably and efficiently.

Torontonians have been, and are still, complaining that the street cars do not contain sufficient seating accommodation for the number of passengers who ride on them. Many suggestions have been made by way of solving the difficulty and securing seats for all. The "no seat, no fare" plan has been tried and it appears to be rather unsatisfactory in its operation. Why not seek redress after the plan followed by the Maryland Legislature and provide for a reduced fare for every passenger who has to stand. If the Legislature fixed a two-cent rate for this purpose it would very soon remove all cause of complaint.

Our Canadian correspondent has said on various occasions that the policy of the present Dominion Government is subject to change with the wind. That this is the case is easily seen when one reads the correspondence of last week and that of the present issue. Apparently there was no prospect, a week ago, that the Canadian Government would impose an export duty on pulp wood. Just now there is a loud call for an export duty on nickel ore and matte, and while these articles have nothing in common with the paper and pulp industries, the authority to tax them as they go out of the country is coupled with that to tax out-going pulp wood. And as Sir Wilfrid Laurier is no longer in conciliatory mood, it is among the possibilities that an export tax will be imposed on pulp wood. But it doesn't matter now, American manufacturers of wood pulp have had plenty of time to provide against such a contingency, and have improved it.—The Paper Mill.

How?

In the recent "prosperity" debate in the House of Representatives, Jerry Simpson, the Populist Kansas Congressman, tried to score a new point against the Dingley tariff by exploiting the alleged fact that Mr. Dingley was wearing a London made silk hat. Mr. Dingley explained that the hat was made in New York, but the London trade-mark was placed inside to please the Anglomaniacs, who always preferred things because they were English. He has since been informed that no silk hats have been imported for at least a dozen years. Thus ended Mr. Simpson's ludicrous attempt to make Mr. Dingley's headgear a national issue.—Home Market Bulletin.

Another vindication of the Great American "I am." It is extremely funny to hear a contemporary of such solemnity and weight as our Boston friend arguing from such a standpoint and in such terms as these.

It is interesting, also, to note that in the Colonies generally the primary interests of trade with the Mother Country are receiving attention. The statement has been made from Canada, apparently on official authority, that after August next a distinct preference (amounting to twenty-five per cent. of the amount of duty) will be given to the products—not only of the Mother Country, but also of British Colonies which treat Canada in a similar manner. From Australia it

is satisfactory to learn that the Federal Convention have passed clauses providing for the establishment of uniform Custom rates, within two years after the establishment of the Commonwealth, with intercolonial free trade immediately thereafter. It would appear, therefore, that economic progress is, if slowly, at all events approaching within measurable distance, and that those who have for so many years advocated Imperial Federation as a means of drawing the Mother Country and the colonies more closely together, have a prospect of seeing their aspirations realized in even a more practicable and durable manner than they could have expected at the time when the late Right Honorable W. E. Forster took the first step towards the formation of the Imperial Federation League.—Chamber of Commerce Journal, London, Eng.

Our esteemed contemporary of the old world is nothing if not cautious. We are glad to hear its announcement that economic progress is approaching, for we have great respect for the opinion of the representative organ of the great business houses of the metropolis of the world. We would suggest, however, that Imperial Federation should be only for tariff purposes as its extension further would be very apparently impracticable. The Journal would certainly have had no doubt as to the authority for the statement anent the conditional reduction of the Canadian tariff, had it in the least degree followed Canadian legislation in these matters for the past two years.

Notwithstanding section 3 of the Naturalization Act, Chapter 113, of the Revised Statutes, or anything in any Act of the Parliament of Canada, or of the Legislature of any province, no person may acquire or hold, either in his own name or through a trustee, or otherwise, any mining lands or mining rights in Canada, or be a director of a mining company, unless he has been a resident in her Majesty's dominions during the twelve months immediately preceding the time when he acquired such mining rights, or became such director.

Such is the bill which James McMullen has fathered in the Dominion House. It is to be hoped that he will lose no opportunity of impressing upon the Commoners the desirability of making law of his bill. The twelve months' residence proviso will bring the Americans to time on the double-quick.

During 1897 Canadian imports totalled \$115,979,713 in value. The exports from Canada during the same period amounted to \$154,676,089.

The United States in 1897 exported wood and manufactures of wood to the extent of \$40,330,793. Canada exported to the United States the same commodities to the amount of \$15,895,214 during the same year. Why can not Canada supply the United States' foreign customers direct? During 1897 the United States supplied Australia with \$942,196 worth of products of the forest. Canadian Trade Commissioner Larke, says that part of the Australian market was offered to Canadian lumbermen and they would not take it. Why?

Ontario millers are strongly in favor of Mr. Richardson's bill in the Dominion Parliament, which require railway companies to take wheat on their cars at ordinary shipping points. As it is at present farmers are sometimes obliged to haul their wheat to an elevator, although a railway station is much nearer than where the elevator is located. They have been laying their grievances before Sir Henry Joly and will press their view.

Mr. Chamberlain can do better work to hurry on Imperial extension by coming to Canada than by remaining where he is. It is an Imperial statesman of the Chamberlain stamp that should be appointed the next Governor-General for Canada. Or better still, Mr. Chamberlain should relinquish his office as Secretary of State for the Colonies and become a representative in the Canadian Parliament. If he wishes to advance the cause of Imperialism he can effect more by leading the Imperial party in Canada than by remaining where he is and viewing the movement from afar.—Toronto World.

Our contemporary thus concludes an editorial in which it calls upon Mr. Chamberlain to be the Imperial Bismarck. We should be more than glad to have such strength added to the movement here but what would the movement in Great Britain be without him?

Inquiry has been made from English sources as to what extent Canada could supply evaporated fruits to the British market. Here is another profitable field opening up for the development of a great industry, and proprietors of evaporators should lose no time in ascertaining full particulars in the matter from the Ontario government of whom the inquiry was made.

Hamilton despatches state that the Board of Trade of the city on Burlington Bay have passed a resolution to the effect that it is desirable to impose on nickel ore an export duty equal to the import duty which the United States imposes on manufactured nickel. Every Board of Trade in Canada should follow suit. We cannot have any too strong a movement in this line. In a recent issue of THE MANUFACTURER this whole question was discussed at length, and as an evidence of the interest taken in the subject we may state that our supply of extra copies was completely exhausted within a few days after publication. We shall be glad to receive any and all information in the matter, and assist by every means in our power to secure the imposition of an export duty on nickel ore and matte, and the consequent establishment of a great Canadian industry.

The Fire and Light Committee of Toronto City Council have received representations from Messrs. Elliott and Pennyquick who represent a new process whereby illuminating gas is manufactured from garbage. They claimed that a ton of garbage would produce from ten to fourteen thousand cubic feet of gas. The fifty tons of garbage daily deposited at the

city crematories would yield energy enough to light from 1,200 to 1,500 arc lamps for 12 hours, while the 40,000 loads of street sweepings annually removed from our streets would furnish power for manufactories. This gas can be manufactured for fifteen or twenty cents per 1,000 feet. The company represented by these gentlemen offer to erect a plant at the crematory at their own cost within three weeks, to demonstrate the feasibility of their proposal. They are evidently convinced of the practicability of their proposal or they would scarce have tendered such substantial evidence of faith. In event of its success what complications may be expected to arise? The Consumer's Gas Company cannot compete with the new estimate of prices. If it prove successful we may expect that its promoters will be bought out by the concern that now holds the Toronto monopoly. To avoid the loss of such a bonanza the corporation should secure an option in case the test results satisfactorily, so that the people may not be deprived of the benefit of such a great advance in the science of illumination. The success of this or similar plans of making gas from garbage has been thoroughly established elsewhere, notably in London, England, and the working of the system advocated by Messrs. Elliott and Pennyquick has come under our notice and appears to be all that is claimed for it.

In a recent issue the Ottawa correspondence of The Mail and Empire contained the following interesting interview which points us towards the approach of preferential trade within the Empire:—

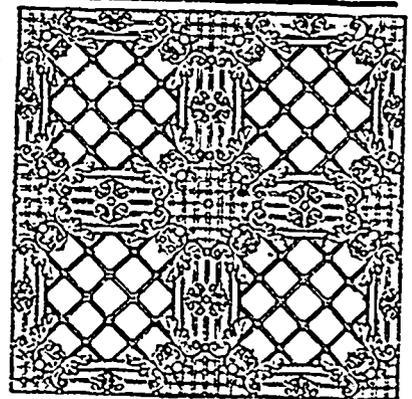
Mr. Lowles, member of the Imperial Parliament, and an ardent advocate of Imperial preferential trade, arrived in the city yesterday, and is the guest of Sir Charles Tupper. Mr. Lowles states that it is a mistake to suppose that the preferential idea is repugnant to the British public because of the ingrained national prejudice in favor of absolute free trade. "No idea," he said, "is more popular in England than that of making Canada the granary of the Empire. This, we think, could be accomplished by the imposition of a shilling per quarter upon grain. The Cobden Club is practically on its last legs and has not even headquarters in London, although it meets every year for a banquet and perhaps to confer a medal." Mr. Lowles further said that Mr. Chamberlain's enthusiasm for preferential trade has not lessened, only the latter is of opinion that an advance should come from the colonies, as any proposition from the Mother Country might be misunderstood. Mr. Lowles takes a contrary view, and believes that without compromising her position Great Britain might make a suggestion to the colonies.

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For Ceilings and Walls are most deservedly popular for use in every class of building. When you think of the Fire Proof and Hygienic Qualities and Artistic Effect of our Metal Finish, and remember that it not only lasts indefinitely, but retains its beauty as long as it lasts—you understand why progressive people everywhere are giving us their orders.

Everything that can be said is in favor of these goods, and our prices are moderate. Let us hear from you.



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METALLIC ROOFING CO., Limited, - 1181 King St. West, TORONTO.

Newfoundlanders have awakened to the needs of a young country. The budget, presented to the Legislature recently, estimates a deficit of \$213,000 for the year ending June 30th next. Trade prospects are improving monthly and phenomenal development is expected to take place during the year. The expenditure for the coming year will be a hundred thousand dollars below last year's figures, and further reductions are contemplated for the years following. The new tariff is decidedly protective, every local industry being assisted. The duties on raw material, tea, sugar, and fishermen's necessaries of life, are reduced, while the duties on spirits, tobacco, and manufactured goods are increased. The question of inter-Imperial preferential duties is held over until next year, pending the experience of the operation of the new tariff, but the Receiver-General has warmly endorsed Hon. Joseph Chamberlain's policy of preferential duties with the Empire. We are glad to see Newfoundland started at last on the right road, and in the light of continuance along that line we prophesy a big boom for the colony by the sea.

There is quite a large probability that we may have to fall back upon America at no distant future to make good our deficient supply—on America, once our largest buyer of both pig and finished material.—The Statist.

The above prophecy is in reference to the iron famine which appears to threaten the iron trade of Great Britain. The Statist points out that during the past year the exports and home market of Great Britain consumed about half a million tons more than the whole output of the United Kingdom. Here is an opportunity for the Ontario Government to take a step that would be exceedingly popular. The Statist evidently has not a very clear idea of American iron deposits, and no time should be lost in laying before English consumers the fact that Canada can supply an unlimited quantity of iron unexcelled in quality by any iron in the world.

It is stated that galena was recently found at Austin, Man., that assayed \$37 silver to the ton. Added to that comes the report that fine rubies have been discovered on the high levels, seven miles from Vancouver, near the Fraser River. The gems have been submitted to jewellers, who pronounced favorably upon them. We know but a tithe of what riches lie easily accessible to us in the boundless, unexplored regions

of Canada, but it seems now as though we are likely to make discoveries on our own properties where we may have dwelt for many years, all unsuspecting of the natural wealth so near us.

Ready-made clothing manufacturers have cause of complaint and have been telling their troubles to the Ottawa Government. They claim that after the preferential tariff reduction goes into force, on July 1st, the duty on goods from Great Britain will be more than eight per cent. less than the duty they will have to pay on materials, cloth, linings, trimmings, etc., which they import from Europe. Thus another item is added to the already lengthy list which must be considered in revising the tariff.

Upon Canadian Trade Commissioner Anderson's recommendation a consignment of a ton of Canadian butter was recently shipped to Kobe, Japan. Three days after it reached Japan the consignees cabled for another ton. They have since written Mr. Anderson as follows:

The butter sent arrived in good order, and is certainly the best that ever came into this country. It went like greased lightning. Every day or so a note comes in asking for more. I can safely report to you that the brand forwarded (a Northwest product) is an established butter in Kobe.

