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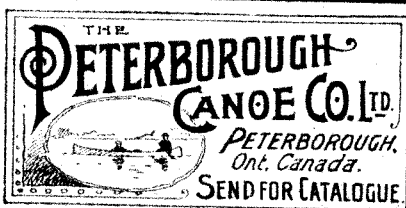


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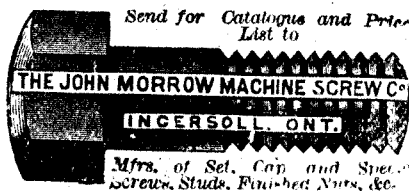
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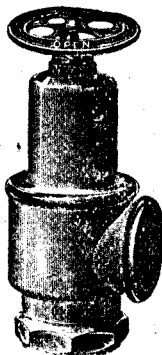


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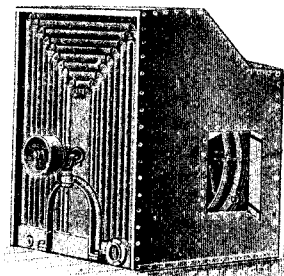
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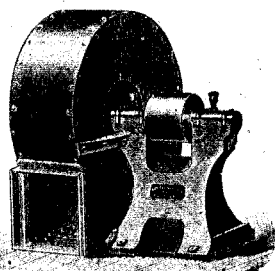
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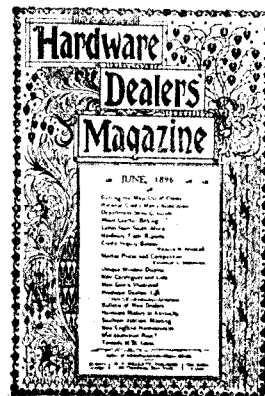
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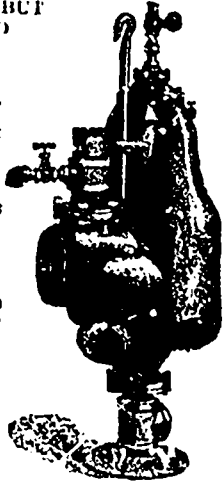
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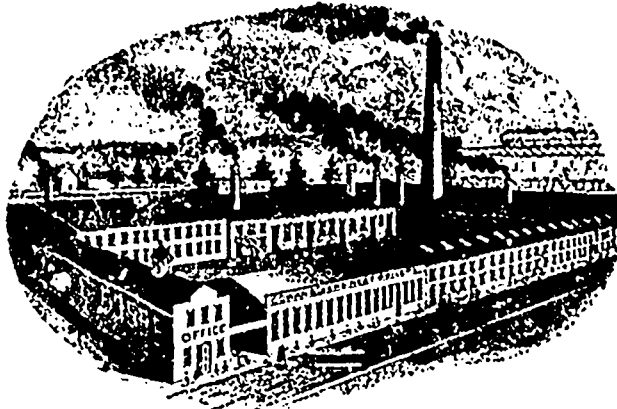


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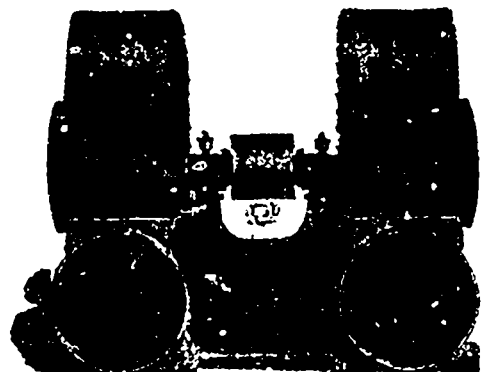
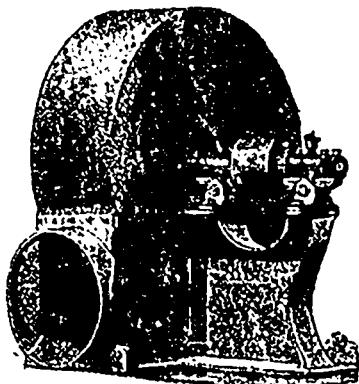
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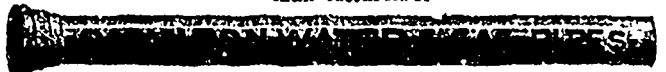
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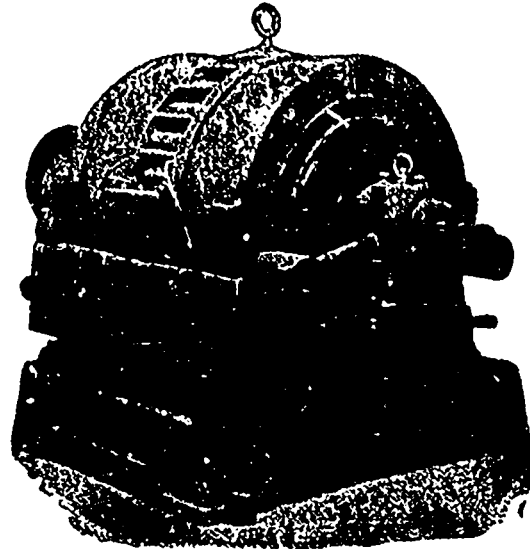
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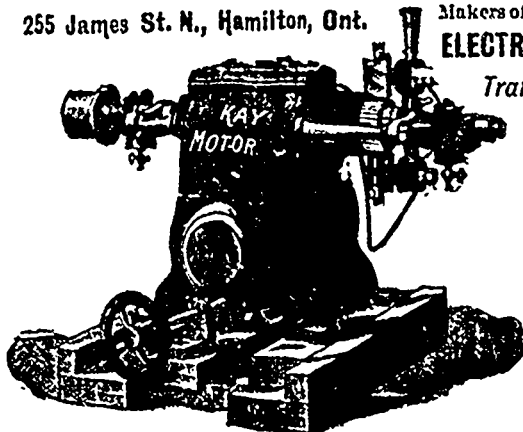
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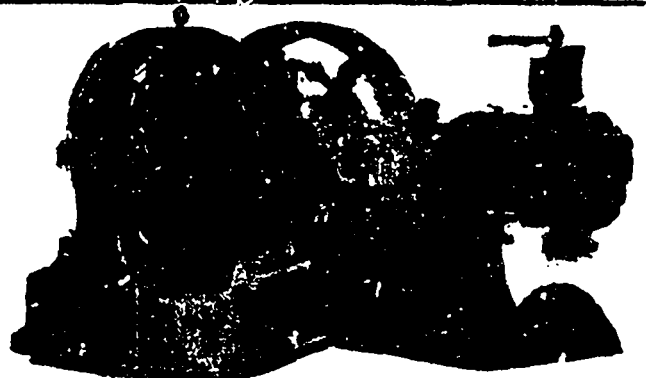
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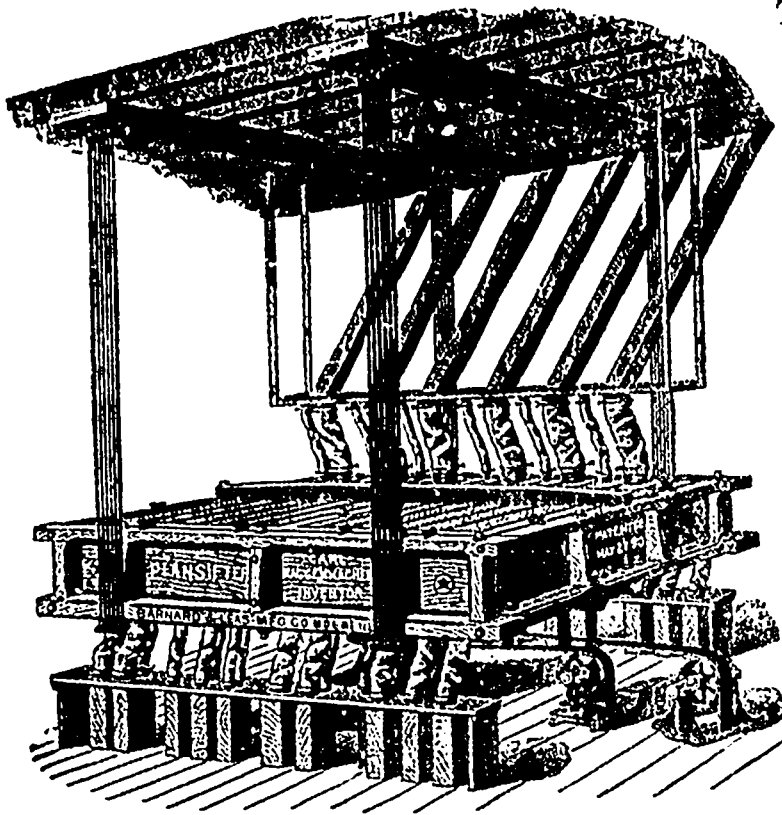
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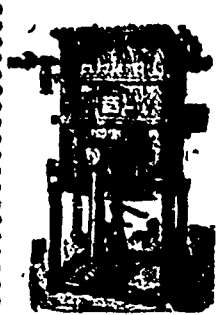
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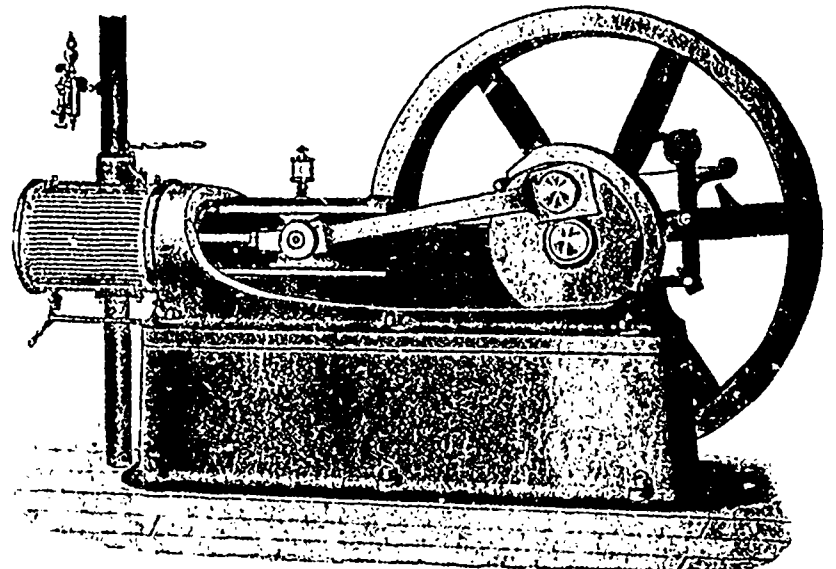
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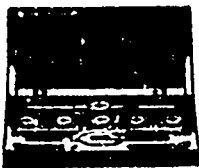
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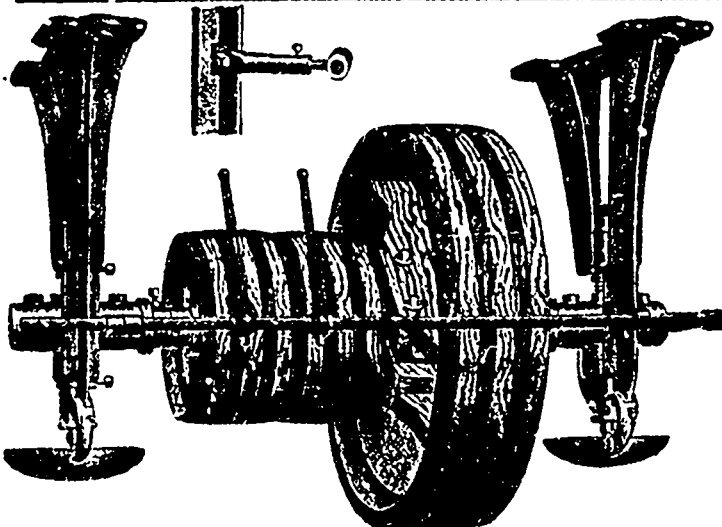
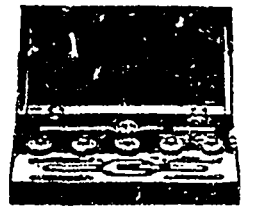
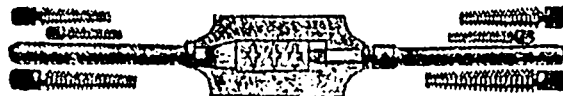