Why shouldn't Canada supply Japan with every pound of butter which the Orientals desire to import?

The Bulletin of the Canadian Association of Stationary Engineers is the latest arrival in the field of technical journalism in Canada. It is not a very extensive journal, but it promises to grow. That is the right spirit, and there certainly should be a niche ready for The Bulletin in its own particular line. The Association is an organization that has done a great deal and will do a great deal more for the calling practised by its members, and we extend the right hand of fellowship to their organ. The officers of the Association are: President, E. J. Philip, 11 Cumberland St., Toronto; Vice-President, W. F. Chapman, Brockville, Ont.; Secretary, J. G. Robertson, Montreal, Que.; Treasurer, R. C. Pettigrew, Hamilton, Ont.; Conductor, G. R. Risler, London, Ont.; Door Keeper, G. C. Mooring, Toronto, Ont.; W. G. Blackgrove, District Deputy for Ontario. Executive Secretary's office: 7 Vercheres Avenue, Montreal, Can.

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PISTON INLET Air Compressors

STRAIGHT LINE
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FOR ALL DUTIES.

... COMPLETE MINE EQUIPMENT ...

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

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

The Canadian Pacific Railroad has been helping the Canadian millers to find a market for flour in the West Indies, in connection with its St. John, N.B., route. A trial shipment sent to Barbadoes has given excellent satisfaction, though apparently, from reports made, it did not net the millers any profit. Millers who made the trial shipment have been asked to duplicate the shipments already made. Trinidad imports about 150,000 barrels of flour annually. The chief obstacle in the way of Canadian export flour trade to the West Indies is the insufficiency of steamship communication; something that will hardly be lacking long if there is an urgent demand for it. The ocean is full of steamers.—American Miller.

Our Chicago contemporary is very far seeing. We tender our thanks for the kindly comment, and would suggest that some ambitious Canadian capitalist promptly remove any obstacle now presented by a lack of steamships between Halifax and the West Indies.

Six armored vessels, six protected cruisers, thirteen torpedo boat destroyers and five torpedo boats are now building in Great Britain for foreign governments. Confine the manufacture of nickel steel to Canada and every one of those ships would be built in Canadian shipyards.

A very interesting programme has been prepared for the next convention of the Canadian Electrical Association, which will be held in Montreal June 28th, 29th and 30th. Those interested in electrical work cannot afford to miss the valuable papers on intricate points and new processes.

The Montreal Street Railway Company is nothing if not enterprising. It has just had 15,000,000 car tickets printed. The cost of the printing was \$1,100. The company received \$3,000 for advertising on these tickets. Pretty good business, this.

A number of those who are affected by the unsatisfactory condition of cotton manufacturing in Lowell, Mass., are in correspondence with the Canadian Government and will likely cross the border and take up land in Canada. So state our American contemporaries, and we are glad to accept their statement without question. We have no doubt that such immigrants will be an acquisition to Canada. They are of industrious habits, and trained to work. That sort of the immigrant is the man who will help us to build up a nation of workers.

Anglo Canadian trade is doing much better than trade between Great Britain and other countries. The exports to Canada during February increased twenty-three per cent., while for the two months they increased fifteen per cent. The exports of all other countries decreased one and two per cent. respectively. Imports from Canada decreased one, and increased twenty-eight per cent. respectively, but imports from all countries decreased four and two per cent. respectively. The increase in exports to Canada occur largely in goods affected by the new tariff. The chief increases in imports from Canada for the two months are: Oxen, £25,000, wheat and flour, £90,000, fish, £46,000. Imports of wood decreased £35,000.—Montreal Star.

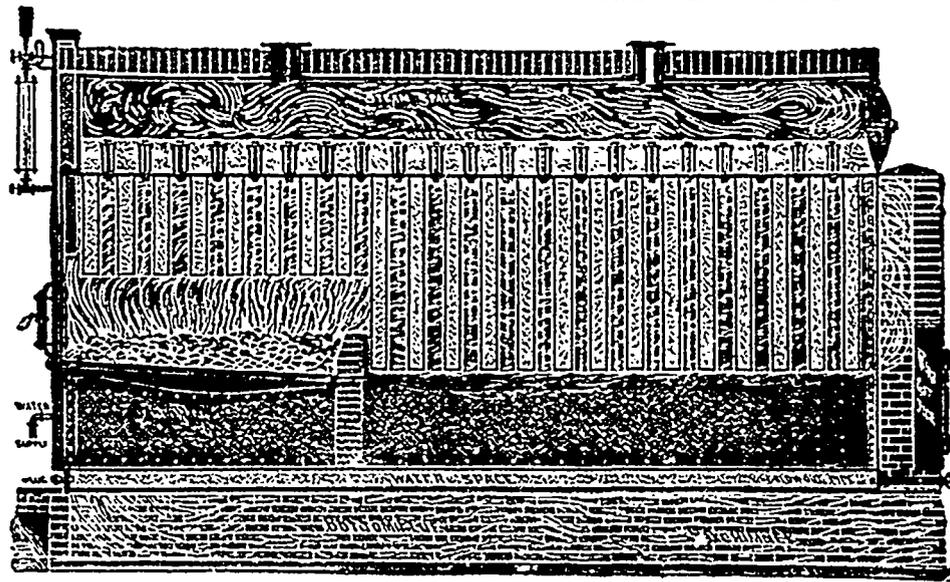
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Bell Telephone Building, - MONTREAL, QUE.

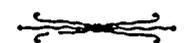
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Manufactured in Montreal, Ottawa and Toronto.



For Steam, Power and Hot Water Installations....



The Most Economical Boiler, and the Cheapest, when based on Evaporating Capacity.

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GUARANTEED: A Saving in Fuel of 30 per cent. over Return Tubular Boilers.
A Saving in Fuel of 50 per cent. over any Cast Iron Heater.

...Catalogue Free.

CAPTAINS OF INDUSTRY.

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

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

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

The Bank of Hamilton is opening a branch at Morden, Man.

The Cobban Manufacturing Company, of Toronto, are employing a record-breaking number of hands and report a good outlook.

The Gurney Foundry Company, of Toronto, sees extending trade ahead. February of this year has been a much better month for them than February, 1897.

The Massey-Harris Company are literally too busy to talk. They expect a tremendous season's business and orders are tumbling in from the four quarters of the earth.

The Abell Engine Works, Toronto, are running up to their full capacity. They are filling \$50,000 of orders for the Northwest Territories.

The Sydenham Glass Company, of Wallaceburg, Ont., has a contract for the manufacture of several carloads of lantern globes.

London, Ont., wants tenders for its annual lumber supply.

The Smith's Falls, Rideau and Southern Railway are asking permission to lay rails and erect poles and wires in Smith's Falls.

Hull Electric Railway Company, of Hull, Que., have ordered five open cars from the Ottawa Car Company.

The C.P.R., it is said, are arranging for the stringing of a heavy copper telegraph wire across the continent.

The Lake of the Woods Milling Company made a big sale when they put through, at Montreal, a deal comprising 6,700 sacks of choice Manitoba flour for May shipment.

The sash and door factory of F. Tremblay, Montreal, recently suffered damage by fire.

The Bell Telephone Company are having plans prepared for a new exchange building to be built on St. John street, Quebec.

A new engine has been added to the plant of the electric light company at Milltown, N.B.

The Royal Electric Company, of Montreal, have installed an electric lighting plant in Fort William, Ont.

The Bertram shipyards in Toronto are taxed to their utmost. Overtime is the rule and everybody is so busy that he has scarcely time to eat his lunch.

The C.P.R. is so busy that eighteen men in the paint shop at Toronto Junction, Ont., are laid off, as cars cannot be spared from the road to be overhauled, the traffic is so great.

The cut of logs on the Tobique River, N.B., is expected to reach 50,000,000 feet for the past winter. The cut on the Upper St. John, will likely be twice as great as the Tobique cut.

The Canada Paper Company have started their new mill at Windsor Mills, Que., and are preparing to drive about 12,000 cords of pulp wood down the Windsor River from St. George and Stoko.

The Sarnia Ont., Town Council has accepted the tender of Mr. John McDougall, of Caledonia Iron Works, Montreal, for one three million gallon pump, Worthington pattern, at a cost of \$8,180.

The Metallic Roofing Company, of Toronto, have found it necessary to increase their floor space by one-third owing to the fact that their sales for this year are already three times what they were during the same period of last year.

Menzie, Turner & Co., window shade manufacturers, Toronto, report that their engines are running day and night, and so far this year they have doubled the business of the same months of last year. They are employing twice as many hands.

WATCH THIS SPACE. . . .

. . . . Next issue we will show you something new in the Electric Supply Line. Meantime, send in your orders. . . .

JOHN FORMAN,

644 Craig St., MONTREAL.

ELECTRIC SUPPLIES.

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WRITE FOR LATEST CATALOGUES AND SAMPLES TO

CLOTH AND PAPER.
GLASS & FLINT PAPER.
"Atlas Brand"

"FLORA" Knife Polish
in 3d. Gal. & 1/2 Tins.

Ground, Washed & Flour

WHEELS of highest
quality for general
& special purposes.

Grinding Machinery.



THE LONDON EMERY WORKS CO.,

10/12 VINE ST., CLERKENWELL,
.....AGENTS WANTED.....

LONDON, E. C.

The Osgoodo Glove Works, of Preston, Ont., are soon likely to be handled by a joint stock company, which is being organized for that purpose.

The Berlin Brush Company, of Berlin, Ont., have dissolved. Messrs. Martin and Kirsch will continue the business.

The people of St. John's, Que., are agitating for the erection of a big skating and curling rink during the coming summer.

The Brussels Electric Light Company, of Brussels, Ont., has been succeeded by Robt. Mainprize, who continues under the old style.

The Empire State Watch Company, of Montreal, Que., have dissolved.

The Dyson-Gibson Company, of Winnipeg, Man., manufacturers of spices, etc., are asking permission by way of letters patent to increase their capital to \$100,000.

A charter of incorporation has been issued to the Jacques Cartier Pulp and Paper Co., of Montreal, Que.

An electric railway is being advocated between Ottawa and Metcalf, Ont. The distance is about twenty miles.

The Furniture Manufacturers' Exporting Company, of Ontario, Canada, Limited, is now authorized to deal in furniture, etc. Capital stock, \$25,000. John R. Shaw, Toronto, is solicitor for the company.

The British American Light and Power Company is asking incorporation to build and operate electric tramways, etc., in the Yukon country and northern British Columbia.

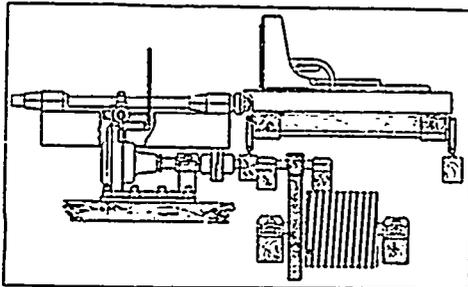
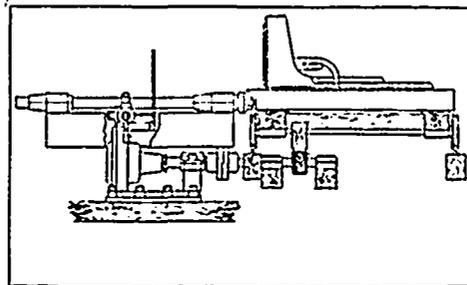
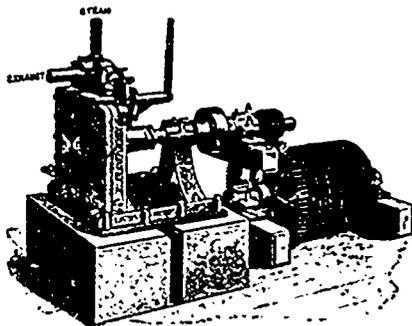
The Dechenes Electric Light Company, of Dechenes Mills, Que., is having plans prepared for a system of dams to develop 3,000 horse-power at Dechenes Rapids. A new power house will also be built.

The C.P.R. will likely build a telegraph line from Quesnelle to Dawson City next summer.

John Hope & Co., bobbin and spool manufacturers, Lachute Mills, Que., report a very busy winter. They have just received large contracts from some of the leading cotton mills of Canada.

Two more 252-inch looms for making felt have been recently added to the plant of Hamelin & Ayers, Lachute Mills, Que. This makes six looms of this size now working in their mills.