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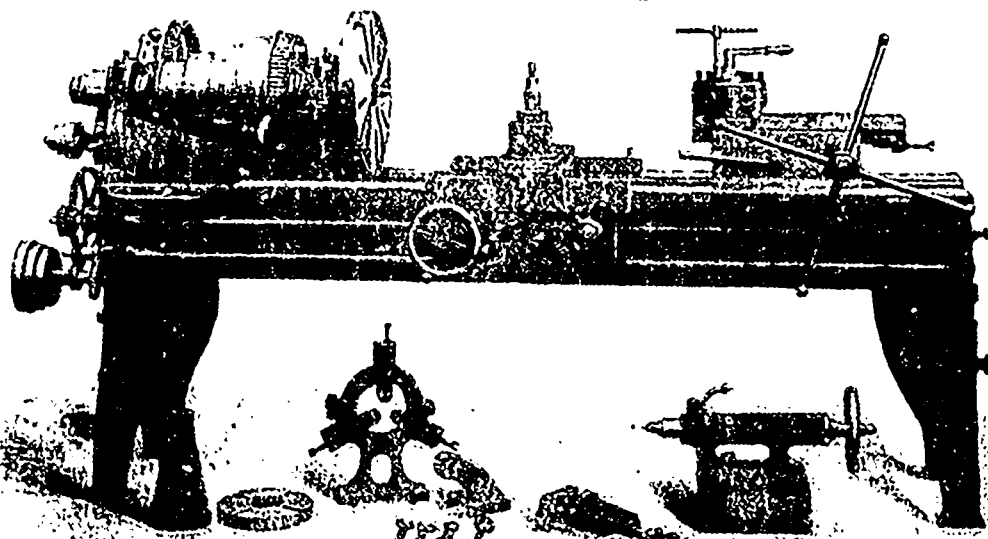
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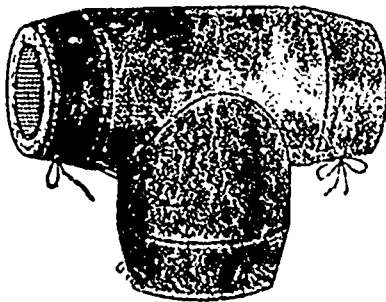
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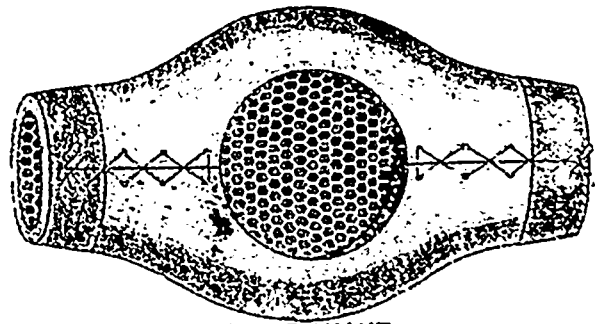
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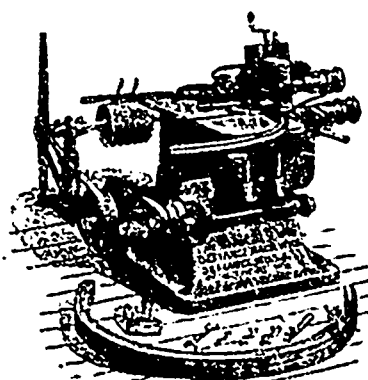
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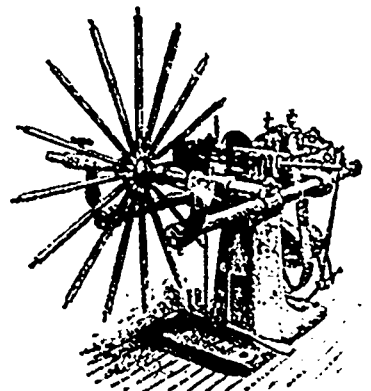
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WESTMINSTER OR WASHINGTON ?

With reference to the trade of the United States with Great Britain, The Globe on October 18th made a remark that we took note of in our last issue. The Globe said —

The cutting off of this trade would be a great misfortune to both countries, and its continuance is one of their highest interests.

New Zealand has a surplus that is estimated at a total of £524,000. At its last session of parliament, the finance minister, Mr. Seddon, said that, if the customs revenue would allow it, it would be advisable to make a reduction in the

tariff on goods from the United Kingdom, and leave the tariff on foreign goods at the same figure it now is. That the government of New Zealand are not unaware of the latest methods of promoting trade is witnessed by their proposition that they will establish business agencies in the principal cities of Great Britain. Listen to The Globe:—

This is a further proof that the southern colonies are appreciating the Canadian policy and are incited to profit by our good example. The reduction of the duty on British goods is an easy, and at the same time, effectual line of tariff reform. It also awakens the interest of British financiers and brings the colonies making the experiment into commercial prominence. The establishment of commercial agencies is a necessary supplement of a preferential tariff. The Globe has recommended it as an essential part of Canada's trade policy, and it is gratifying to find sister colonies moving in the same direction.

"The Canadian policy," forsooth. Laurier and The Globe evidently know what the Canadian policy is, and the Government of New Zealand would confer upon Canadians a great favor if they would give us an idea of what that policy really is. It is safe to say that it would be received as a very interesting piece of information. The Globe's annexed endorsement of the action of the New Zealand Government of course places it beyond peradventure that the New Zealand Government must be right. One can almost picture the exuberant gratification of the antipodeans when they observe this praise from Sir Hubert, and, no doubt, they will expect the hearty assistance of the Canadian Liberal organ in the formation of the league of preferential trade between Great Britain and her colonies. The Globe talks of "our example." Will The Globe inform us where it is to be found? It seems to us that it would be more becoming for The Globe to refer to "New Zealand's example," and set it up for Canada to follow.

There is one drawback to the joy which we anticipate will run riot in the New Zealand Government when The Globe's commendation is announced at a council meeting. They may see the issue of The Globe that contained The Globe's other policy. Then they will observe that The Globe's ardent desire for preferential tariff is not too strong to prevent it from taking all care to divert any possible harm from the trade that brings wealth to the coffers of their good friends at Washington. The Globe wants preferential trade with Great Britain but the thought that the United States would lose its trade with Great Britain in that event brings tears to its eyes.

Which is it, Mr. Globe, Westminster or Washington ?

LOOKING FOR A MARKET.

The British Vice-Consul at Kansas City recently reported that German goods are finding their way into the western market. The German manufacturers send out commercial men and good catalogues, and they have nineteen consuls in the United States while the British Government have only eight. Furthermore, the German exporter sends out his goods by ship to the Gulf of Mexico, and thus gets cheaper transportation than the British merchant who ships direct to Atlantic ports. The Vice-Consul gives some advice to British exporters that also applies to Canada.

He advises them not to be afraid to ask questions of their consular agents. We advise the Canadian manufacturer to lose no opportunity to make use of our trade commissioners in other lands. Send them your catalogues. Write to them for

information. Besiege the Ottawa Government with inquiries for their reports, and read them. Study the conditions described in them so that you may be able to make an estimate of the possibility of establishing a trade with these markets. See to it that your board of trade sends its business directory to the trade commissioner. If he has it on his desk some day it may mean hundreds of dollars to you.

When you have obtained all possible information do not fail to take advantage of any exposition that is to be held in the country in which you desire to sell goods. A well-arranged exhibit will cost you money, but well expended money is good economy, and the return from it may be looked to to make the account balance on the right side. There is no surer way of selling a customer a good article than by placing it before him, and showing him that it is exactly what you represent it to be.

And, above all, see to it that the article you send to a new market is the very best value you can possibly furnish for the money. It is, perhaps unnecessary to add that caution, but it is meant to ensure careful inspection of every point. No article with a defect in its manufacture will be allowed to go out from any honest workshop, but if, by accident, a flaw should pass unobserved it might be the means of destroying, at the very outset, a commercial connection that would otherwise have developed into a source of regular revenue.

#### YOU HAVE NO TIME TO LOSE.

Once more it is necessary to impress upon our readers that they cannot possibly display too much energy and promptness in looking for trade in other countries where there are always men ready to seize any advantage that may turn up. Far away Australia is just now brought forcibly to our notice by a letter written by our Trade Commissioner, Mr. J. S. Larke, to Sir Richard Cartwright. In it Mr. Larke complains of the dilatoriness of Canadians in their efforts to get their goods into the Australian market. He says:—

Correspondence has been going on for some time with a British Columbia company and one of the most reliable timber brokers in New South Wales. Delays for some reason have hindered a completion of the negotiations, the last steamer bringing not even an acknowledgment of a remittance. I could not induce him to wait longer, and he closed with a United States firm. I think the same criticism will apply to the lumbermen of Eastern Canada. Any letter I have written respecting the trade has never elicited a reply. Recently I called attention to the fact that oak staves for wine casks were asked for here, and a timber journal published the fact. I have heard from United States dealers who wish my services in getting a market for them, but no Canadian has availed himself of the opening.

Imagine it. A Canadian with a market fairly offered him and refusing to take it. His American competitor so over-anxious to get this same market that he rather oversteps the bounds of propriety, and has nerve enough to try and secure the good offices of Canada's Trade Commissioner in his behalf. Mr. Larke's principles are so well known that there is no need for any speculation as to the fate of the American's modest request. Australia is not the only quarter of the earth where the American manufacturer is getting ahead of us. Listen to the editorial note of The Iron-mongers' Chronicle, of London, England:—

There is at the present moment a strong tendency with American manufacturers to compete with British producers,

not only for their own trade, but to go further, and place themselves in competition for the English market, and even for the supply of some of our colonies. The spirit with which Americans are taking up the manufacture of tin plates, iron hoops, cast pipes, etc., show us that the British manufacturer must "look to his laurels" and overhaul his prices. The answer will probably be that these are already at their lowest and it is not possible to quote lower. That may be true, but it then becomes a question if works are organized on the best paying systems, and if the machinery used, the appliances available, and the methods of procedure are the best, and consequently the most profitable.