Mr. C. Bethell, M.E., formerly with H. W. Petrie, of Toronto, has taken charge of the city warehouse and salesrooms of the Laurie Engine Company, which are located at 321 St. James street, Montreal, Que. Mr. Bethell has had extensive experience in this line of work, and we predict success for the Laurie establishment under his superintendence.



THE DAKE STEAM FEED

EMBODIES THE FOLLOWING ADVANTAGES :

Simplicity of Construction.
Small Space Occupied.
Economical Use of Steam.

Easy Adaptation to either New Mills or those now in use.
Positive and Easy Control. **Cheapness.**

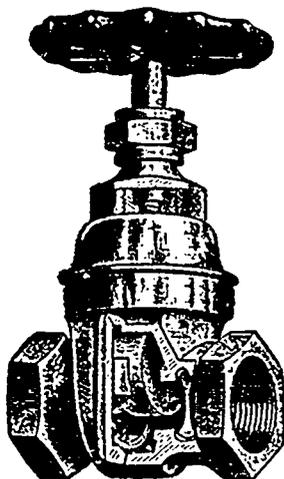
The movement of the engine in either direction is under the absolute control of the Sawyer, thus accommodating the speed of the feed to the size of the logs.

Mill men, who have used other makes of Steam Feeds, comment favorably on the economical use of steam of our Feed over others.
Write for Catalogue and full particulars.

THE JENCKES MACHINE CO.,
SHERBROOKE, QUE.

Succeeding the Phelps Machine Co., Eastman, Que.

The WEBBER Patent Straitway Valve

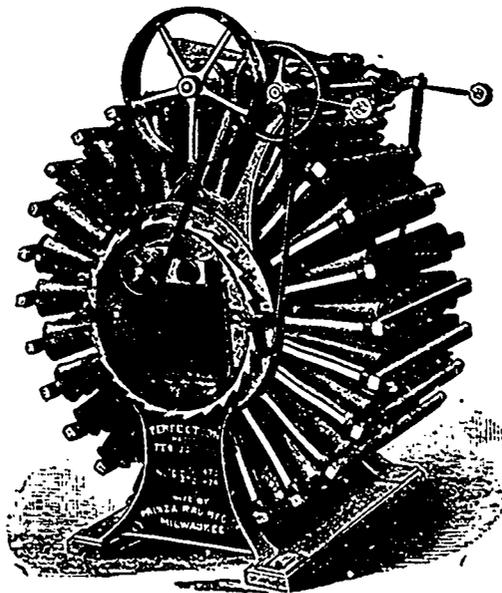


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Steam,
Water
OR
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EVERY
VALVE
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The Kerr Engine Co., (Limited),
WALKERVILLE, ONT.
Solo Manufacturers for Canada. Send for Price List.

The Perfection Dust Collector.



The only machine with a perfect Automatic Cloth Cleaning Device.

We Guarantee it to collect absolutely all the Dust, and discharge the air free and clean.

We Guarantee it will not make any back pressure against the fan.

Wm. & J. G. Greey,
2 CHURCH ST.,
TORONTO, - ONT.

Sole Licensees for Canada.

Contractors will have a chance at Manitow, Man., where S. E. Riggs will erect a large block this summer.

Mr. Amos Allison, of Belleville, Ont., has been starting men at work on an iron bearing property near Malone, owned by him and which will be known as the Dufferin mine. He states that tests show that the ore carries from seventy per cent. to ninety cent. of iron.

A twenty h. p. dynamo from the Canadian General Electric Company has been placed in the Bank of Toronto mill at Fenelon Falls, Ont. It is to supply 325 lights.

Superintendent Fisher, of the T. H. & B. has been in Dundas, Ont., arranging for the Brantford Plow Works to locate near the railway in case Dundas secures the works, as it is trying to do.

Messrs Hickey & McPherson, salmon canners, Vancouver, B.C., have dissolved partnership. Mr. Hickey will carry on the business.

The planing mill of John Morris & Co., at Goderich, Ont., was destroyed by fire on the 30th ult. No insurance.

A 35,000-bushel elevator at Sidney, Man., belonging to James Richardson & Sons, Kingston, Ont., was recently destroyed by fire. It will be rebuilt this summer.

The gold output of the Kootenay mining district is estimated at \$1,500,000 per month.

Arthur Ludlam will henceforth conduct the sash and door manufacturing-business of Ludlam & Fuller, at Leamington, Ont.

Milton Pulp mill, at Milton, Queen's County, N.S., is putting out about 2,000 tons per month. The mill uses from six to eight car loads of wood per diem and is working splendidly. Manager Hughes has reason to be proud of his factory.

James Vicks Sons Garden and Floral Guide for 1898 is a most beautiful work of the printer's art and contains a fund of information for the growers of flowers and vegetables which should be made very helpful, and the ease with which the information is obtained places all of the patrons of this superior firm under obligation to them. The seeds of this firm which we have planted have always given the best of satisfaction, and enables us to recommend the firm as doing an honorable business.

Capt. Farris and Mr. Thos. Wallace, of St. John, N.B., have been recently in Toronto, Ont., inspecting engines which the Polson Iron Works are building for the steamer "Col. Jim," which is being built at Victoria, B.C., for the Stewart Yukon Pioneer Company, Limited, of London, England.

The Confederation Life Association, of Toronto, have taken out a building permit to erect an eight storey structure at a cost of \$10,000. The building is to be a store and warehouse.

Thirty men from Polson's Shipyards, Toronto, Ont., are in Vancouver, B.C., setting up the steel steamer built by the Polsons for the C.P.R. Stikino River route. The steamer was put together in Toronto and then taken apart and shipped by a special train across the continent. The woodwork will all be fitted at Vancouver.

The G. T. R. have already expended \$600,000 on improvements to the Victoria bridge at Montreal. About half as much more will be required to complete it.

It will pay manufacturers to investigate the many merits of the wood split pulleys advertised in THE CANADIAN MANUFACTURER. They save power, they save time, and they save money.

The Chatham Hedge Fence Co., Limited, of Chatham, Ont., have obtained a charter.

A charter has been granted to the Leadville Mining Company, of Toronto, Limited.

The Standard Roofing and Paving Company, of Montreal, have dissolved.

J. Y. Griffin, the Winnipeg, Man., pork-packing house, are opening a branch in Vancouver, B.C.

THE - - - -

WM. HAMILTON MANUFACTURING CO., Limited

MANUFACTURERS OF

THE "RELIANCE"

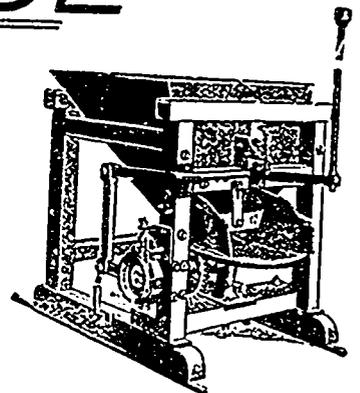
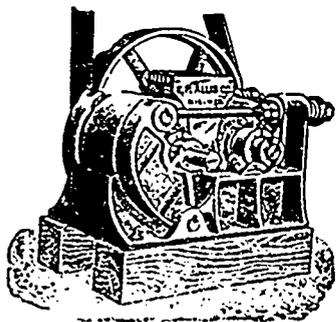
Mining, Milling

AND

Smelting Machinery

FOR THE DOMINION OF CANADA

(Under License from The E. P. ALLIS CO., Milwaukee, Wis.)



Crushers, Rolls, Jigs, Concentrators, Screens, Stamps, Pumps, Compressors, Hoists, Boilers, Engines, Water Wheels, Etc.

Branch Office
VANCOUVER, B.C.

PETERBOROUGH, ONT.

Hull, Que., voted almost unanimously for the \$30,000 bonus to the Toronto Rubber Company. Only eighteen votes were recorded against it.

The Allen Mfg. Co., Toronto, manufacturers of underwear, are negotiating with the city for water at manufacturers' rates, for leave to make overhead and underground connections across a lane, between two wings of the factory, and exemption from taxation for local improvements for ten years. The extension of their factory, they point out, will occasion the demolishing of a number of unsightly Pearl street houses. If their demands are not granted they will move to Montreal.

The Toronto Patent Agency Company, Limited, of Toronto, Ont., has taken over the business of the American Patent and Investment Company, formerly conducted by Mr. J. A. McMurtry. The Toronto Patent Agency Company is incorporated with \$25,000 stock.

The Clearwater Gold Mining Company, a Virginia, U.S., concern, has been granted license to do business in Ontario. A. H. Marsh, Toronto, Ont., is their solicitor.

The C. P. R. proposes to build three new liners for the Vancouver-Yokohama route.

The Kingston Milling Co., of Kingston, Ont., has dissolved. Thos. G. Renton continues the business.

MacIntosh Bros. are moving their sawmills from Lac La Hache, B.C., to Quesnelle Forks, B.C.

The Richmond Lumber Manufacturing Company, of Stephenson, B.C., has been incorporated.

Sauble Falls Ranch and Lumber Company, recently incorporated, has been empowered to construct and operate works for the manufacture of electricity for light, heat and power at Sauble Falls, Ont.

Mr. I. Erb, architect, Petrolia, has been instructed to hasten the completion of the plans for the new Petrolia Methodist church, and tenders will be called for as soon as possible.

The bottling works at Diamond Park, Arnprior, Ont., have ordered machinery with a capacity of 1,500 dozen bottles per day.

Ridgetown, Ont., is still trying to secure the Hall furniture factory.

The Swan Cigar Company, of Montreal, will shortly be transferred to St. John's, P.Q.

Mr. Edmond Parent has decided not to remove his boot and shoe factory from Quebec to St. John, P.Q.

The Dominion Manufacturing Company are starting business as biscuit manufacturers in Montreal, P.Q.

Parks, Mitchell & Co's sawmill at Moyie City, B.C., has been destroyed by fire.

The Muskoka Beaver Mining Co., Limited, have been incorporated in Ontario to do mining, reduction and development.

The Cushing Sulphite Pulp Company, capital \$500,000, are asking incorporation and propose to erect a mill at St. John, N.B.

The Payne mine, New Denver, B.C. is now shipping ore over its new tramway to the C. P. R.

Rich divisions of gold are reported from Whycomagh, C.B.

The C. P. R. will shortly have an 800,000 bushel elevator at St. John, N.B. They already have a 300,000 bushel elevator at this point.

MACHINERY and EQUIPMENT FOR Mines

MANUFACTURED BY

Canadian Rand Drill Co.,
MONTREAL.

A. KLIPSTEIN & CO.

122 PEARL STREET, NEW YORK.

Anilines, Dyestuffs and Chemicals.

DELIVERY MADE AT NEW YORK, MONTREAL OR HAMILTON.

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AGENTS,

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Sulphur

ROCK
ROLL
FLOUR
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English Recovered
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Etc,

The Anglo-Sicilian Sulphur Co.,
Limited.

Arthur P. Tippet & Co.,

CANADIAN AGENTS,

30 St. Francois-Xavier Street,
MONTREAL.

ABBEY IMPROVED CHILLED SHOT CO.

(LIMITED)

NEWCASTLE, GREAT BRITAIN.

THIS SHOT IS NOW MADE BY A NEW PROCESS.

Samples sent on application.

Read the following Reports on our New Make of Shot:—
Sporting Goods Review states:—"The size and shape of pellets are good and are exceedingly hard. We understand that the demand for this shot has considerably increased and gaining in favor with sportsmen, to whom its excellence of manufacture appeals."
Arms and Explosives states:—"For soundness and general regularity of surface the pellets possess a very high degree of excellence."
W. W. GREENER, "the Great Authority on the Gun," speaks highly of Chilled Shot, and strongly recommends it in preference to soft shot.

ESTABLISHED 1823.

Telegrams:—"WILSONS, CORNHOLME."—A.B.C. Code Used.

WILSON BROS. BOBBIN CO.

(LIMITED)

CORNHOLME MILLS, TODMORDEN, ENGLAND.

BOBBIN AND SHUTTLE MANUFACTURERS.

THIRTY PRIZE MEDALS AWARDED.

HIGH-CLASS WORKMANSHIP. SEVENTY YEARS' REPUTATION.

LARGEST BOBBIN MAKERS IN THE WORLD—(Over 1,200 Workmen).

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Patents obtained. Patents sold on commission. Provincial rights sold. Most actual sales. Best results. Quickest work. Honest Treatment. Oldest company. Reliable references. All patent business promptly attended to. Valuation and prospects of any patent furnished on application.

The DRIER the STEAM the GREATER the POWER.