The last words of The Chronicle's paragraph are the key to the whole situation. Success depends on the system, tin-machinery, and all the various technical and scientific organization of a manufacturing concern. And right there is where the British manufacturer needs protection, as he is beginning to find to his cost. Under a protective system the manufacturers of the United States have reached a perfection in the various mechanical and technical schools of artisanship that is hardly equalled by the British standard of manufacture in many lines. The reason of that lies in the fact that Great Britain's manufacturers have spent their time in looking for markets afield. Thus the American manufacturer has suddenly become a formidable competitor because of the skill and strength acquired under beneficent protection.

The Maryland Steel Works, of Baltimore, have secured an order for 7,000 tons of steel rails for India where a new line is being run into the interior from Calcutta. Large orders for iron hoops are going to American manufacturers and the British makers of those articles are much put out about it. The South American market is going to the United States, and Canada cannot afford to waste any time in getting in a claim to a share of it.

#### THE RESULT OF PROTECTION.

In 1891 before tin plate mills were started in the United States the imports of this commodity into that country were 656,000,000 pounds. Proper protection was granted in 1891. In 1892 the home product of tin and terno was 13,646,719 pounds. In 1893 it was 92,819,202 pounds. In 1894 it had increased forty per cent., and in 1895 the product reached 193,801,073 pounds. In 1896 the mills in the United States turned out 307,228,621 pounds, and from 1891 to 1896 the imports had decreased to 236,000,000 pounds, or only seventy-five per cent of the quantity manufactured in the United States. And greater progress than ever is expected in the current year.

Here is a sample of exactly what has occurred, as the result of protection judiciously applied. The free traders who opposed the bill in Congress put up a very strong contest to prevent the legislation becoming law. The Republican faction were confident that protection would develop a home industry. They carried the bill, but the opposition to it was so strong that as a concession to the Democrats, a clause was inserted to the effect, that, if by October 1, 1897, the manufacture of tin plate in the United States did not equal one third of the imported quantity, the duties provided by the Act were to be repealed. The Republicans were confident that they would succeed. The Democrats were equally certain that the result would make a laughing-stock of the protectionists. And the result bids fair to place imports in a

relation exactly the reverse of that needed to upset the bill.

Canadian free traders will kindly turn their attention to the facts set forth above. They should remember that foreign trade is wasteful, because it tends to maximize the distance between raw material and the factory, and between the factory and the market. Such waste is unjustifiable, except when it is unavoidable. At one time cotton from the Southern States was sent to England to be manufactured and the finished product returned to America. The planter who grew cotton wore cotton garments made from the product of his own plantation, but they had travelled six thousand miles before they went on his back. By a protective system the American cotton manufacturer makes cotton fabrics to-day, and they are as cheap to the consumer as the English cottons although the wages of the operator in the cotton factories of the United States are higher than the wages of the same operator in England.

The existence of raw material in Canada is ample justification for the development of facilities for manufacturing the finished product here to supply our own market. This can be done only by keeping the products of foreign factories out of this country. Then with the advance of economic perfection in manufacturing we will find ourselves able to compete in unprotected foreign markets, and under eventual preferential trade league of Great Britain and her colonies to supply our manufactured products to other portions of the Empire that have not the raw material.

Again. The minute that an employer ceases to regard his employe as a consumer, he, to a certain extent, loses interest in the welfare of that employe. Thus the interests of the employer and his workman are divided when they should be the same. When a manufacturer has a home market he will do his best to keep up wages. When he has no home market he will reduce wages because it will not affect his profits. The laboring classes are really the means of the manufacture of any factory-made product becoming a permanent industry, and it is thus evident that, under a protective system, the employer and the employe have one common interest in working for the success of manufacturing industries.

Another feature of protection that is often—too often—overlooked, is that the exports of a nation are not the only criterion of its prosperity. There appears to be no reason why extensive exports might not be sent out from any country and the mass of the people still remain poor. If the people of a nation do not consume a fair proportion of its manufactured products there is no socializing effect as there is made when protection promotes the diversification of employments. A home market is preferable to a foreign market and should always be first developed. All of these statements are statements of fact capable of proof by any thinking man who looks about him. Yet there are those who will contend against protection.

The dear old Globe is really amusing with its "Lessons in Economics." Perhaps it would undertake to explain the propositions we have just stated. It says:—

If John Doe in Toronto sells some cloth to Manitoba farmers and Richard Roe in Winnipeg sells some wheat to Toronto millers the transactions leave no statistical record. But let these same Canadians transact precisely the same business through channels crossing national boundaries, and trade statistics are gathered affecting imports, exports, and balances of trade. For example, let John Doe sell his cloth

in the West Indies, let the Manitoba farmers buy cloth in Manchester, let Richard Roe sell his wheat in Newfoundland and the Toronto millers buy wheat from Duluth, and there will be many disturbing trade statistics and balances for politicians to worry over. The two series of transactions are precisely the same for every Canadian interested in them, yet the one leaves no trade record, while the other furnishes statisticians with two lines of export and two lines of import. It would be absurd to dogmatize as to which series of transactions was the more profitable. The line of greater profit varies from day to day and from hour to hour. If not obstructed by Governments the people will generally choose the best place to buy and to sell.

The Globe's consistency always fails it before it gets to the end of a tariff argument. When John Doe of Toronto, transacts business with Richard Roe of Winnipeg, both the money and the cloth remain in Canada. When John sells his cloth to a customer in the West Indies, the cloth goes out of Canada and the money comes in. Yet, The Globe would have us believe that the latter transaction shall not be recorded any more than the former. Dogmatism is the announcement of what is purely theory as a fact. The Globe should remember that in this case we propound the theory from what we know to be the fact. In the former transaction, it is equitable to suppose that John Doe and Richard Roe have each made a fair profit. Then Canada has gained nothing. In the latter case John's profit was Canada's profit.

The Globe is quite correct in its assumption that people unobstructed by Governments will generally choose the best place to buy and to sell. But the fact which The Globe so calmly asserts calls to notice other facts. There are large iron deposits in the United States. Yet, for many years, manufactured articles of hardware were purchased by United States consumers from the British manufacturers. If The Globe's brilliant ideas had been carried out by the Government of the United States, the American market would have been to-day supplied by the British manufacturers. Canada's iron-mongers would have been supplied from Great Britain, too, but instead, we find that the American industry supplies our iron. We, in Canada, might have created the same conditions as exist in the United States, and to-day hundreds of thousands of dollars would have been invested in the iron mines of Canada, and mining and smelting would employ an army of workmen. But our people have not been "obstructed" and they choose the best place to buy, viz., the United States. Obstruction in wise degree would very soon persuade them that they could buy the best of iron from Canadian mines and smelters. But The Globe says it must not be.

There is no gainsaying the fact that we must develop our own civilization. This is true from the free trader's cosmopolitan standpoint, since, if we do not develop our own capacities, we limit our national usefulness. If we do develop them by scientific protection we will promote the economic selection of industries which we are best fitted to cultivate. A protective policy is not necessarily narrow or exclusive. Apply it philosophically and practically and it becomes a cosmopolitan doctrine of industrial relations, because it will first develop home industry, and through it civilization without injuring others, and in the second place, it will eventually automatically extend these beneficial results to all mankind.

## TUPPER AND THE TARIFF.

Sir Charles Tupper's consistent position in tariff matters is in strong contrast to the coat of many colors which the Laurier Government wears. Commercial union, free trade, reciprocity, and preferential tariffs (open to the world) are just a few of the proclivities exhibited by the gentlemen who at present compose the Dominion Cabinet, and spend their days and nights in jumping from one policy to another. The country waited for the Fielding tariff. The Tariff Commission went junketing about the country, and heard enough evidence to convince anyone that free trade was an utter and absolute impossibility for this young country. When they were in Toronto at one of their sittings one witness asked for free trade.

"We ought to get him photographed" was the side remark of one of the ministers to another. The remark is trifling, but it is sufficient indication of the trend of the evidence they heard, and the newspaper reports of the proceeding entirely justify the remark.

We have a tariff with wonderful provisions for trusts, and for preferential arrangements. We have a Premier whose stand against imperial trade federation gained him the Cobden Club medal. He is now in Washington, discussing our trade relations with the United States. The business men of this country have no confidence in the soundness of his doctrines. The majority, whose support in the Ottawa House makes him Premier, have followed him blindly. They have condemned preferential trade with Great Britain and her colonies. Their leader has declared himself in favor of the amicable separation of Canada from the Empire to become an independent nation. Is he looking toward preferential trade with the United States, or free trade with the world?

Oh! for men whose trade principles are as sound as those of Sir Charles Tupper. There is sound policy and preservation of the best interests of Canada in his position. We can do no better, by way of summing up the stand he has taken, than to give the text of his tariff amendment:—

That in the opinion of this House the reduction by twenty-five per cent. of the duties upon all imports, except wines, malt liquors, spirits, spirituous liquors, liquid medicines, and articles containing alcohol, sugar, molasses, and syrups of all kinds, the product of the sugar cane or beet root, tobacco, cigars and cigarettes, in favor of any country whose tariff is, or may be made, on the whole, as low as that of schedule D, is calculated to imperil the industrial interests of Canada, and is in principle opposed to preferential trade of any kind with the mother country.

That on several occasions the Government and Parliament of Canada have requested her Majesty to be pleased to take such steps as might be necessary to terminate the effect of the provisions of all treaties which prevent the Parliaments of the United Kingdom, and the self-governing colonies adopting such tariffs as may be required for the promotion of trade within the Empire, but no decisive action has been taken in this direction.

That the desire for preferential trade with the United Kingdom is now general throughout Canada.

That this House is of opinion that the Government of Canada should cause her Majesty's Government to be advised that so soon as the difficulties in the way are removed, the Parliament of Canada is ready to enter into a preferential trade arrangement with Great Britain and Ireland.

That this House cannot consent that any arrangement made by the Government of Canada with any country involving serious considerations of tariff and revenue should become operative without the sanction and ratification of Parliament.

## EXPENSIVE REVENUE CUTTERS.

Of course the bringing of the Yantic to Detroit means nothing whatever. Of course if it had been any indication of unfriendly intentions our canals would have been closed against her. Of course the "old tub" is to be used merely as a training ship. But we have not been told that she is unseaworthy or unable to stand the use of her armament in actual service. And she is not to be the only armed American craft on the Great Lakes.

The American Government is to build two revenue cutters for the lake service. They are expected to cost nearly two hundred thousand dollars each. They are merely protective vessels of course, and will be used by the customs service. Let us look at the specifications: They are to be all steel, length over all, 205 feet 6 inches, length between perpendiculars, 188 feet; beam, molded, 32 feet; depth of hold, 17 feet; displacement, 927 tons. They will be single screw boats with ten foot propellers of manganese bronze and seventeen knots an hour is the speed they will be required to develop. The engines are to be of the latest type and 2,400 horse-power is expected to be developed. They will each be rigged in addition with two masts of Oregon pine, eighty-nine feet high, and carry six boats and a steam launch. Of course they are merely for revenue cutters, but listen to what the Marine Record has to say about them:—

Each vessel will be armed with a six pound rapid fire gun mounted amidships. In addition to this, they will be provided with torpedo tubes projecting through the steam below the water line. This is a feature that has not been seen on fresh water in the United States, and may prove of value in the event of war. A magazine, provided with mechanism for flooding it in case of danger of explosion, will occupy a large part of the interior of each cutter, while the coal bunkers will be so arranged as to protect the machinery and magazines if fired upon. There will also be an armory on each boat, fitted out with a full complement of small arms, such as rifles, cutlasses and pistols. The cutters will also be so constructed that in case of need a battery, which may be kept at some convenient port, may be shipped aboard and prepared for action with little delay, and they have been designed of a convenient size to pass readily through the canals by the Niagara and St. Lawrence falls, so that they can be sent to sea on short notice. In every respect, they will be thorough sea-going vessels, and could be transformed into armed commerce destroyers of a very formidable type.

Torpedo tubes, a magazine, an armory of cutlasses, rifles and pistols; a convenient battery; sea-going vessels; armed commerce destroyers. What does this mean? We are to have these two splendid vessels constructed at Cleveland under our very noses. The United States Government has already arranged for the work and everything is going ahead. Would it not be well for the Canadian Government to take notice of the building of these two powerful steamships and their preparation for warlike purposes. They are not to be used as commercial vessels. They are avowedly built by contract for the United States Government and are said to be for revenue purposes. Does their description bear out the declared intention of their construction?

In April, 1817, when Richard Rush was Secretary of State for Canada, and Sir Charles Bagot was His Britannic Majesty's minister plenipotentiary in Canada, a treaty was executed in regard to the vessels of war to be maintained by the two countries on the Great Lakes. On April 28th of that year President Monroe signed the proclamation announcing

the arrangement. The following selections from it speak for themselves. Read them, and the building of the two (so-called) revenue vessels at Cleveland needs no further commentary:—

The naval force to be maintained upon the American lakes by His Majesty and the Government of the United States shall henceforth be confined to the following vessels on each side, that is—

On Lake Ontario, to one vessel, not exceeding one hundred tons burden, and armed with one eighteen-pound cannon.

On the upper lakes, to two vessels, not exceeding like burden each, and armed with like force.

On the waters of Lake Champlain, to one vessel not exceeding like burden, and armed with like force.

All other armed vessels on those lakes shall be forthwith dismantled and no other vessels of war shall be there built or armed.

If either party should be hereafter desirous of annulling this stipulation, and should give notice to that effect to the other party, it shall cease to be binding after the expiration of six months from the date of such notice.

The naval force so to be limited shall be restricted to such service as will in no respect interfere with the proper duties of the armed vessels of the other party.

### THEY'RE LOOKING TO WASHINGTON.

The Laurier Government are gentlemen of discernment. Their trade policy is a most ingenious piece of work. Their tariff is a masterpiece of wondrous beauty, and displays statesmanlike reasoning and logical sequence in its construction. Their careful attention to provision for all possible contingencies is really remarkable.

Perhaps the best instance of reasoning in the tariff is the provision for government action in the case of trusts. In making this provision the astute framers of the tariff undoubtedly displayed correct economic knowledge. The free trade policy of the Government may be read as we run. And the student of economics is, of course, aware that only under free trade can a trust flourish.

Sir Wilfrid Laurier is, at this writing, in the city of Washington, the capital of the United States of America. Can this be the man who has scarce been long enough from England to get the din of London out of his ears? Can this be the same Sir Wilfrid who next to Her Majesty the Queen, we are told, was the central figure of the greatest celebration that the world has ever known? Or is it rather the Laurier who on the 7th of April, 1892, stood on the floor of the House of Commons, at Ottawa, and told his fellow legislators that he looked ultimately to see Canada an independent nation? Has the time come, and is Sir Wilfrid about to make his intentions known? We were told that Sir Wilfrid Laurier's mission to Washington was in connection with the Behring Sea sealing question. What do we find? The Toronto Evening Telegram's clever Ottawa correspondent is in Washington, keeping a sharp eye on Sir Wilfrid and Sir Louis Davies. Listen to these extracts from his pen:—

Unless facts seriously misrepresent the character of his visit here, the Canadian Premier's chief object is not the consideration of the seal question. Already the experts in the Behring Sea conference have held three sessions, Sir Wilfrid Laurier has attended none of these. He learns something of the commission's doings through Sir Louis Davies, a regular attendant at the conferences, that is a matter of a short consultation between the two in Sir Wilfrid's apartments at the Shoreham. With this Sir Wilfrid Laurier's connection with the seal question seems to

stop. Two hour's talk with Secretary of State Sherman yesterday afternoon and a long conversation with members of the United States Cabinet at the State dinner last night was not confined to the question of seals in Behring Sea.

I saw Sir Wilfrid this morning. Both he and Sir Louis Davies admitted that questions of concern to the United States and Canada would be informally talked over during the next few days.

Now this is quite a different story from that first outlined by the Canadian Ministers. Both the Premier and Sir Louis Davies were emphatic in their denial that reciprocity would form a subject for discussion. Their answer was a decided "No," to a straight question. Of course, it is now easy for Premier Laurier and Sir Louis Davies to say that they happened across this idea of talking reciprocity quite accidentally. They can point out that suggestions were made by members of the United States Government for a friendly talk on reciprocity, etc., and they saw fit to fall in with such plans, but it looks clearer every day that Premier Laurier is here mainly to consider the question of reciprocity, but concludes to hide his intentions, foreseeing a possible failure in ultimately negotiating a treaty.

Sir Wilfrid Laurier's plans took definite shape to-day when arrangements were made for a conference between the two Canadian Ministers and Mr. Kasson. The latter is a commissioner appointed by the McKinley Administration, whose duties concern the arranging of trade relations between the United States and other countries. At the meeting between the Canadians and Mr. Kasson, the question of reciprocity with Canada will be freely discussed. Sir Louis Davies went to extra labor this morning to show me that the discussion is to be absolutely informal, a mere comparing of notes and perhaps arrangements made for negotiating a treaty. The latter, it may be said, will not be considered during this visit of the Canadian Ministers.

How does that sound? Discussion of trade relations the real motive of our Premier's visit to Washington. Small wonder that in England he discouraged at every turn the proffer of preferential trade with the Mother-land. His idea of our destiny is that we shall be no longer a colony of the British Empire, but a nation responsible to none but ourselves. Under these circumstances it is but natural to expect that Sir Wilfrid would rather curry favor with the other occupants of this continent than accept any bonds that would unite us closer with the Mother-land. Free trade is, of course, to be ultimately a concomitant of "Canada—a nation," and there is where Mr. Laurier's little statute for the regulation of trust will come in handy. Just follow that through and you have the evident line of the Liberal Ministry's reasoning.

Protection so stimulates domestic competition that inventions are multiplied, and the cost of production is reduced to a minimum. Under these circumstances no trust can succeed if it has for its object to maintain prices above a normal profit. The moment a combine undertakes to hoist the price of its product above the competitive price, that moment its downfall comes in sight. No more satisfactory proof of this need be adduced than the failure of the American wire mail trust, which undertook to make excessive profits and was forthwith driven to the wall by domestic competition. In the face of this, and with the added fact that Sir Wilfrid is discussing trade matters at Washington, there surely can be no doubt in the mind of any reader that the Liberal Government have in store for us propositions of a free trade nature. The sooner they disabuse their minds of any such idea the sooner the necessity of painful correction at the hands of the common-sense majority of the electors of Canada will have been removed.



## EDITORIAL NOTES.

One noticeable feature of the newspapers and periodicals, and especially of the trade journals of Great Britain, is the number of advertisements of American manufacturers and their wares. Our Canadian manufacturers might do worse than take a hint from this.

Economy in trade is a reduction of the ratio between the expenses of a business and the profits accruing from it. It will pay better to pay a man more than two ordinary men, if he does more work than two ordinary men. And frequently when you cast about for means of retrenchment close examination will show that to increase your expense must be the very best possible economy. It pays an employer of labor to study his employes, so that he will have a thorough understanding of the capability of every man for work, or for development into competence to do good work.

General Nelson A. Miles, the greatest military figure in the United States, advocates the fortification of the Federal Governments building, in Chicago with Gatling guns. He was in Constantinople during the attack in the Turkish Bank, and that reminded him of the "necessity for some means of defence of the public institutions of the United States" Verily, Mr. General Miles must have a high opinion of the character of his fellow-citizens.

The regulations under section 22 of the Joint Stock Companies' Act require that the word "Ltd." be spelled out in full, "limited," after the title of such companies. This has been held to be true in all cases, and has put manufacturers to a good deal of bother and expense. At the next session of the Ontario Legislature it will likely be made clear, by statute, that this applies only to advertisements, and not in the case of the word being stamped on manufactured goods. Manufacturers will do well to see that this important step is taken.

It may surprise some to learn that the Japanese can yearly send out 2,500,000,000 boxes of matches to the foreign market. They have already driven European and American matches out of India and China, and when we consider that the thousands of children employed in the business get but six-pence per week each, we may realize that here is another dangerous rival; at least, in this field. There is but one way to keep Japanese matches out of Canada even. We must have protection, not only to keep up our industries, but to maintain the standard of wages.

Board of Trade returns of the British export trade show a decline from last year of seven and one-half per cent. for September. It is admitted, in Great Britain, that this is caused largely by the Dingley tariff. Strange commentary on the doctrines of would-be free traders. American manufacturers will supply what British manufacturers did last year, and yet Great Britain allows the United States to sell its manufactures in the home market of Great Britain.

A new system of laying sub-marine cables has been devised by Mr. C. Scott Snell who recently read a paper on it before the Royal United Service Institution at London, Eng. His system provides for laying a cable as fast as the fastest cruiser can steam, and bids fair to become a valuable feature of naval warfare.

John Bull laughs now, but Uncle Sam's turn will come when Congress passes a law for the protection of American Shipping.—American Economist.

Our funny old friend, The Economist, is in high glee over this move. It seems impossible for the inflated self esteem of Uncle Sam's people to realize that their nation is not capable of supplying itself with ships. It's a plain case of utilizing British ships or else keeping their produce at home.

American machine tools, by hundreds of thousands of dollars' worth, are sent, freight paid, for thousands of miles across the ocean to England, Germany, France, Russia, Japan and China, and it is difficult to resist the contention that this simply means the success of free and intoligent labor well paid.—London Times.

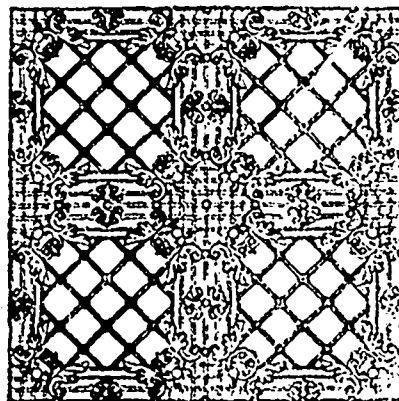
What is the world coming to when the greatest free trade journal in the world writes thus? And yet we are told that Great Britain will successfully continue a free trade policy

Let every person, farmer or other, who thinks that this industry will prove us important as those who have had some experience with it confidently believe, understand, that as a nation we consume more sugar than any other in the world; that we import three-fourths of all the sugar we consume; that it takes nearly our entire exports of wheat and corn to pay for this imported sugar, which we could just as well raise at home.

Canada is not the greatest sugar consuming country in the world, but the above remarks of R. M. Allen, President of the American Sugar Growers' Society, are worth reading and noting, and applying to Canada.