OUR SECTIONAL PIPE AND BOILER COVERING

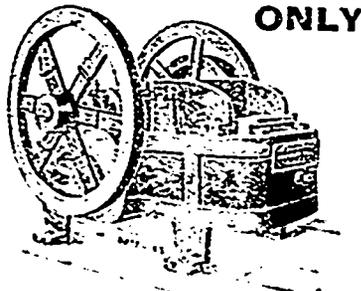
Almost Entirely Prevents Condensation of Steam when Passing Through the Pipe
EUREKA MINERAL WOOL & ASBESTOS CO.

132 BAY STREET, TORONTO.

ASBESTOS GOODS.

MINERAL WOOL

ENGINE PACKING.



ONLY

FINE CRUSHER

BREAKS LARGE, or when set close
Reduces to GRAVEL and SAND.

FOR ORES.

STURTEVANT MILL CO., BOSTON, MASS.



THE GROCKER IMPROVED ...TURBINE.

SEND FOR OUR NEW CATALOGUE
JUST ISSUED.

A HIGH-GRADE, MODERN WHEEL—ECONOMICAL

AND EFFICIENT IN THE HIGHEST DEGREE

The best combination of hydraulic science with practical results now on the market. Complete Water Power Plants built and installed.

*It will interest you.
Our Prices will Please,
and to Purchase
Our Machinery will Pay you.*

The JENCKES MACHINE CO., 28 Lansdowne St.,
SHERBROOKE, Que.

ECO MAGNETO WATCHMAN'S ELECTRIC CLOCK.

Without Batteries.

Write for descriptive circular to

Eco Magneto Clock Co.,

Room 71, 620 Atlantic Avenue,
BOSTON, MASS.

MONTREAL ELECTRIC CO.,

302 St. James Street

Agents for Province of Quebec.

John Starr, Son & Co. (Limited),

HALIFAX, N.S.,

Agents for the Maritime Provinces.

The Kaladar and Anglesa Mining and Development Company, of Kingston, Limited, has been incorporated with capital stock of \$400,000. W. H. Perry, Napanee, is the solicitor.

Charles L. Lewis, of Duluth, Minn., is the legal member of the Zenith Gold Mining Company, of Ontario, Limited, which has just been incorporated with a capital stock of \$93,000.

The Calcutt Brewing and Malting Company, of Ashburnham, Limited, has been incorporated to acquire and conduct the Calcutt Brewery. Capital stock, \$95,000.

The Tree Rotary Engine Company, Limited, of Woodstock, Ont., has been incorporated under the laws of Ontario. Its objects are to acquire the patents of, and manufacture Tree's rotary engine. The capital stock is \$24,000. John S. MacKay, of Woodstock, is the company's solicitor.

The St. Catharines Cold Storage and Forwarding Company, Limited, has been incorporated and will carry on business at St. Catharines, Ont.

The Golden Dredge Mining Company, of London, Canada, Limited, has been incorporated with a capital stock of \$80,000.

The Poole & Wilson Company, of Toronto, Limited, has been incorporated, and will carry on the business of bookbinders and manufacturing stationers in Toronto.

The site of the old W. S. McKay factory, North Water and Queen streets, Galt, Ont., will soon be occupied by a new mill to be erected for the C. Turnbull Co.

The Frontenac Lead Mining and Smelting Company, Limited, has been incorporated for Ontario with a capital stock of \$55,000. John Ross Shaw, of Toronto, is the legal member of the company.

Letters patent for Ontario have been issued to the Snyder, Roos Company, Limited, of Waterloo, Ont., to manufacture furniture, house and shop furnishings, etc.

The Challenger Leather Goods Company, of Toronto, Limited, has been incorporated to manufacture and sell leather goods.

The Windsor-Yukon Mining Company, Limited, has been incorporated in Ontario with a capital stock of \$45,000.

The Niagara Metallic Furniture Company, of Niagara Falls, Ont., has been chartered to do business with a capital stock of \$24,000.

The Guelph Linseed Oil Company, Limited, has been incorporated to carry on business at Guelph, Ont., with a capital stock of \$50,000.

The Anchor Knitting Company, of Almonte, Limited, will henceforth be authorized to transact business. Capital \$50,000.

Leitch & Turnbull

Canada Elevator Works,

Queen and Peter Streets, Hamilton, Ont.

Patent Safety Hydraulic... **POWER ELEVATORS** Hand and... Telephone Connection.

WM. BARBER & BROS.

GEORGETOWN, ONT.

Manufacturers of

BOOK AND FINE PAPERS

An agitation is on foot in Berlin, Ont., for the building of a new town hall, to include a free library and other kindred municipal institutions.

Galt, Ont., is a lucky town. The C.P.R. will favor it with a new passenger station this summer, and they will also raise their bridge over the Grand River to lessen the grades. Galt is an enterprising, growing town and the C.P.R. evidently are aware of that fact.

The firm of Robert Greig & Co., manufacturers of flavoring extracts, Montreal, has been converted into a joint stock company, of which Robert Greig is president.

Mr. George Ingle is adding a brick office building to his planing factory at Lindsay, Ont., and installing a lot of new machinery. He expects a busy season and has several large orders ahead.

New offices are in process of erection for the Goldie & McCulloch Company, of Galt, Ont. They are also increasing the size of their moulding shop.

The foundry of the R. McDougall Company, Limited, of Galt, Ont., is about to undergo extensive alterations.

The Laurentian Spring Water Company, of Montreal, have sold out to C. Robillard & Co.

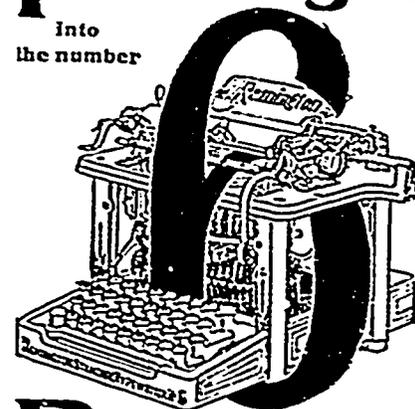
Campbell, Amos & Company have begun business as manufacturers of shoes in Quebec.

Coy Bros.' sawmill at Upper Gagetown, N.B., was burned last week.

W. J. Fletcher, of Markham, Ont., proprietor of the electric light plant there, which was recently destroyed by fire, has decided to reconstruct the plant and has purchased from the Royal Electric Company, of Montreal, a 20 k.w. "S.K.C." generator.

Inwrought

Into the number



Remington

Standard Typewriter

are certain sterling qualities of Excellent Construction and Reliable Service for which all Remington models have always been famous. LIKEWISE... Scientific Improvements notably increasing its usefulness and durability.

EDISON'S MIMEOGRAPH, A New Duplicating Device.

CHAS. F. ARCHIBALD.

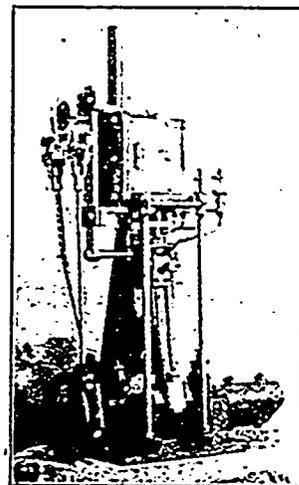
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YACHT ENGINES, 1 H.P. to 50 H.P.
Safety Water Tube BOILERS
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Stationary Engines and Boilers



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FLEMING & CHAPIN, **BRAIDS** Silk Cotton
229-231 Church St., PHILADELPHIA. **Worsted**

CARBONIZER A neutral substance, harmless to animal fibre or tissue, while it destroys burrs, etc., as efficiently as acid. It leaves the wool in fine condition. Manufactured by the Merrimac Chemical Co., 13 PEARL ST. BOSTON.

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YOU WANT THEM. WE MAKE THEM

WRITE FOR PRICES

BANNERMAN & FINDLATER,
Boiler Makers, OTTAWA, ONT.

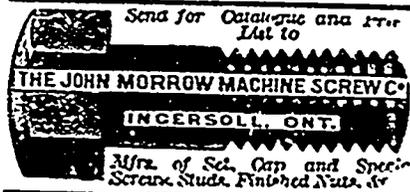
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Mechanics, Engineers and Firemen to enclose 20 cents in stamps for Working Model of Valve for Steam Engines.

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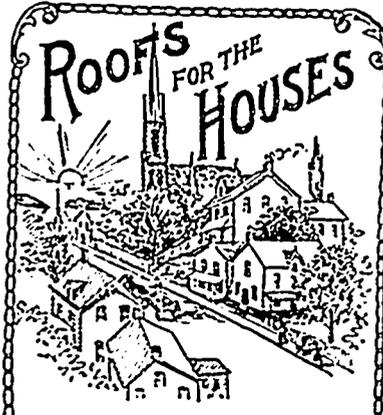
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5 King Street West, - TORONTO.

ROOFS FOR THE HOUSES



32 Years ago
we started the manufacture of sheet metal building materials, and this long experience enables us to offer intending builders all that is desirable in Steel Roofing, Steel Sidings, Steel Ceilings, etc.

We give You
the benefit of our long experience—any of our big catalogues—and up-to-date information on these goods on receipt of a post card.

The Pedlar Metal Roofing Co.
OSHAWA, ONT.

Henry Morgan & Co., Montreal, have placed an order with the Royal Electric Company, of Montreal, for a 20 k.w. direct current generator.

The Brantford Electric and Operating Company are installing a 60 k.w. "S.K.C." generator, and a 40 light T.H. arc machine, received from the Royal Electric Company, of Montreal.

The Porth Waterworks Company is installing two phase "S.K.C." motors, built by the Royal Electric Company, of Montreal.

A fine waterworks system is being constructed in Rat Portage, Ont. Its estimated cost is \$50,000.

The Cobourg woollen mill was last week sold to Mr. Wm. Rosamond. The consideration was \$15,500.

Brampton, Ont., have an empty factory and are making a strong endeavor to secure the removal of the Gould, Shapely & Muir Company from Brantford, where their premises were recently badly damaged by fire.

J. Carew, Lindsay Lumber Mills, Lindsay, Ont., has a big stock of logs on hand to keep the mills going until the drives come down. Press of work will necessitate the operation of the machinery night and day for a while. Mr. Carew had to put in new machinery in connection with his contract to cut 25,000 railway ties.

An Ontario pulp mill recently sold to an American paper company a large consignment at fifteen cents per cwt. ahead of the Canadian price, and the American company wants more of the same.

Methodists at Morlin, Ont., will build a \$4,000 church.

The Flannagan Broom Works, at Wingham, Ont., have been purchased and will be operated by Mr. James McGavin.

The Canada Chinaware Company, Campbell & Purvis, and the Dominion Sanitary Pottery Company, of St. John's, Que., have reunited to maintain a uniform scale of prices. Wherefore wholesalers are mourning the loss of the cut rates that prevailed when the war was on.

The J. B. Armstrong Co., of Guelph, Ont., have on hand a large contract for cutters, which is keeping them very busy.

The Royal Carpet Company, of Guelph, Ont., are working day and night to keep up with the demand. They are making many special designs for lodge and society rooms.

The management of the Grand Trunk has contracted for the construction of twenty first-class passenger coaches. They will be turned out with every modern improvement. The Grand Trunk is just finishing the construction of two hundred freight cars, and have decided to build three hundred coal cars in their Canadian shops. In addition, ten new locomotives have been received, and ten more are coming.

Dartmouth, N.S., expects soon to see under construction a pulp and paper mill to employ 200 or 300 hands.

Amherst, N.S., recently suffered great loss by fire in the car works of Rhodes, Curry & Co. The buildings destroyed are the foundry and one of the planing mills. The machine shop was slightly damaged, but Messrs. Rhodes & Curry kindly wrote us the day after the fire, stating that the engine and boiler house, dry houses, blacksmith and erecting shops were not injured, and they had a large quantity of foundry work ready and would go ahead with work. The burned buildings will be rebuilt and going by April 15th. Damage \$28,000.

The Polson Iron Works, of Toronto, are running till 9 p.m., and some nights all night. They say that business is better than at any time during the past six years.

Firstbrook Bros., box manufacturers, Toronto, report a brisk trade with an encouraging outlook.