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In view of the preferential trade relations that are likely to be very shortly established between Great Britain and her colonies, some facts anent the trade of the British Isles with Canada may not be altogether uninteresting. The following figures relate to the importations from Canada into Great Britain. During September the number of cattle landed was 17,098, their value being £477,078; sheep and lambs 11,835, valued at £47,336. There were received 28,846 cwts. of bacon, £47,336; 17,302 hams, £38,746; butter, 42,146 cwts., £169,928; cheese, 239,808 cwts., £520,016; eggs, 69,591 crates, of one hundred, £20,959; horses, 1,624, £40,170. The total value of the imports in September, 1895, was £846,417; in September, 1896, £857,997, and in September, 1897, £1,132,378. Or, for a further comparison take the nine months ending September 30th, for the same three years, and the totals respectively are £3,591,943, £4,263,792 and £4,646,258.

The Sioux City (Iowa) Journal comments at some length on the increased exports of corn from the United States. During the year 1891 the exports amounted to 75,451,840 bushels of corn and 287,609 barrels of corn meal. During 1896 the exports were 176,916,365 bushels of corn and 475,263 barrels of corn meal. Col. Charles J. Murphy was sent to Europe as a special agent for the carrying on of a corn propaganda during the administration of President Harrison. He lectured on the availability of corn as a substitute for

wheat and rye, and gave practical illustrations of how corn meal could be cooked into palatable dishes. To his efforts the increase was largely due. Wherein lies another instance of the value of trade commissioners and a demonstration of what Canada may accomplish if available means are rightly used.

Still we are behind. The Dominion Government will not give our beet sugar industry protection. The Ontario Government refuses to pay a bonus. In New York State Governor Black has signed the bill that provides for a yearly bonus of \$25,000, to be paid out to beet sugar manufacturers at a rate not exceeding one cent a pound for every pound of ninety per centum crystallized sugar prepared from beets grown within New York State, and for which the grower receives not less than \$5 per ton, provided the sugar manufacturer is not the grower. All of which simply means that the United States is in a fair way to keep in circulation within its boundaries \$100,000,000 that would otherwise go to Europe each year. A natural sequel of this will be that in a few years Canada will be supplied by the United States each year with several hundred thousands of tons of sugar that we are perfectly able to produce in Canada. And when it is too late our government will discover their foolishness in not taking time by the forelock and securing to Canada a vast industry.

Whatever its ultimate effect, it is clear that the immediate result of protection in America is to close the American markets largely to British exports. We may as well make up our minds to this fact and seek an opening for our goods elsewhere.—London Times, October 5th.

A preferential trade league of Great Britain and her colonies is a remedy ready to hand. The Thunderer can not do better than advocate this simple and effectual method of securing to the Empire, for all time to come, the commerce of the world.

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## ORIGIN OF COAL.

The recent important modification in our ideas of the manner in which coal was produced are summarized by Dr. Philippe Glangaud in *La Nature*. It was not long, says the doctor, since we have had no exact idea of the manner in which coal was formed. It was once supposed that it was due to the influence of the "central fire;" we were far from suspecting that it had an organic origin. It is chiefly by the discoveries of French scientists that we have been able to solve this problem, which is so important both from the scientific and the practical point of view.

In the first place observations showed that coal is made up of vegetable remains, more or less altered, mingled with a brown substance, coming also from the decomposition of vegetable matter. This proof led certain scientists to believe that coal had come from the burial of forests in the place where they had grown. A luxuriant vegetable must have covered the soil, and on the remains of the vegetable species that fell and decayed sprang up new plants. This assemblage formed a considerable accumulation of vegetable matter. According to theories then in favor, a cataclysm soon took place; the forest was covered by waves charged with sands and clays, under which the vegetable mass disappeared. Quiet was restored, an

other forest grew on the remains of the first, and a new cataclysm cover this also with new sands and clays. Thus was explained the alternation of coal-bearing strata with rock and slate that was observed in coal regions.

This theory, which was current for some time, could not be sustained by a close examination of the facts. In fact, it was noticed that the layers of coal were very regular, and that trunks of trees had often been found with their roots in the air; finally, it was impossible to admit that vegetation could be preserved in the open air. It was necessary that it should be removed from the action of the air in order to be altered into a combustible material.

After having made a number of observations of this kind, M. Fayol, a French engineer in charge of the coal mines at Commeny, was led to propose a new theory of the formation of coal—a theory based on facts and experiments, a rational theory, which has now gained the adherence of all scientific men. The mines in Commeny are in a part worked in the open air, so that it is easy to observe the relations of the different strata that make up the region. M. Fayol noticed at first that the pebbles constituting the pudding stones were formed of rocks whose place of origin was sometimes quite distant. As to the coal, it was the result of vegetable debris laid down in horizontal layers, one above the other. He concluded

that from these data that a liquid must have been necessary to transport and arrange in this way those different elements. Coal, then, was not formed in the places where it grew; it is a product of transportation.

The climate of the coal epoch being very moist, abundant mud carried ~~sw~~, trees and whole forests and swept them into lake basins. The trees thus formed great rafts of logs, like those on certain American rivers. The heaviest materials, gravel, sand, clays were deposited in the order of their density. The lighter vegetable matter floated longer and was deposited last. Thus is explained why the layers of earth and coal are not parallel, and why all these layers, as has been observed in deltas, are inclined in the same direction and at different angles.

M. Fayol tested his hypothesis by experiments on rapid sedimentation. He produced artificially, with the aid of small torrents, all the circumstances observed in the coal basins of the central plateau. The facts observed to-day at the mouth of the Mississippi makes M. Fayol's hypothesis even more probable.

But the results reached do not stop here, from a scientific point of view. While the old theory required thousands of centuries for the formation of a coal basin, the theory of flotation enables us to understand that a relatively short period would have been sufficient to form the depressions in which the coal was deposited. The discovery of

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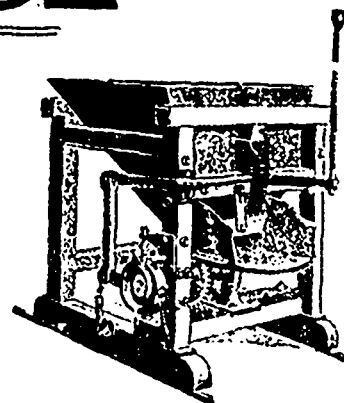
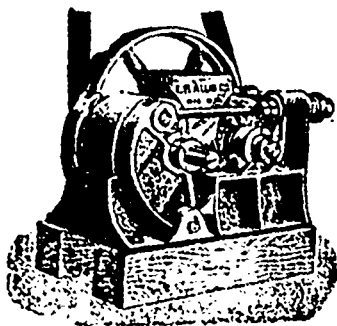
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**Directory to the Iron and Steel Works of the United States**. By James M. Swank. Price, \$6.00. This edition of the Directory is an invaluable book of reference for all business men who wish to correspond with Iron and Steel Manufacturers or with Iron and Steel Consumers, forming in every respect a complete guide to the Iron and Steel Works of the United States, and to the principal works which consume Iron and Steel. It is well arranged for ready reference to any establishment, as it contains an index to the names of firms and companies, and also to the names of works; also an index to brands of pig iron. The book will be sent by mail in a strong flat envelope. This book contains a list of the iron and steel works in Canada. No other edition of this work will be issued until March, 1898.

**History of the Manufacture of Iron in All Ages, and Particularly in the United States From Colonial Times to 1891**. Also a short history of early coal mining in the United States, and a full account of the influences which long delayed the development of all American manufacturing industries. By James M. Swank. In one volume, royal octavo, 574 pages, large type, good paper, well printed, best cloth binding, gilt title. \$5.00.

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boulders of coal, round in several basins, even justifies the conclusion that the coal was formed before its transportation by the water. So coal was the result of flotation of vegetable matter and its deposition in lakes.

M. Glanguaud notes that not all coals were formed from trees and large plants. Some were the product of very small, almost microscopic, algae that covered the surface of still water. Such were the coals called "hogheads."

To sum up, attentive and careful examination of the constitution of coal enables us to understand the different way in which it could have been formed, concludes the writer. Science has probably not said its last word, and perhaps new discoveries are at hand that will throw new light on the question of the origin of the most important combustible mineral, without which the activities of the nation would be quickly brought to a standstill.—The Literary Digest.

#### THE FASTEST STEAMER AFLOAT.

The Turbinia, the English boat driven by a steam-turbine, whose remarkable performances have already been noted in these columns, has recently improved even on her first record, as the following extract from Nature shows:—

"We understand that during the three weeks the Turbinia was in the Solent she made frequent runs of many miles at a time, at speeds of from thirty to thirty-five knots, and that her performances were witnessed by many leading authorities in naval matters, as well as the mercantile marine. On Tuesday, June 29th, with a distinguished company on board, she was run up to nearly full power, and maintained the unprecedented speed of thirty-five knots, or over forty miles per hour, for the length of the line of battle-ships, or about five miles. During this run there was an absence of strain, and from this fact it seems that the limit of speed in this little vessel has not yet been reached, and that after further improvements, at present in progress (having returned to the Tyne last week), she will be capable of not only maintaining her position as much the fastest vessel afloat, but will be able to give many knots to any competitor engined with reciprocating engines. We purpose, in a subsequent issue, to give a further account of the compound turbine-engines which, by the most direct and economical conversion of the power of the steam into effective horse-power in engines of

unprecedentedly small weight, enable the Turbinia to achieve without stress or vibration such remarkable results."

The following comments on these remarkable feats, which, some authorities think, presage a revolution in marine engineering, are made by The Scientific American:—

"It was only a few years ago that we were looking forward to the day when some naval architect and engineer would give us a vessel capable of steaming at a speed of twenty miles an hour. So swift has been the development of marine engineering that to-day there exists a bona-fide steam-vessel that has been run at just double that speed, or, to be exact, at the rate of forty and one-third miles per hour. At the time of our last notice of this phenomenal little craft, we were informed by Mr. Parsons, the designer of her engines, that the turbines had never demonstrated their actual power, for the reason that the main steam-pipe had proved to be too small to supply steam as fast as the turbines could take it.

"Judging from reports in the English technical press, this defect has evidently been made good, and the motive power tuned up to working-pitch; for it seems from the statement of Sir George Baden-Powell, who was on board the Turbinia as she steamed down the lines of the fleet at Spithead, that she reached a speed of thirty-four knots an hour. In a letter to Engineering, Mr. Parsons states that during a recent trial the turbines indicated 2,400 horse-power, and gave the boat a speed of thirty-five knots an hour. This is equivalent to forty and one-third miles an hour, or well up to the speed of the average passenger-train. As a mere question of speed, this is a phenomenal performance, and it is not likely that it will ever be reached by a boat driven with an engine of the reciprocating type; but the wonder of it is increased when Mr. Parsons goes on to say that it was done on an expenditure of fourteen pounds of steam per indicated horse-power. When we bear in mind that the best type of Corliss compound engine working under favorable conditions will consume not less than eighteen pounds of steam per indicated horse-power, the high economy of the compound turbine will be appreciated.

"At the same time it must be admitted that one could wish for more exact details of these runs. The speed is given in round numbers that suggest rather careless or crude timing. Sir William White, chief constructor of the British navy, has suggested that some builder of torpedo-boats, like Yarrow or

Thornycroft, should first run a boat with a set of his own engines, and then substitute a set of Parsons' turbines, with a view of determining their relative efficiency. Such an experiment, if carried out at considerable length, would settle the question as to the economy and practicability of the turbine for this class of service."

#### THE QUEEN'S FACE DID IT.

The Queen has witnessed the entire growth of the nervous system given to the planet by electric telegraphy—a growth mainly due to British enterprise. It was held in germ by the penny postage that began early in her reign. The Queen's head, when the Queen was young and her profile pretty, became an envelope and newspaper-wrappers the symbol of cheap and rapid communication by letter. No circumstance that I can think of helped more to build up that popularity, which has become the instrument of so much good, than the penny postage-stamp. We do not think of it now because we are so used to it. But I can remember the time when the Queen's head, as the postage stamp was then called, was new to many. In the prestige that cheap arrangement brought her, she much more than made up for the prerogatives she waived in her attempts to be a true constitutional Queen. The Queen's head had formerly been only seen over public houses. But Rowland Hill brought home to every family where a letter was delivered the idea of a young Queen who had come to reign on a quite new and superior basis. A mania for postage-stamps sprang up. Stamp fanatics promised thousands of pounds for benevolent objects if so many stamps that had passed through the post-office could be furnished them against a certain date. Louis Napoleon was so much struck with the increased prestige of the Queen through the penny stamp that when elected President he lost no time in having a three-half-penny stamp struck with his profile on it. Doubtless it helped to open his road to empire.—Emily Crawford, in the Contemporary Review.

Big orders for Alabama iron for exporting purposes have been booked recently, and shipments will continue for several months. Two companies are sending iron to Manchester, Eng., on a large order received a few days ago. The order is said to be up in the thousand tons.

## BOOKS.

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TORONTO, CANADA

**THE RUSTING OF IRON UNDER OIL PAINT.**

The explanation of the rusting of iron under a protecting coat of paint, now current, is that fine hair cracks are found in the paint which allow the iron to come in contact with the air. These cracks are formed by the unequal expansion of the iron and the paint, as iron is the better conductor of heat. In the case of painted surfaces of some years standing, the supposition is that the compound of the litharge in the oil with its acid, originally flexible and colloidal, gradually changes to a brittle crystalline oxy-compound. The iron cooling quicker than the paint, draws the air charged with moisture into the hair cracks and thus promotes the formation of rust. The author states that his doubts in regard to the above explanation were confirmed by the peculiar action of sea water on painted iron plates, with which he experimented. These plates of painted iron were immersed in sea water for two-thirds of their depth, the other third remaining dry. After remaining thus for six months, an examination showed that for about an inch or so above the water line the paint was cracked, blistered, and even peeled off. The immersed portions of the plates, except for a few rust spots, and as further stated, looked unchanged. The lead paint showed signs of a radical decomposition, while the other paints stood up better, being soft and rough when dried, but not destroyed. The changes remarked in the paints were found to have commenced from within. As the sea water was evidently allowed to penetrate, the adhesiveness of paint to iron was weakened, capillary attraction evidently distributing the water all over the submerged

surface, and surface evaporation aiding the destruction above. A further observation was the blistering of the paint due to the formation of salts underneath, making it permeable to water at once. To prove this point better, the author made elaborate experiments as follows: Layers of paint were spread on gelatine coated with glue, dried, and after immersion in cold water, separating the layer of paint from the gelatine. Perfectly sound coats thus obtained were afterwards proven to be permeable to water and salt solutions, when arranged in a dialyzer. Again these coats were shown to be permeable to air, illuminating gas, acid vapors, etc. The result is that layers of paint as usually applied are found to be not only hygroscopic, but also not proof against water and gases. This explains the rusting of iron and steel under protecting coats of paint. In studying the influence of the atmosphere on painted bridges, the author observed that on the lower surfaces of beams, which are not subject to the direct influence of rain, large yellow spots appeared, which turning brown, proved them to be rust. Continued observation revealed the origin of these spots to be due to precipitation of dew on the cold iron, a drawing together of the moisture into drops which remain hanging for a long time, and consequently gradually soak through the paint, leaving it porous and open to the action of moisture air, and carbonic acid, which means rust. The conclusions derived were that warmth does not affect paint as it is thought to do, and need therefore not be feared in structural work. That paint is hygroscopic, and permeable to water and gases when in a blistered condition. That the more linseed oil a paint contains, and the less the colors

are subject to chemical influences, the better the results will be. The nearer the co-efficient of expansion of the iron can be brought to that of the paint, the better. Two coats of paint will not protect iron properly, it takes at least three or four, using a very fat color. Experiments with various proportions of oil and color gave the following mixtures as best adapted for protecting iron work: 100 parts of red lead (by weight) required 12.8 parts of oil. The same quantity of white lead, forty parts of oil, and 100 parts of a color indifferent to chemical action could stand as much as eighty-five parts of oil. The author's experience in the preparation of iron surfaces for painting, shows that cleaning the iron well with muriatic acid, then rubbing well with oil, is the only proper way, in spite of what may be said to the contrary; for structural parts, thus prepared, remained piled up in the open air for months without a sign of rusting, while other material painted with iron and lead colors direct, peeled off and rusted badly. Further investigations by Prof. Van der Kloes substantiate this mode of procedure, and show that cleansing of the iron alone is not as good as cleaning and oiling it. The author concludes with the advice that after all this is attended to, four coats of paint, rich in linseed oil, should be applied, which will give results of the highest character as far as we know it at the present time. —Polytechnisches Journal.

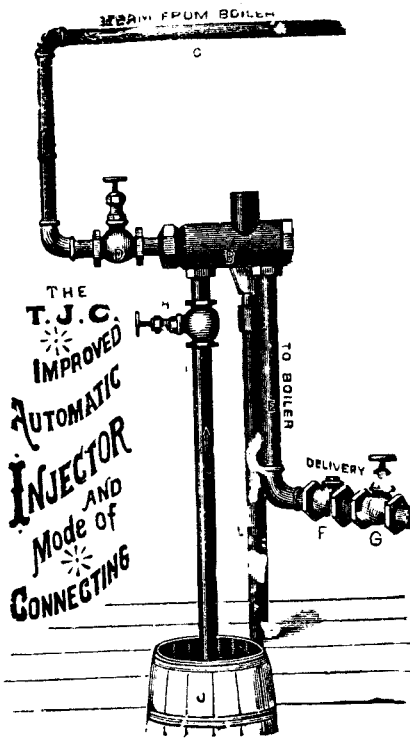
The new Duluth-Superior draw bridge was opened a few days ago. The span is 490 feet long and sixty feet wide. It is said to be the largest draw span in the world. Across it are two steam railway tracks, two trolley tracks, two roadways and two sidewalks.

**THE IMPROVED AUTOMATIC INJECTOR.**

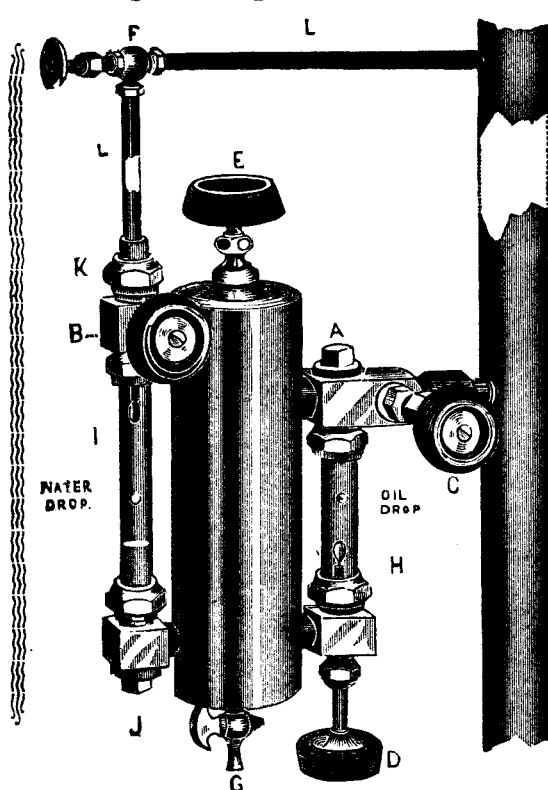
Pat. by T. J. CARROLL.

**PRICE LIST.**

No.	PRICE.	GAL. PER HR. 65 LBS. PRESS.	SIZE OF PIPE CONNECTION.	HORSE POWER.
10	\$7 50	120	1	8 to 16
15	15 00	300	1 1/2	16 to 40
20	22 50	540	2	40 to 72
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SIZE.	BRASS.	NICKEL.
1 Pint	\$1 50	\$5 00
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**HAMILTON BRASS MNFG. CO., Limited, 259 to 265 James Street North HAMILTON, ONT.**

**NEW TANNING PROCESS.**

While nearly every other industry has during recent years been the subject of marked scientific improvements, the art of the tanner has remained practically the same from time immemorial. Hides for the production of heavy leathers are still soaked in the tanning liquor for very long periods, ranging from five to ten months, and sometimes even longer. This necessitates an enormous outlay of capital and the use of considerable areas of ground upon which the long series of tan pits is ranged. From inquiries we have made an important change in this direction now appears imminent. Instead of many months being necessary for the tanning process, hides are now, we understand, being converted into good sole leather in from thirty to forty hours. East India kips require only from twelve to twenty hours, and calf skins eight hours. The weight obtained from market hides is from fifty-two to fifty-four per cent. of leather, and fully eighty per cent. from salted South American hides. We learn that the new process is simply a mechanical one in combination with the use of certain extracts, and that one plant, capable of tanning from 2,000 to 2,500 hides a year, occupies a space of only about twelve by ten feet. The cost of tanning material required is about 2d. per pound of leather, the apparatus in a tannery where steam-power is available costing about £1,000 for a yearly output of from 25,000 to 30,000 hides,

and less in proportion. The quality of the leather thus made, specimens of which we have seen, is in every respect excellent, and shows that the patentees have overcome the one great difficulty heretofore in the way of rapid tanning processes, viz.: they obtain by the new system a superior grain, while the leather produced is of good substance, thoroughly tanned, and of remarkably fine color, and these claims on behalf of their system the patentees are prepared fully to guarantee. The new process is therefore deserving of the most careful attention, and tanners in all parts of the world, and those who may be about to embark in the trade, should not fail to obtain the fullest particulars. Such a process as that referred to must eventually bring about a great change in the tanning industry, for the cost is not only much lower than that of the present methods, but the weight obtained in the leather is very high. Messrs. Levinstein & Sons, 24 Railway Approach, London Bridge, London, S.E., England, are introducing the new process.—British Trade Journal.

The Canadian Consolidated Copper and Nickel Company give notice through their solicitors, Messrs. McCarthy, Osler, Hoskin & Creelman, Toronto, of application for incorporation at the coming session of the Ontario Legislature.

The large Jewell filters for the town of St. Hyacinthe, Que., have arrived and are being installed. These filters were built throughout by the Jenckes Machine Co., Sherbrooke, Que.

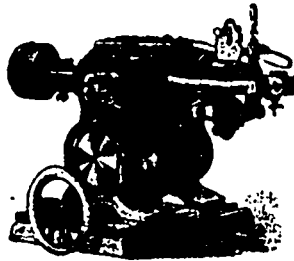
The Eustis Mining Co., Eustis, Que., have commenced sinking again in their shaft, and for this purpose have placed an order with the Jenckes Machine Co., of Sherbrooke, for one of their special underground hoists, to be worked by compressed air.