The pipe shop, machine shop and foundry of the Londonderry Iron Company, Limited, of Londonderry, N.S., will undergo repairs of an extensive character to meet the demands for the coming season. These departments have shown a handsome profit during 1897, and the outlook for them is very favorable, as the indications point to a large trade in gas and water pipes the coming year. Several provincial towns are likely to have gas plants established in them through the enterprise and energy of Halifax and other capitalists, and a large number of other towns are agitating for water-works systems. The Windsor fire has been a warning to many of the beautiful and growing towns of our progressive province, which is likely to bear fruit, especially in view of the great reduction in insurance rates granted to all towns with water systems. As the Londonderry Company now make pipe acknowledged by provincial engineers to be as good as foreign pipe, and manufacture all sizes of bell and spigot, turned and bored, flexible joint, flanged pipe, specials, etc. they will be able to supply all materials necessary for water or gas systems without the need of going outside of the provinces for them.

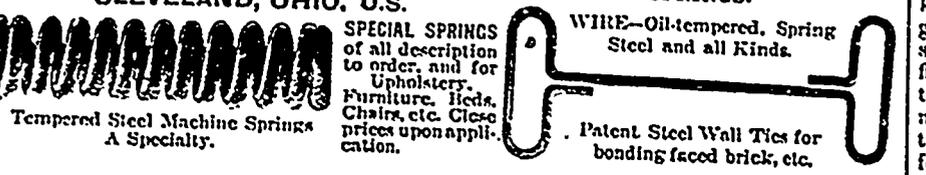
Felts for Pulp Mills 20 years in the business —the first to make Felts in Canada; capacity 1,000 lbs. per day. All our Felts are woven endless, without a splice. Our Felts will last longer and make dryer Puly. All up-to-date mills use our Felts. New mills, when in need, write for samples and prices.

HAMELIN & AYERS, Lachute Mills, P.Q.

ELECTRIC REPAIR & CONTRACTING CO.
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COMPLETE ELECTRIC PLANTS INSTALLED.
ELECTRIC APPARATUS OF ALL KINDS REPAIRED ON THE SHORTEST NOTICE.
Armatures Rewound for all Systems. Commutators Refilled
Write us, our Prices are reasonable and work good.

FOR SALE!
Premises recently occupied by THE A. S. WHITING MANUFACTURING Co., CEDAR DALE.
Consisting of Valuable Water Privileges, Buildings, and about Twenty Acres of Land.
APPLY TO.....
H. R. LUKE, Oshawa, Ont.

CLEVELAND WIRE SPRING CO., CLEVELAND, OHIO, U.S.
TEMPERED STEEL MACHINE SPRINGS.
WIRE—Oil-tempered. Spring Steel and all Kinds.
SPECIAL SPRINGS of all description to order, and for Upholstery, Furniture, Beds, Chairs, etc. Close prices upon application.
Tempered Steel Machine Springs A Specialty.
Patent Steel Wall Ties for bonding faced brick, etc.



Are Your Lungs Weak?

Have you got Consumption, Catarrh, Asthma, or Bronchitis? Cannabis Sativa, Dr. Stevens' East India Remedy, will cure you.

It has cured many cases of pulmonary consumption, pronounced hopeless by physicians. Its virtue is attested by leading members of the medical profession; by business men of high standing; by hundreds who owe their lives to its marvellous power to heal the lungs, allay inflammation, renew the vital elements of the blood and create strength.

So confident am I of its virtue that I will send a package, sufficient for 12 days' treatment, absolutely without cost, duty prepaid, to every sufferer who will send me an accurate statement of his or her case. I do not say that one package will effect a complete cure, but believe so much benefit will be derived from it that the treatment will be continued until a complete cure is brought about.

What it has done for others.

PETERBORO, ONT., Canada, Oct. 13, 1877.
 "I was foreman in the lumber shanty when I was taken sick, and being anxious about the work, I exposed myself greatly, caught a severe cold, and after recovering took a heavy relapse, which terminated in inflammation of the lungs.

"The doctors all gave me up. One of the most prominent said it was impossible for me to get cured, or even get better, and all that any one could do for me was to give me something to ease me the little while I could live, and had me make my will. The 22d of January, 1873, I took my bed in Peterboro, and on the last of the following August, I was drawn homelying on a bed, and three doctors gave me up after I came home. An abscess formed at the bottom of my left lung and discharged outwardly from that time until May, 1876. At the time I got your medicine, it was getting worse every day. Every one thought, and so did I, that death alone would end my misery. I commenced using CANNABIS SATIVA the first of February, 1876, and after using three or four packages of the Remedy, the discharge was checked, and I was able to get out of bed alone for the first time in more than three years and three months.

"For from the 22d of January, 1873, to the 15th of May, 1876, I never was able to get in or out of bed once alone, nor never lay ten minutes off my back, nor never was out of bed one-half day at a time, and spent upwards of \$1,400 without much if any benefit, and I only used a few cents over \$20 for your medicine till I was well.

"It is now exactly eleven months since I left my bed, and I am smart and healthy, and without pain or ache, or any symptoms of the disease. For the past six months I have been able to make a good living for myself. Last fall I cradled and drew in grain."

ROBERT A. HAMILTON.
 Sept., 1877.—Mr. Hamilton's health still remains good.

"My son was given up by three doctors. They said he could not live. In three days after commencing to take CANNABIS SATIVA, we could see a change for the better. It cost me hundreds of dollars for doctors before I got this remedy—and they did him no good. He was reduced from 150 pounds to 114 pounds, and in one week after he began to take the Remedy, he gained 14 pounds. After using five packages he is stronger than ever before. His recovery has been acknowledged in this place as a miracle. To God and your remedy we give thanks for it."

JOHN DIER, JR., Westport, Ont.

W. A. NOYES, 820 Powers Block, Rochester, N. Y.

A. C. NEFF, Chartered Accountant. JAMES WOOD, Late Sec. The T. Eaton Co., Ltd.

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SPECIALTY:—Electric Wiring, by skilled men.
 All work done according to latest methods, at
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Complete outfit for the
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METALLIC LETTERS AND FIGURES,

used by all foundries and machine shops
 to put on patterns; also a number of
 LETTERS AND FIGURES already
 finished, from 1 inch up to 14 inches.
 Profits large, good reasons for selling.

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Blackwell up-to-date VARNISHES

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Consultant to Canadian Pacific Ry.,
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CONSULTING ENGINEER.

Specifications, plans, advice upon Steam and
 Electric Plants, Power Transmission and dis-
 tribution. Special machines designed.

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Contributions to Science.

The name of WESTINGHOUSE is a guarantee.

Stillwell Regulators, Scott 2-Phase,
 Shallenberger Meters, 3-Phase System,
 Tesla Polyphase System, Wurts Non-Arcing
 Lightning Arresters,

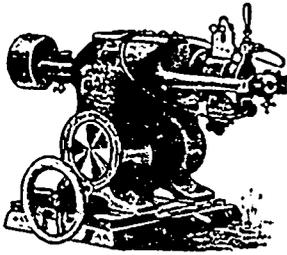
Controlled by the **Westinghouse Electric**
 & Mfg. Co., Pittsburgh, Pa.

The name of
WESTINGHOUSE
 is a guarantee.

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 Electric & Mfg. Co.

New York, Boston, Chicago, Philadelphia,
 San Francisco, Buffalo, Syracuse,
 St. Louis, Atlanta, Tacoma.
 Mountain Electric Co., Denver.
 Ahearn & Soper, Ottawa.
 Westinghouse Electric Co., Ltd.,
 32 Victoria Street, London.

**Jones & Moore
Electric Company**



Manufacturers

Dynamos and Motors

Direct Connected or Belt Driven.

COMPLETE PLANTS INSTALLED
At Lowest Prices.

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FITTINGS**

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& SON, Limited**

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Streets

TORONTO

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Rhode Island Horse Shoes.

Cut Nails.

Bar Iron and Steel

Railway Spikes

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ABBOTT & CO., - MONTREAL



THE B. GREENING WIRE CO. LTD.
PERFORATED METALS.

HAMILTON, - CANADA.

CATALOGUE AND PRICES ON APPLICATION.....

The Packard Electric Co., Limited.

MAKERS OF

**Lamps and
Transformers**

Sole Agents for SCHEEFFER RECORDING WATT METERS
ST. CATHARINES, ONT.

C. H. Witthum, sawmill, Hepworth, Ont., has been succeeded by the Hopworth Manufacturing Co.

A. W. Fleming, of Montreal, has just contracted with Ottawa parties for the supply of a large quantity of "Patrol" double jacket hose.

A recent C.P.R. excursion took 800 settlers, and three train-loads of stock and effects to Manitoba from Ontario. The G.T.R. took some 300 to Manitoba by way of Chicago and St. Paul.

The Boards of Trade of Charlottetown and Summerside, P.E.I., want the Ottawa Government to subsidize a direct line of freight steamers from Prince Edward Island to Great Britain. They want cold storage accommodation to enable them to ship dairy produce.

Bannerman & Findlater, boiler makers, Ottawa, Ont., report business as increasing. They have just built a new boiler shop 110 by 52 feet. A boiler for the Klondike and four steel scows for the Upper Ottawa Improvement Company are among the recent noteworthy productions of this firm's boiler factory.

The 1898 bicycle catalogue of the Welland Vale Manufacturing Company, Limited, of St. Catharines, Ont., is one of the most complete and most artistic to hand this season. It gives clear and concise descriptions of the different styles of bicycles built by this company, but it is more than the ordinary run of catalogues inasmuch as it is well written and illustrated in splendid style. The maple leaf, the shamrock, the lily and the rose are kept before the eye on almost every page, and the various designs are drawn by a clever hand. The little publication is well worth preservation, both for its usefulness and its artistic beauty.

The franchise of the Quebec Electric Railway was procured by H. J. Beemer, who transferred it to the present company but retained a two years' option on the property which gave him a right to redeem the franchise by paying a ten per cent. premium on the construction price and six per cent. interest on the money invested. The returns from the road have been so handsome that Mr. Beemer is at once redeeming it, and turning it over to a new company at a handsome profit. It will be consolidated with the Quebec, Montmorency and Charlevoix Railway under one management, and the latter will be run by electricity, instead of steam.

The Peterboro Canoe Co., Peterboro, Ont., is running night and day with a complement of fifty hands, and still have to refuse orders every day owing to the large contracts now on hand, and this latter in spite of the fact that they have all the improved facilities to guarantee quick work. The company has just received an order for fifteen varnished cedar canoes, eighteen feet long, to be shipped out this week for the United States Government, for their survey party on the Yukon. They are also filling up an order for three hundred basswood canoes for the Northwest Trading Company of Canada. Mr. Morley Ogilvie, son of the famous explorer, who spent several years in the Klondike with his father, and who will leave with a party of Ottawa gold seekers to the Klondike shortly, was in town yesterday and placed a large order with the firm. The company will also ship this week a steam launch to Edmonton. She is to ply on the Mackenzie river on the Edmonton route.

The Hudson Bay Knitting Co., of Montreal, are putting into operation perhaps the largest tent factory in Canada, and are making a full line of all kinds of tents.

A large workshop has just been erected by the government in their shipyards at St. Joseph de Sorel, Que. This addition to the works has been put up with a view to the construction of new dredges, two of which will be commenced shortly. These dredges will be of steel and will have more than ordinary power. About one hundred men will be employed upon them during the coming season. The government has also under construction in these yards two steam-tugs and an immense coal-boat.

Salem, N.S., is again agitating for the establishment of a waterworks system to be supplied from Yarmouth. The estimated cost is \$1,900.

Willis Chipman, C.E., of Toronto, has been in Arnprior discussing the extension of the waterworks and sewage system. Mr. Chipman planned the waterworks in 1892.

The Government will run a creamery this summer at Saltcoats, Assa., N.W.T.

The Lordley Furniture Manufacturing Company, of St. John, N.B., have been visited by fire twice within a week.

NEW ANILINES.

Paper Yellow R.—This new product is admirably suited for paper dyeing and is a direct improvement over Metanil Yellow in that it is entirely absorbed by the paper fibre and shade is not altered by pressing over the drying cylinders.

As is well known, Metanil Yellow is affected by acids, and should even a slight

excess of Alumina Sulphate be added to the pulp, the shade turns reddish, whereas Paper Yellow R. is not affected. This new color is productive of many new shades in combination with Auramine or Orange 11 B., and being a cheap dyestuff should prove of interest to paper manufacturers.

Benzo Green 2 B.—This color resembles the Benzo Green G., recently introduced. The G. brand being such a useful color, and being met with such a ready demand, the Farbenfabriken of Elberfeld have produced a similar color, but which is considerably bluer in shade. Benzo Green 2 B. dyes the same as ordinary benzo colors. Circulars and shade cards mailed on application to the Dominion Dyewood & Chemical Co., Toronto.