The Chicoutimi Pulp Co., Chicoutimi, have decided to extend their mill, and have placed an order with the Jenckes Machine Co., of Sherbrooke, for nine of their perfect ton-plate screens, an additional crocker turbine and a fifty h.p. steam boiler.

Messrs. William C. Wilson & Co., 24 Front street, East, Toronto, have been appointed agents for The Quasby & Mattison Company, of Ambler, Pa., magnesian steam-pipe covering. This firm carries one of the largest stocks of asbestos steam-pipe covering in Ontario and are in a position to fill contracts entrusted to them with the utmost despatch.

A trolley electrical road wagon has been invented by Mr. W. D. Caffrey, of Reno, Nevada, who has associated with him Col. Maxon. The wagon is to be used principally for the transportation of farm produce. A line of ordinary poles were set up, the two wires were secured to the poles, and a trolley allowed the current to be furnished to the wagon. The cable which provides the electricity allows a divergence or turning about of the vehicle if necessary. On the trial trip a speed of fifteen miles an hour, with 2,500-pound load, was attained. This may be the beginning of an era in which all branches of trade will use electricity in preference to horse power when possible.

**ELECTRIC BARGAINS.**



**ONE EDISON MOTOR,  
ONE BALL MOTOR,  
TWO DYNAMOS.**  
Above almost new.

We install complete plants at lowest possible figure. Write us before buying.

*Motors, Dynamos and Platers*  
Manufactured in all sizes.

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Corner King and Victoria  
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**BREWERS  
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Brewing Kettles, Boiling Coils,  
Beer Coolers, Attempartors  
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WESTINGHOUSE ELECTRIC COMPANY, Ltd., 32 Victoria Street, LONDON, S.W., ENGLAND.  
For CANADA address, - - - - AHEARN & SOPER, - - - - OTTAWA, CANADA.

# CAPTAINS OF INDUSTRY.

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

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

The starting of any such concern means a demand for some sort of machines, machinery, or supplies, such as steam engines and boilers, shafting, pulleys, bolting, lubricants, machinery supplies, wood or iron working machinery, ventilating and drying apparatus; pumps, valves, packing, dynamos, motors, wire, arc and incandescent lamps, and an infinite variety of electrical supplies, chemicals, acids, 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 Shawanogan Water and Power Company, Shawanogan, Que., will apply for incorporation.

The Carriage Specialty Company, of Toronto, has been incorporated with a capital stock of \$20,000.

The Percin Plough Company, Smith's Falls, Ont., has been incorporated with a capital stock of \$9,000, to manufacture sulky ploughs and other agricultural implements.

The Forsyth Granite and Marble Company, Montreal, has been incorporated with a capital stock of \$50,000.

The granite quarries at Shelburne, N.S., will ship to Aberdeen, Scotland, in December next 200 tons of granite.

The Acetylene Lighting Company, London, Ont., is being incorporated with a capital stock of \$15,000, to manufacture apparatus for the production of acetylene gas.

The Winnipeg Mining & Smelting Co., of Greenwood, B.C., have installed a complete mining plant, purchased from the Rossland Branch of the Jenckes Machine Co., Sherbrooke, Que.

The Cookshire Mills Company, Cookshire, Que., will build a new box factory at that place.

The Grand Trunk Railway Company has come to an agreement with the town of Collingwood, Ont., for the erection of an elevator there.

E. R. Simpson & Co., engineers and machinists, have started business in Berlin, Ont.

The Shallow Lake Woodwork Manufacturing Company, Shallow Lake, Ont., has been incorporated with a capital stock of \$5,000.

The Jenckes Machine Co., of Sherbrooke, Que., report British Columbia sales as very satisfactory. They are continually shipping to their warehouse in Rossland, where a heavy stock of mining plant is regularly carried.

The Goldie & McCulloch Company, Galt, Ont., recently shipped a car load of safes to Windsor, N.S.

The Sydney Cheese factory, near Belleville, Ont., was burned a few days ago. This factory made 300,000 pounds of cheese the past season. It will be rebuilt at once. Mr. J. R. Brower, Belleville, Ont., is manager of the company.

The Quebec Central Railway Company are preparing to make alterations and additions to their shops at Sherbrooke, Que., to the extent of about \$75,000.

The Jenckes Machine Company, Sherbrooke, Que., recently received an order for Crocker turbines for an electric light plant to be installed at Roberval, Que.

The Rosamond Woolen Company, Almonte, Ont., have ordered a new boiler and engine from the Goldie & McCulloch Company, Galt, Ont.

The William Buck Stove Company, Brantford, Ont., has been incorporated with a capital stock of \$150,000 to acquire the business heretofore carried on in Brantford by the late William Buck.

# Electrical Supplies, Incandescent Lamps.

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The cut shows the direct connection of two 20 inch.

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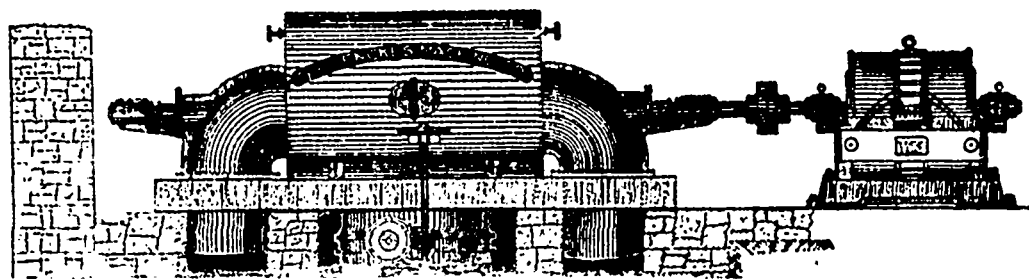
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#### ELECTRICAL GENERATOR

At Power Station of North Shore Power Co., at St. Narcisse, Quebec.

Two sets were furnished for lighting and power for City of Three Rivers.

17 Miles Distant from Power Station



THE JENCKES MACHINE CO., SHERBROOKE, QUE.

COMPLETE WATER POWER PLANTS  
BUILT AND INSTALLED.

Address for Catalogue and full information - 28 LANSDOWNE STREET



The Royal Electric Company, Montreal, have been awarded the contract to install an electric light plant in Fort William, Ont. The Robb Engineering Company, Amherst, N.S., will supply the engines and boilers.

The Odorless Grematory Closet and General Heating Company, Hamilton, Ont., has been incorporated with a capital stock of \$21,000.

The firm of Abbott & Co., of Montreal, who employ several hundred men, are considering offers from various Ontario towns, with a view to the removal of their works. The success of our iron mines will lead to the construction of a smelter in connection with the mills.

The attendance of young people in the different departments of the Central Business College, Yonge and Gerrard streets, Toronto, is the largest ever enjoyed in the history of that institution at this season of the year.

The Kerr Engine Company, Walkerville, Ont., recently installed a new pump at the waterworks at Leamington, Ont.

The Progress Printing and Publishing Company, St. John, N.B., is being incorporated with a capital stock of \$9,000.

The Bois Manufacturing Company, manufacturers of woollens, St. Hyacinthe, Que., will apply for incorporation.

The capital stock of the W. R. Gardner Tool Company, Sherbrooke, Que., has been increased to \$150,000.

The Heintzman piano factory, at Toronto Junction, is being operated over-time to over-take orders. The present unusual activity is in part due to the Company's increased demand for pianos in Manitoba.

The Knowlton Electric Light Company, Knowlton, Que., has been dissolved. Austin W. Peters is now registered sole proprietor.

The Canada Printing Ink Company, Toronto, has been incorporated with a capital stock of \$40,000.

The Atlas Hotel Company, Montreal, is being incorporated with a capital stock of \$50,000, to build hotels on the line of the Atlantic and Lake Superior Railway.

Six miles of cement walks have been laid in Galt, Ont., during the past six months.

Messrs. Reid and Brown's foundry at Toronto, was damaged by fire a few days ago to the extent of about \$4,000.

Price Bros., Quebec, have placed an order with the Jenckes Machine Co., Sherbrooke, for one of their special refuse burners, eighteen feet in diameter, 120 feet high, for their Montmagny mill. This is the second burner of this size which the Jenckes Co. have supplied them.

The city of Kingston, Ont., is negotiating for the establishing in that city of a flour mill that will employ 200 men.

Thomas Whitaker, London, Ont., has discovered an extensive bed of fire clay in Muskoka. Mining rights have been secured and a company has been formed to develop it. Fire clay is at present imported at a cost of \$20 a ton.

The St. Lawrence Anchor Fence Company, Montreal, will apply for incorporation.

Messrs. Burr Bros, furniture manufacturers, Guelph, Ont., are running their factory from seven a.m. to ten p.m. They expect the rush to continue for some time.

The Windsor Hotel Company Montreal, will spend \$40,000 in refitting and furnishing the hotel.

Wm. Ritchie & Co. are removing their sawmill from Grande Piles, Que., to Three Rivers, Que.

# MACHINERY and EQUIPMENT FOR Mines

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**Canadian Rand Drill Co.,  
MONTREAL.**

## FIRE PROTECTION.

INDICATOR VALVES. CHECK VALVES.  
INDICATOR POSTS.  
FIRE HYDRANTS. CAST IRON PIPE.

For the modern equipment of your Mill with Automatic "Sprinkling System," write us.  
We manufacture a full line of these goods.

**ST. LAWRENCE FOUNDRY CO.**  
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TORONTO, - CANADA.

**J. H. WALKER,**

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SPECIAL  
AGENT

**Rubber  
Goods..**

TELEPHONE 2807

(Wholesale).

Having severed my connection with The Canadian Rubber Company as Manager of their Toronto Branch, I beg to advise that I have opened an office at the above address and am prepared to supply Rubber Goods, as heretofore, to meet any requirements.

I will have the best goods in the market—at the best prices. Myself or a representative will have the pleasure of calling on my friends in the near future, and would ask them not to place any orders for Rubber Goods until seeing one of us.

If requiring anything in my line, in the meantime, drop me a card and I shall give same prompt attention.

Assuring my many friends of my ability to give them as good service in the future as in the past, I hope for a continuance of their favors.

**J. H. WALKER.**

**Dominion Oil Cloth Co.,**

Manufacturers of....

**OIL-CLOTHS OF EVERY DESCRIPTION**

Floor Oil-Cloth, Table Oil-Cloth, Carriage Oil-Cloth,  
Enamelled Oil-Cloth, Stair Oil-Cloth, etc., etc.

Office and Works

Cor. St. Catharine and Parthenais Sts., MONTREAL, Que.

J. L. Pollock's flax and sawmills at Drayton, Ont., were damaged by fire a few days ago.

The business of Paxton, Tate & Co., manufacturers of mill machinery and agricultural implements, has been sold to Madi son Williams, who continues under same style.

A. J. Mitchell, planing mill, Rodney, Ont., has been succeeded by F. A. McCallum.

The Central Bridge and Engineering Company, Peterboro, Ont., shipped a one-hundred foot girder bridge to Lachine, Que., a few days ago, for the crossing of the G.T.R. and the street railway at that town.

Peter Reid, of Lemesurier, Que., is installing a new engine and boiler, purchased from the Jenckes Machine Co., of Sherbrooke, which will largely increase the capacity of his sawmill.

Several new petroleum wells have lately been drilled in Lambton county, Ont., near Florence. The wells yield from five barrels to one hundred barrels of oil per day.