Intensive Blue.—A new addition to the many easily level dyeing blue colors now on the market; however a cheap and good blue for wool dyeing, fast to alkalies, will without doubt meet with a favorable reception. As the name implies, this color is very intense, also has great covering power.

Special circular describing its properties and shade card of self color and combinations (just arrived), mailed on application to the Dominion Dyewood and Chemical Co., sold agents in Canada for the Farbenfabriken, vorm. Friedr Bayer & Co., Elberfeld, Germany.

BRITAIN'S TRADE POLICY.

Queen Victoria rules over 11,500,000 square miles of colonial possessions, with a total population of 340,000,000. The trade of this vast territory and population is necessarily enormous, and while the colonial tariffs do not nominally discriminate in favor of the mother country, it is perfectly well under-

stood that all of the potent military and political influences of the colonial Governments are systematically employed to throw as much of this trade as possible into the hands of British merchants.

In view of these facts it is an exceedingly ominous sign of the times that of the entire foreign trade of all the British colonies, only about forty per cent. is transacted with Great Britain, while sixty per cent. goes to foreign nations, of which the most important are Germany, France and the United States. It was the British purpose to keep the colonies, which had been won at the cost of so much toil and blood, as a sort of special preserve for the British manufacturer. It is therefore a rather sharp shock to John Bull to discover that instead of buying only British wares his colonists are inconsiderate and ungrateful enough to trade with strangers and aliens.

It is commercial ambition which more than anything else has animated Great Britain in her policy of colonial acquisition. It is not mere love of power and dominion which has carried the British drum beat around the world so much as it is a decidedly prosaic desire to extend the trade of Manchester, Birmingham and Sheffield. If this hope of more business is to be thus rudely disappointed, the world will probably soon witness a striking change in British policy, both as to tariffs and colonial policies.—New York Wool Record.

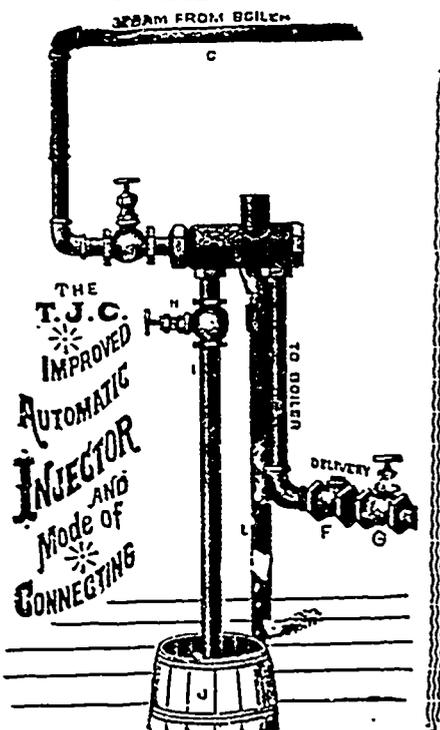
The Packard Electric Company Limited, of St. Catharines, Ont., are determined not to let their friends forget them. We are in receipt of their calendar blotter for April which contains a table of efficiencies of Type "L" Transformers.

THE IMPROVED AUTOMATIC INJECTOR,

Pat. by T. J. CARROLL.

PRICE LIST.

No.	Price	GAL. PER HR. @ 15 LBS. PRESS.	SIZE OF PIPE CONNECTION.	HOUSE POWER.
				15
10	\$1.50	120	1"	15
15	\$2.00	300	1 1/2"	40
20	\$2.50	500	2"	70
25	\$3.00	700	2 1/2"	100
30	\$3.50	900	3"	130
35	\$4.00	1,100	3 1/2"	160
40	\$4.50	1,300	4"	200
45	\$5.00	1,500	4 1/2"	250
50	\$5.50	1,700	5"	300



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A written guarantee with each injector for two years.

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LUBRICATORS**

PRICE LIST.

SIZE.	BRASS.	NICKEL.
Pint.....	\$1 50	\$3 00
Pint.....	5 00	6 00
1 Pint.....	8 00	9 00
1 Quart.....	11 00	12 00
2 Quarts.....	16 00	18 00

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HAMILTON, ONT.

OVER THE TREE TOPS.

In these days of advanced engineering, railways have sought and conquered many remarkable places, says the Philadelphia Press. Here we can ride up and down mountains just as if they were little hills, and hurry along the brink of gorges that makes us shiver when we look down. From California, however, comes the strangest railroad story and picture for a long time. It tells and shows a train that actually runs over tree tops.

What a singular sensation it must be to realize that one is following a fuming, spitting locomotive over the very places where kind nature intended birds should rest, and that delightful quiet found among dense foliage reigns supreme. This railroad down in Sonoma County, California, between the Clipper mills and Stewart Point, is not exactly a passenger, but it is a railroad in every sense of the word.

It so happens that when the railroad comes to a place about equi-distant from the two points mentioned, a huge ravine is encountered, the side and bottom of which are

heavily wooded, two giant redwood monarchs of the forest towering far above the less protentious growth and imparting an air of almost regal impressiveness.

Now it was very necessary that the railroad should cross this ravine. It was also true that the building of a regulation railroad bridge would hardly pay. And this is where real genius came to the rescue. If the reader could stand either at the edge of this ravine or on one of its sloping sides, he would see that strangely enough the growth of the trees and their position is such that their tops can be cut off and an almost level surface of stumps be secured.

This is what genius saw, and hence the railroad across the tree tops. In the first place the big redwoods were sawed off seventy-five feet from the ground, this being the exact height from the bottom of the ravine to the level of the tops of the trees. Next, trees on either side were sawed off of sufficient length to render their tops in a direct line with the tops of the redwoods, as well as of the edges of the banks.

In this fashion was nature made to provide the piers and superstructure of the desired

bridge. To the lumbermen, even the California veterans, the project seemed almost chimerical, but the builders pushed ahead, and presently one day with a shout of triumph a little logging engine pulled four flat cars and a cabooso over the tree tops.

Nobody ever heard of such a thing before. We have all been told of the rope bridge, have read of the great steel structures that span several famous rivers, and many of us have seen these triumphs of engineering genius, but who is there that ever heard anywhere else of a railroad bridge over the tops of trees? It is by long odds the queerest of the whole lot.

Each number of Scribner's for 1898 has marked the beginning of a new feature. In January, Senator Lodge's "Story of the Revolution" and Page's "Red Rock" began; in February, Captain Mahan's first paper on naval episodes of the Revolution; in March, Mr. Wyckoff's new series of his experiences among "The Workers"; and in the current issue for April, the feature is the first part of Richard Harding Davis's short serial "The King's Jackal." This is the dramatic tale of an exiled king, and the action takes place at Tangier in the space of thirty-six hours. It contains some very good comedy scenes, and the characters are of that cosmopolitan cleverness that Mr. Davis delights to depict. A beautiful American heiress is the heroine, and a newspaper correspondent is the real hero. Mr. Gibson will make a full-page drawing for each of the four parts of the story.

Julius & Cadieux, piano manufacturers, Montreal, have dissolved partnership.

The Northey Manufacturing Company, of Toronto, report increased orders for pumps and hydraulic mining machinery. They prophesy brisk business ahead.

KLONDIKE . . .

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GEORGE GOODERHAM, President. **J. F. JUNKIN**, General Manager.

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The first cost is not the test of an actual saving. The truly Economical Manufacturer knows this to be true. For instance, the cheap, trappy Pulley, by its inferior working qualities, is a source of loss to the user the moment it is put in operation, and this loss continues all the time the Pulley is working. You do not get the full or proper results from your power plant. Higher price, though, is not always a sign of better quality, for instance—you may or may not have to pay more for

"THE REEVES" PATENT WOOD SPLIT PULLEY

but in either case you are getting the best value on the market. Because with THE REEVES the saving is continual, in Power, in Time, in Shafting, in Belting, and last but not least, and as a result of all the other savings, a saving in Money. CAN YOU AFFORD TO BE WITHOUT "THE REEVES"? Is the best too good for you? WRITE TO-DAY FOR OUR CATALOGUE AND GET OUR PRICES.

Also COLUMBUS, IND.

REEVES PULLEY CO., Toronto, Ont.

A CHANCE FOR CANUCKS.

The officers of the International Exhibition to be held in Turin, Italy, have offered a prize of 15,000 lire (about \$3,000) for the best invention, apparatus, system or machine devised for the application of electricity to industrial purposes. The prize is in honor of all named after Galileo Ferraris. It is open to competitors of all nations, one of the essential conditions being that it shall be shown at the exhibition and submitted there to a practical test. A committee of international authorities will be appointed to award the prize.

A COMMERCIAL UNIVERSITY.

An interesting experiment is to be tried in Leipzig after Easter, says the Berlin correspondent of the Morning Post, when, in accordance with a decree of the King of Saxony, countersigned by the Ministry of the Interior in Dresden, a University will be opened for the higher instruction of young men intending to devote themselves to a commercial career. The course will be of two years' duration, and will comprise both theoretical and practical study. Lectures will be given on political economy, the science of finance, wares and technology, commercial geography and history, common law, trade exchange and Admiralty law,

Colonial politics, workmen's insurance, etc., while practice will be afforded in mathematics, bookkeeping, correspondence, chemistry, stenography, and so forth. Final examinations will be held, and diplomas will be granted. The classes will be open, under certain conditions, to foreigners. The experiment, which will be watched from an educational standpoint, has an interesting social side. It is intended to give the University cachet to the rising industrial generation in order that a man may no longer be ashamed to confess to being a merchant or a tradesman. It is the social weapon in the political struggle now raging so fiercely between industrial and agricultural Germany, and this University at Leipzig will, it is hoped, succeed in raising the intellectual rank of the commercial men.

IN AUTOCRATIC RUSSIA.

The output of pig iron in Russia during 1897 is estimated at 1,857,000 tons, representing an increase over 1896 of 240,000 tons. Of this total, 7,200 tons have been produced in northern works (against 4,800 tons in 1896); 676,000 tons in the Ural district (against 581,000 tons); 161,800 tons in the central districts of the Empire (against 134,700 tons); 723,500 tons in Southern Russia (against 641,500 tons); 253,000 tons in Poland (against 209,000 tons); 2,900 tons

in the southwest districts (against 2,400 tons), and 11,140 tons in Siberian private works (against 5,640 tons).

JAPANESE MANUFACTURERS

There are some fifteen manufacturers of folding-screens in Kobe, employing about 200 operatives. The work is divided into two departments, namely, embroidering and mounting the papers or cloths, the former being executed chiefly by female hands. The wages of female employes range from fifteen to forty sen per day, while for those engaged in the latter division twenty to sixty sen are allowed, according to the volume of the work they complete. The prices of manufacture differ of course in a considerable degree according to the workmanship and material—some of them valuing more than 100 yen, while others cost about two yen or so only. The annual average of exports of these goods reaches about 300,000, including some costly ones which were made elsewhere and brought to Kobe for export. Shanghai, America, London, France and Vladivostock are the principal parts whither the goods are exported, the former two places buying the cheaper varieties. The dealers in this kind of produce in Kobe are Messrs. Greppi & Co., No. 22; Messrs. E. H. Fuska & Co., No. 60; Messrs. J. Witkowski & Co., No. 118.—Japan Weekly Times.

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IN GOOD ORDER.

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Within three miles of Toronto.
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25 Acres of Land. A Great Bargain.

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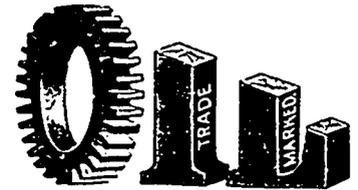
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"R. R. R. DYNAMO"

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ENGLISH CARD CLOTHING.

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Montreal—Ottawa—Galt—Winnipeg.

WESTERN TRADE:—

Our Mr. R. M. W. McLaren, in charge of Galt Branch, will be pleased to give quotations as well as receive orders.

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

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FROM SELECTED STOCK.

Correspondence Solicited
Orders Promptly Filled.....

• SHERBROOKE, P. Q.

A CHINESE COTTON MILL.

The Governor of Hupeh has started a cotton mill of 30,000 spindles and 1,000 power looms, opposite Hankow, on the Yangste-Kiang. The mill is fitted with electric lamps, and a modern system of automatic sprinklers, and employs 2,000 persons, mostly children, in weaving cheap cottons. The coal comes from Japan, the cotton from Shanghai, and the yarn, which is finished with materials from Europe, finds a ready market, though loose and not durable, in the neighboring provinces. The pieces are forty yards long, and sold at \$3.75 per piece, giving the manufacturer a profit of forty per cent. The spun cotton is hydraulically compressed for home sale. The dyeing is plain, the machinery European; but only one foreigner is employed.—Philadelphia Record.

ELECTRIC AMPUTATION

A Boston paper says that a four-inch circular saw for the amputation of limbs is being installed at the Emergency Hospital in that city. An electric motor will furnish the power to run the device. The saw will be mounted on a flexible shaft like that which a dentist uses, only larger. The bearings, in which runs the saw arbor, are attached to a handle by which the surgeon is able to direct the saw at any angle. Dr. Galvin and his assistants will be able to save considerable time by the use of this appliance. Not only does the saw cut much faster than a hand tool, but the heat of its rapid cutting sears the flesh and blood vessels, and the healing processes of nature are advanced to a stage which by the old method is reached only after an hour or two.

STREETS VERSUS STREET RAILWAYS.

In the recent inaugural address of the president of the English Society of Engineers there were brought out some important points concerning the raison d'être of street railways or tramways. If in the old days of the horse car there had been no considerable difference between the tractive effort on pavements and rails there would have been no cause for street railways. The use of vehicles riding freely over the pavement is in all respects superior to that of vehicles running on rails, with the single exception of the lower traction coefficient of the latter. Omnibuses, require no special roadbed, are not confined to fixed routes on which such a roadbed is provided, are not blocked by an accident at any one point and are greatly superior to tram cars on these accounts. But the immensely greater tractive effort on the poorly constructed roads of the past necessitated the tramways. The speaker referred to above classed tramways as "metallic admission by engineers and the public of the badness of ordinary roads."

Now that the horse has been superseded by the electric motor for street railway work, this change necessitating the constant connection of the vehicle with either an overhead or an underground conductor, the reduction of the traction coefficient on pavements to a value equal to that on rails would not necessarily eliminate the use of the latter, as the vehicles would be necessarily confined by the necessities of the conducting system to fixed routes. If, however, in

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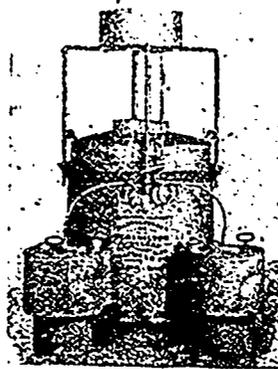
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W. H. SHAW, Principal

CORNER YONCE AND CERRARD STREETS.

Hamilton Acetylene Gas Machine.

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light is required.

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**Canada Chemical
Manufacturing Co.**

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Acids — Commercial and
Chemically Pure.

Mixed Acids for Explosives.

Liquid Ammonia, Glauber Salts,
Copperas, Muriate Tin,

Tin Crystals, Acetic Acid, Nitrate
Iron, Bisulphite Soda,

Acid Phosphate for Baking Pow-
ders and General Chemicals.

Fertilizers, etc.

**LONDON,
ONT.**

future the storage battery or any other mechanical means of propulsion, whereby the car is rendered independent of the conducting system, is developed to such an extent that it can compete with the trolley, the perfection of pavements would do away with the necessity for rails.

That our roadways will be enormously improved over their present crude condition there is not the slightest doubt. The horse is a very poor dynamometer and gives but a crude indication of the work he is doing. The development of motor vehicles, especially electrical vehicles, with which an ammeter shows immediately the great difference between a good and bad pavement, is opening the eyes of road users to the advantages of better pavements. Belgian block pavements, especially with steel tired wheels, involve a most deplorable waste of power in the pounding, rattling and shaking of the vehicles running over them. Macadam roads are non-resilient. Asphalt pavements are better than either, except in hot weather, when their resilience often falls below that of macadam. A rigid, flat pavement would be ideal for motor vehicles, but is out of the question while horses are used. With the passing of the horse, however, the pavements can and will be improved and may reach such a state of perfection that there will be no advantage in rails. In this case if light automobile vehicles are perfected, the street railway may become a thing of the past.—Electrical World (N. Y.)

THE CHIMNEY AS AN AIR PUMP.

The most important duty of a chimney is the creation of a partial vacuum above the fire sufficient to draw the air needed for combustion through the interstices of the burning fuel. The action is simple, the column of heated air inside the chimney being lighter than the cold air outside, and the downward pressure from the top of the stack inside the chimney to the top of the fire being less than from the same point outside down to the under side of the grate. The heavier pressure outside tends to force air through the fire, and this air becoming heated makes the process continuous.

Although ideal in point of simplicity, in the other features of efficiency and effectiveness this process is sadly lacking. Its operation obviously requires the discharge of the products of combustion into the stack at a considerably higher temperature than that of the external air, and this involves a great waste of energy. To produce a draft sufficient for hand firing with stacks of reasonable height, requires a flue temperature of approximately 500° or more. With the uneven fires and intermittent stoking of hand work, and consequent excess of air over that required for perfect combustion, this requires a loss of somewhere between 15 and 25 per cent. of the available energy in the coal.

A great part of this lost energy could be retained by the use of economizers, feed-water heaters, or finally by the use of a device by which the fresh air instead of being introduced cold under the fire, could first be heated by the hot air escaping to the up-take flues. In case any such refinement as this were used, however, the gases in the up-take would be too cold for proper draft-producing purposes, and mechanical draft would be necessary. The extremely small amount of power necessary for the production of mechanical draft in comparison with the large amount to be saved by proper cooling of the gases may make this a profitable refinement.—Electrical World.

A LIQUID FUEL AUTO-MOBILE TRAIN.

This road train was built to run between Circenestor and Fairford, Gloucester, a distance of eight miles, in connection with the Midland and Southwestern Junction Railway and the Great Western Railway. The train consists of a powerful motor van, capable of carrying two and a-half to three tons of goods and luggage, coupled to a passenger car or omnibus, capable of seating twenty passengers inside.

The total length of the train coupled together is 35 feet and can easily be turned within a radius of 20 feet. The coupling arrangement is made elastic, and there is no unpleasant jerking motion when the train is started suddenly.

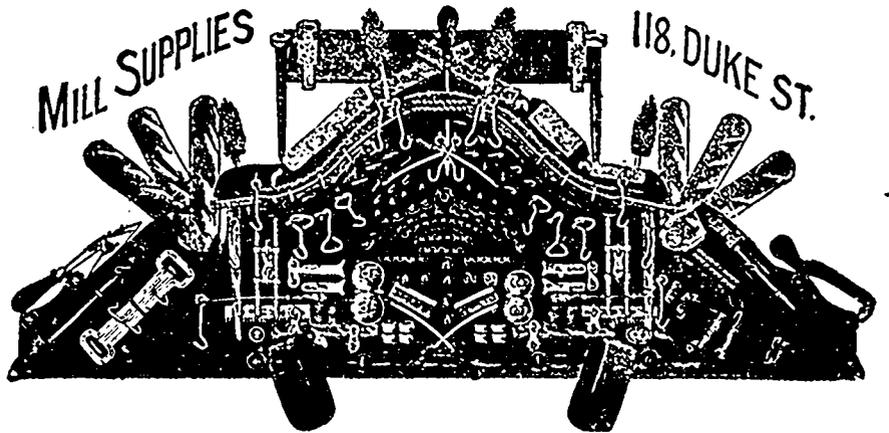
The van is 14 feet 3 inches long, 6 feet 3 inches wide, 9 feet 6 inches high, and with 250 cubic feet capacity; it is fitted with double-folding doors at the back, and sliding doors at either side for greater convenience in handling goods.

The boiler is the company's type, designed especially for motor cars, and is a combination of the smoke tube and water tube, with 100 square feet of heating surface, and is fitted with a 35 horse power Lift, automatically regulated by the steam pressure in the boiler at 225 lb. pressure per square inch. The largest part of the boiler is below the body of the van, and that part extending through the body is only 20 inches in diameter, and is lagged with asbestos and covered with teak staves; there is practically no heat in the goods compartment of the van from the boiler.

The engine is a double tandem compound reversible, designed especially for motor car purposes, capable of developing 20 I.H.P. working compound, and 35 I.H.P. by letting high pressure steam into the low pressure cylinders. The engine is securely fastened underneath the body of the van, and power is transmitted to a counter shaft by means of steel cut bevel gears through a telescopic shaft, which allows for the action of the springs and the unevenness of the roads; the counter shaft is fitted with a compensating gear and is securely fastened to a pair of steel reaches; steel pinions are fitted to either end of this counter shaft, which run in large internal cut gears fastened to the spokes of the hind wheels, each of these gears being protected by dust-proof guards. The speed ratio of the engine is 12 to 1; all of the shaft gears run in dust-proof oil cases. The exhaust steam from the engine first passes into an exhaust box, thence through a feed-water heater, condenser and separator combined; the small quantity of steam not being condensed passes into the funnel, where it is superheated and made invisible. There are two pumps for feeding the boiler one being double acting with reduced speed gear working direct from the engine crank shaft, the other an auxiliary duplex pump, placed beneath the driver's seat, for feeding the boiler when engine is at rest, or which can be used as a hand pump when the boiler contains no steam.

Two water tanks, capable of holding eighty-five gallons, are fitted in the van, one above the platform and one below, in front of the driver's seat. This is a sufficient quantity of water for a run of fifteen miles over rough country roads. Both tanks are filled by means of a steam injector in about six minutes. There are also two fuel tanks, capable of holding twenty gallons each, fitted underneath the body of the van at the extreme rear end, and are both filled from

GEO. REID & CO. Successors to **The PAUL FRIND Woollen Machinery Co., Limited,**
 'PHONE 956 TORONTO.



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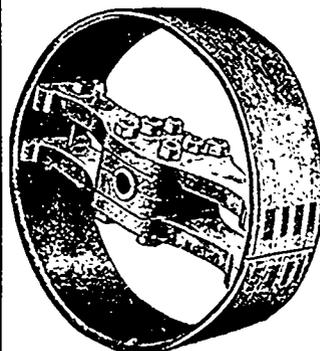
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The omnibus or passenger car weighs

twenty-five cwt., and is fitted with powerful tramcar type of brake, and is worked by the conductor on the rear platform. The total of the train fully loaded is about eight tons, and will climb grades of ten per cent. with ease, at the limited speed of six miles per hour. The van may be run singly at the rate of eight miles per hour, and is capable of climbing grades of twenty per cent fully loaded. We may say that this auto-mobile train was designed by and built under the immediate superintendence of Mr. H. A. House, the company's manager, who is to be congratulated on having produced an exceedingly workman-like job.

The Liquid Fuel Engineering Company are at present very busy at their works, East Cowes, Isle of Wight, building tradesmen's vans to carry one and a-half to two tons, also steam luries to carry two and a-half to four tons, for prominent London firms; and they are also building a steam wagonette to carry seven people, for a private gentleman.—Practical Engineer.

AN EARLY RISING PERSUADER.

In devising an apparatus that will absolutely compel my arising mornings at a regular set time, I believe that I have overcome a difficulty which has never been successfully surmounted before. To be sure we have heard stories and verses of automatic folding beds which, after forcibly ejecting their occupants, snap shut and are only released after the time lock has run down; but it is more often we hear of actual cases where such affairs snap shut without any pretense at delivering their occupants in one piece out into the ambient atmosphere.

Some time ago, after considerable complaint about my failing to respond to gentle entreaties to "get up," mornings, I purchased one of the ordinary electric alarm clocks, which close a bell circuit at any time set and which, with battery and bell, make it necessary for one to arouse sufficiently to throw off the switch.

For a time—till the novelty wore off—this worked very well, and I was declared a "model man," so far as getting up mornings was concerned. But then, notwithstanding that the clock was advertised "a good time keeper," it was very severely affected by changes in temperature, losing or gaining from twenty to thirty minutes as the weather ordained. Besides it had to be wound every day, and when one comes home in the wee hours he hardly feels like giving fourteen screws to an arrangement which is to awaken him in a few hours.

With cold weather came the temptation to crawl back to bed again and have another nap. There is some non-explainable delight, a grim satisfaction, in a few minutes' sleep when you know you are sleeping. Just the dim consciousness that you should be up and around, mingled with the comfort of your situation, that makes you enjoy your stolen nap far more than any other portion of your night's sleep. After once indulging, it is really a task to break off from the habit. It didn't take long to make the "electric alarm clock" obsolete.

My next move was to place an automatic drop, away over in the corner of my room furthest away from the bed, and provide the kitchen with a push button. Touching the latter dropped the drop, which in turn threw into circuit a four-inch bell over the headboard of the bedstead. To stop the bell ringing I must lift the drop, and if I chose

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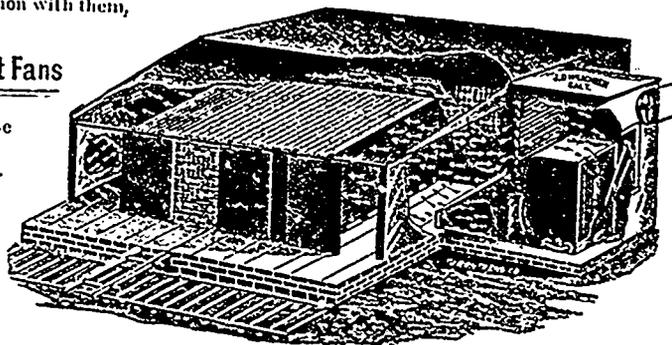
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to go back to bed another push would compel my rising again.

For a long while this arrangement worked admirably. Then we got a girl who couldn't understand why she should push that button more than once (if she thought to do it at all). All the orders, threats or entreaties couldn't make her see that she was hindering the progress of the household by her forgetfulness or maliciousness.

After inconvenience and loss from not being on time in town when I was needed, I conceived the idea herewith described. It has been working both summer and winter, and has yet to fail me, notwithstanding that on several mornings I have actually tried my best to "get around" it.

First I took a good cabinet clock that had a mechanical alarm, and connected thereto an electrical attachment, so arranging it that they might work either independently or together. I finished the job up nicely, placing binding posts on the side of the frame and concealing all wires, etc. The clock is an excellent timepiece and has been in actual service some years. For two reasons I left it in its old place on the kitchen clockshelf. One reason was that it might still set the household time; the other that I might not open the circuit at the binding posts in case of a particular lazy spell.

It should be noted particularly that all connections, such as battery, switch, etc., are with the clock, two flights downstairs, excepting those on the bell and the automatic drop. These I tightened with a pair of pliers so as to make unscrewing with the fingers absolutely impossible. I then purchased two and a-half feet of thirty-six-inch burglar alarm matting, and placed this between the mattress and spring of my bed, putting it in circuit with the automatic drop by means of flexible cord. The pressure of bedclothes, mattress, etc., is not enough to make a contact, but to put one's weight on the bed is sufficient.

The clock may be set to close the circuit at any hour and it keeps it closed for about one hour. At present I wish to arise at seven o'clock, the circuit is therefore closed from seven to eight and open between the hours of eight and seven. Sunday mornings I sometimes like to sleep later than on other days, and by throwing off a switch the night before, I am not disturbed. The button is, however, easily pushed, but will only work when some one is in the bed. This by itself is a great item. Many times, prior to the installation of the matting, meddling fingers had touched that button, necessitating a trip up-stairs when no one was there to stop the bell ringing. Or worse yet, causing the bell to ring till the battery run down. The clock naturally closes the circuit at seven in the evening, but as it is open at the matting the drop does not fall.

I maybe retire as early as eight o'clock and will be awakened at precisely seven the next morning by the four-inch gong, to stop whose ringing I must cross the room and lift the drop. Now, should I go back into bed, the contacts in the matting will immediately close the circuit, dropping the drop, starting the bell which will continue its ringing till the drop is again raised.

In practice I find that once knowing that it's "all up" and there is no use trying to get back to bed, I don't make the effort, but at once begin preparations for "business" and soon forget all about sleep. Should anyone install a similar arrangement I will be glad to hear their experience.—Ray D. Lillibridge in The Electrical Engineer, N.Y.

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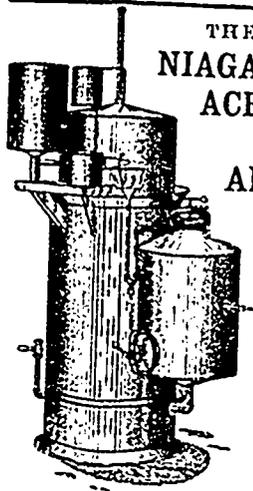
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A very interesting experiment upon the utilization of the power of the tides for driving machinery, has just been made at the little port of Ploumanach, on the northern coast of France. This sort of utilization can be easily accomplished at points on the deeply indented coast of Brittany, where there are a large number of natural tidal basins, and where the difference in the daily tidal level is considerable, frequently reaching 12 metres (39 feet). The object of the experiment was to generate electric current from this tidal power for lighting purposes, through the use of a dynamo and a battery of accumulators, the latter being necessary on account of the intervals of slack water. An old grist mill was used as the generating station. A natural pond, shaped like an isosceles triangle and having its base toward the shore, is separated from the sea by an embankment or causeway of ancient date, 120 metres (385 feet) long. The pond is about 800 feet long, and has an area of about 37 acres. Gates of a very ingenious kind have been constructed in the embankment. At low tide they are uncovered by the receding water, their planes making acute angles with the surface of the sea; the weight of the water in the ponds holds them securely closed until they are again opened by the rising tide being above the level of the pond. At high tide the water thus fills the pond to its own level, and as the tide recedes, the gates automatically shut and prevent the escape of the impounded water. The gates are furnished with soft rubber gaskets, and seat themselves water-tight. The higher the head of the retaining water the greater the pressure on the gates and the tighter the fit in consequence. The leakage is said to be very small. On account of the automatic nature of the gates, they require no attention, the pond filling itself automatically twice a day. The dike which holds the pond is 8 metres (26 feet) high, but all of the head thus furnished is not available on account of the pond serving also as a storage and breeding place for oysters, mussels and lobsters, which require to be kept covered with water. A sluice gate it provided, however, by which the pond may be completely emptied. The fall used is from 25 to 28 feet, races leading the water to ordinary water wheels. Hitherto only a single wheel has been used, driving a Pictet sulphurous acid ice machine, and making 240 kilos (530 pounds) of ice at a charge, or 1,160 pounds a day. Now a dynamo is installed, and the water wheels of the old grist mill are to be replaced with more perfect apparatus. Two wheels are used, each capable of furnishing 50 horse-power at the full head and 20 horse-power four hours after the discharge of the pond is begun. The whole expense of generating thus about 1,500 to 2,000 h.p. hours a day is insignificant. One man takes care of the fish pond and the power station, and the total expense of the power generated is not more than 10 francs (\$2) a day.

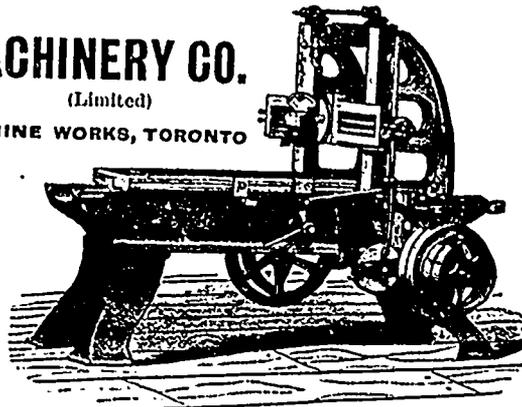
In the Eastern Provinces of Canada, where is the region of high tides, such a method might very easily be convertible to wonderful power. The idea is interesting and presents many features of usefulness.

The contract for stringing the power wire of the Cataract Power Company from De-Cew's Falls to Hamilton, Ont., has been let to Lowe & Farrell. The work is to be complete May 20th, and the company expect to be ready to supply power by June 1st.

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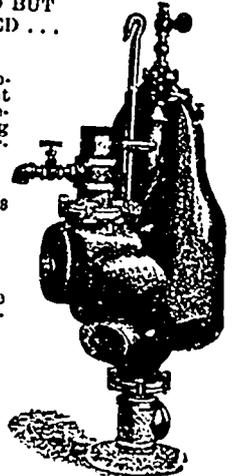
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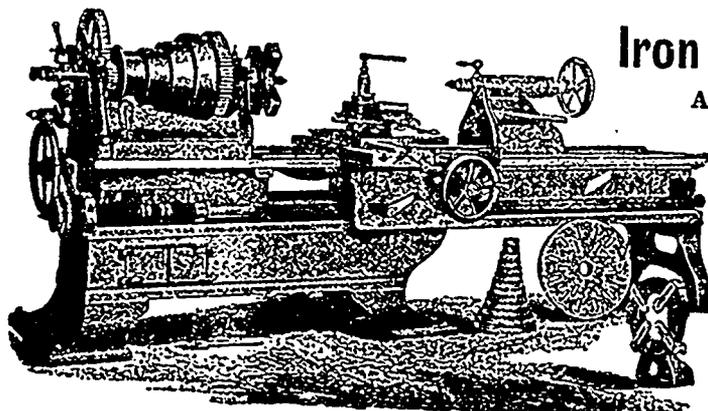
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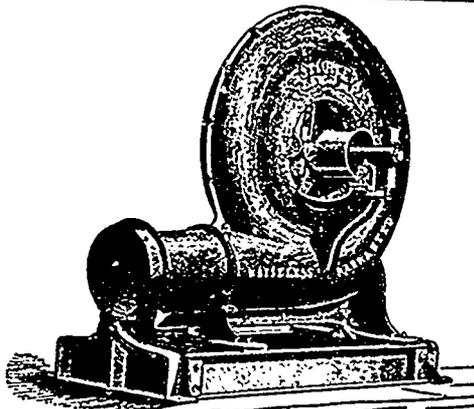
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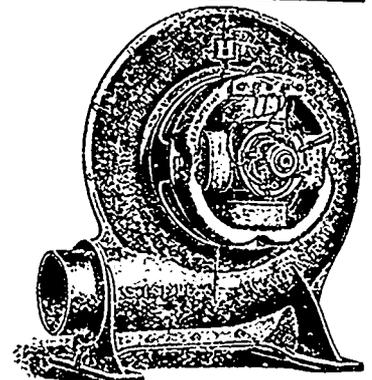
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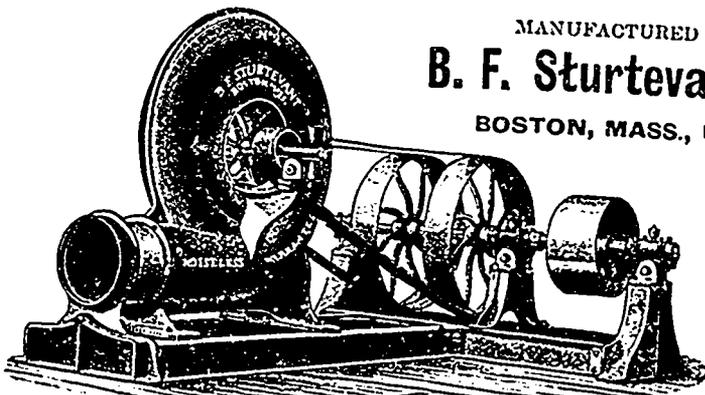
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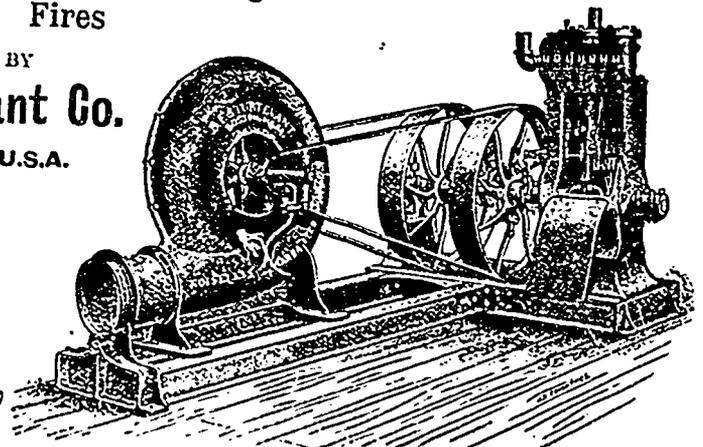
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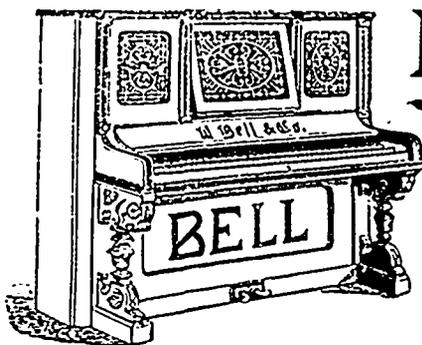
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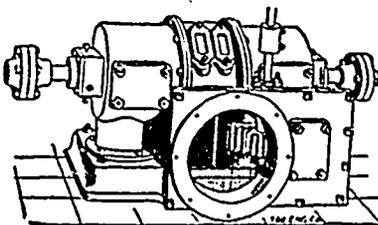
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