The first gold brick produced at the Hammond Reef gold mine, in the Rainy River district, weighs about five pounds. It was extracted from 259 tons of ore by a ten-stamp sampling plant. The ore runs about \$5 per ton. It is estimated that this will yield a profit of \$3.50 per ton. The ore of the Treadwell Mine, Alaska, a similar large low grade mine which pays large dividends, runs \$2.60 to the ton.

Probably the largest penstock ever used in connection with the development of water powers in Canada is being built at the works of the Laurentide Pulp Co., Grande Mere, Que., on the St. Maurice River. The main penstock is fourteen feet in diameter, made from 7-16 inch steel plate, 550 feet long, and with its branches, has used in the neighborhood of three hundred tons of plate. The Jenckes Machine Co., of Sherbrooke, Que., have the contract.

Application will be made by the executors of the estate of the late John Aiken, brewer, Montreal, to convert the business into a joint stock company.

Mr. E. Methot, of Cape St. Ignace, Que., is intending rebuilding his sawmill and installing two forty h.p. boilers, which are being built by the Jenckes Machine Co., of Sherbrooke.

The Northern Water Works and Power Company, Montreal, will apply for incorporation.

Wakefield and Kelington's planing mill at Neopawa, Man., was damaged by fire a few days ago to the extent of \$1,000.

Messrs. Whitlaw, Baird & Co., millers and gran, Paris, Ont., have been succeeded in milling business by Wm. H. Meldrum.

Mr. McDougall, president of the Montreal Quarry Company, has purchased the Pont Rouge pulp mill from Mr. James Reid, of Quebec City, for a syndicate of Montreal men. Fifty thousand dollars are to be expended in enlarging and improving the property.

Messrs. Wm. Dow & Co., brewers, Montreal, will apply for incorporation.

D. W. Van Dyke's fruit evaporating works at Grimsby, Ont., were destroyed by fire a few days ago. Loss about \$6,500.

The Bonanza Nickel Mining Co., of Sudbury, Limited, have placed an order with the Jenckes Machine Co., of Sherbrooke, for a ten-stamp gold mill, complete, with two six foot vanners.

The Perfection Knitting Company, of St. Catharines, Ont., with head office in that town, has been incorporated with a capital stock of \$2,000.

Messrs. B. Bell & Son, manufacturers of agricultural implements, St. George, Ont., have been working over-time the greater part of the year and are unable to keep up with orders although the staff of workmen has been increased.

An addition to the Royal Crown Soap factory, Winnipeg, Man., is being made, which, together with new machinery, will cost about \$25,000.

The G.T.R. elevator at Goderich, Ont., was destroyed by fire a few days ago.

Mr. W. A. McDonald has succeeded to the business, in Montreal, of his late father, Mr. Thomas McDonald, in the manufacture of all kinds of tinware, light sheet iron and copper work.

The Windsor Foundry Co., who suffered so heavily in the recent fire at Windsor, N.S., have decided upon rebuilding their plant, which, we are informed, will be larger and more complete than before.

The Packard Electric Co., Limited.

MAKERS OF

Lamps and Transformers

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

Cleveland WIRE SPRING Company, CLEVELAND, OHIO, U.S.



TEMPERED STEEL MACHINE SPRINGS. SPECIAL SPRINGS of all description to order and for Upholstery, Furniture, Beds, Chairs, etc. WIRE, Oil Tempered, Spring Steel and all kinds

..STEEL..

LA BELLE STEEL CO. PITTSBURG, PA.

Manufacturers of STEEL FLOW SHAPES, HARROW DISKS, CULTIVATOR PLATES, and AGRICULTURAL STEEL of all kinds.

FINE TOOL STEEL

FOR -

DIES, DRILLS, TAPS, BICYCLE CONES, PUNCHES, MAGNETS, Etc.

And for all purposes where requirements are exacting.

For Prices, Etc., Address,

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Agent for Canada.

29 Melinda St., - Toronto, Ont.

The DRIER the STEAM the GREATER the POWER.

OUR SECTIONAL PIPE AND BOILER COVERING

Almost Entirely Prevents Condensation of Steam when Passing Through the Pipes

EUREKA MINERAL WOOL & ASBESTOS CO.

114 BAY STREET, TORONTO.

ASBESTOS GOODS. MINERAL WOOL. ENGINE PACKING.



James L. Robertson & Sons, 204 Fulton street, New York City, have issued a couple of handsome price lists that steam-fitters will find very convenient. Pressure indicators, reducing wheels, planimeters, governors, all sorts of pump, steam and hot water fittings are described and prices carefully tabulated. The Robertson Grate Bar is a special feature. A good grate bar is of vital importance to a power plant.

The Messrs. Lefebvre, the sons of the senior member of the firm of M. Lefebvre & Co., Montreal, have made an agreement with the corporation of St. Johns, Que., to establish a vinegar and canning factory in that town.

Messrs. Lockhart & Sons are opening a saw and grist mill at Lockington, Ont.

The Auxiliary Link and Novelty Company, Brantford, Ont., has been incorporated with a capital stock of \$2,000, to manufacture links for repairing bicycle and other chains, and all kinds of bicycle sundries and parts.

R. G. Anderson has opened a grist mill at Port George, N.S.

The Grand Trunk Railway Company have broken ground for the new roundhouse at the Sarnia tunnel. The new structure will contain thirty-five stalls.

Wm. Holt, manufacturer of hammocks, Paris, Ont., has removed to Dunnville, Ont.

John Bingham and Seth Phillips, Montreal, have been registered as proprietors of the Jubilee Handsewn Shoe-making Company.

The Jenckes Machine Co., of Sherbrooke, are building a very large (20x10) crusher for the Wilson Carbide Co., St. Catharines, Ont.

The St. Maurice Lumber Company are re-building their sawmill at Three Rivers, Que., which was burned some time ago.

The corporate name of The Thomas Manufacturing Company, Limited, manufacturers of the Cleveland bicycle, Toronto, has been changed to The Lozier-Thomas Company, Limited.

The great value which the mining districts, both east and west, are proving to the prairie-food-producing region may be inferred from the following statement: A representative of the Parsons Produce Company recently visited the Kootenay district, and, within a few days after his arrival there, he sent in orders for ten carloads of goods, including butter, cheese, eggs, poultry and apples. This, it must be remembered, is only the sales of one firm in a single trip, and further orders are yet expected. — Winnipeg Commercial.

A crab canning industry has been started at Barrard Inlet, B.C., where 1,000 to 2,000 crabs are canned each day.

Messrs. Gillies Bros. Co., Limited, will build a mill at Madawaska station, Ont., on the K. & P. Railroad, for the manufacture of cedar ties, shingles, basswood, elm and ash lumber. They will also build a mill at Brantford, Ont., for the manufacture of box boards for foreign shipment.

Spencer & Spencer, of Frelighsburg, Que., are enlarging their sawmill, and for this purpose have placed an order with the Jenckes Machine Co., Sherbrooke, for one of their twenty-five inch special Crocker turbines.

Messrs. Macpherson & Co's foundry at Fingal, Ont., was destroyed by fire a few days ago.

## 6 OPTIONS - 6 . . . .

Granted to the holder of the 20-year  
DISTRIBUTION POLICY of the **Manufacturers' Life**

IF HE SURVIVES THE PERIOD HE MAY

- (a) Surrender his policy and receive (1) Cash, (2) Paid-up Insurance (3) Annuity; or,  
(b) Retain his policy and take his profits as (4) Cash, (5) Bonus addition, (6) Annuity.

If he dies during the term his beneficiaries receive the face value of the policy. These options, together with the liberal benefits guaranteed in the policy, render this plan one of the most attractive ever offered.

HEAD OFFICE, - TORONTO.

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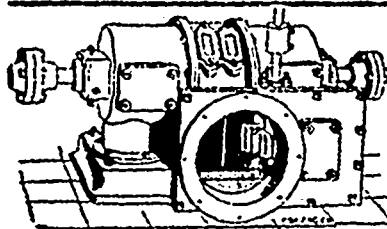
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Washers.

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Cut Nails

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Horizontal Type.

Water Wheel Governors, Machine Dressed Gearing, Pulleys, Shafting and Bendings.  
Catalogue and Gear List mailed on application. Correspondence Solicited

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.... FOR ALL PURPOSES....

HORIZONTAL AND VERTICAL.  
BUILT IN 44 SIZES.

We guarantee a higher percentage of power from water used than any other wheel on the market.

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LOCAL MANAGER  
TORONTO & CENTRAL ONTARIO  
London & Lancashire Life Assurance Co.  
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## AULD MUCILAGE CO.

Manufacturers of the Celebrated  
Premium Mucilage, Lithogram Com-  
position, Lithograms Ready for Use.  
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Write us for quotations.

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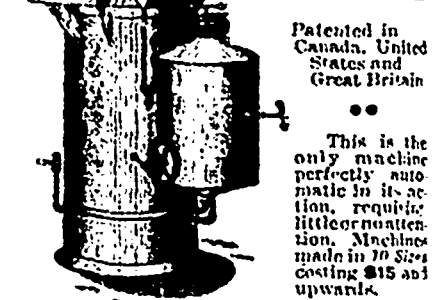
## Leitch & Turnbull

Canada Elevator Works,  
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Patent Safety Hydraulic Hand and Telephone Connection.  
**POWER ELEVATORS**

## BOILERS.

YOU WANT THEM. WE MAKE THEM  
WRITE FOR PRICES  
**BANNERMAN & FINDLATER,**  
Boiler Makers, OTTAWA, ONT.

## THE NIAGARA FALLS ACETYLENE GAS APPARATUS



Patented in  
Canada, United  
States and  
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This is the  
only machine  
perfectly auto-  
matic in its ac-  
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little attention.  
Machines  
made in 10 sizes  
costing \$15 and  
upwards.

Acetylene Gas the Coming Light.

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COAL GAS OR COAL OIL  
For Private Dwellings, Business Houses,  
Churches, Public Halls and Offices.  
For particulars write to the

NIAGARA FALLS ACETYLENE GAS MACHINE CO.  
NIAGARA FALLS, ONT. LIMITED.

Subscribe for **The Canadian Manufacturer**

We have received from Messrs. Wm. J. Matheson & Co., Limited, 182 and 184 Front street, New York, agents for United States and Canada for Leopold Cassella & Co., Frankfort O. M., Germany, the company's pamphlet on diaminogene blue, with numerous samples, showing dyeings by itself and in combination with diamine azo blue, as a substitute for indigo in cotton and linen dyeing. The company's announcement as regards diaminogene blue is as follows—"About eighteen months ago we first brought out our diaminogene blue, and, as we expected, it has since been extensively adopted as a substitute for indigo. The object of this treatise is to compile the experiences which have been made in the application of this dyestuff on a large scale and also to induce our friends to make renewed tests with these excellent indigo

substitutes in the various industries in which indigo or basic dyestuffs as its substitutes are still applied. The advantages for the various industries, viz., piece-dyeing, yarn-dyeing, dyeing of loose cotton, dyeing in mechanical apparatus, printing, we shall describe in the various sections and will here only recapitulate the principal points. Dyeings done with diaminogene blue possess an eminent fastness to light and are absolutely fast to rubbing. They surpass in fastness to washing indigo in so far as their shades scarcely suffer at all even in severe washing. The slight tinting of white cotton in washing has in no instance proved a disadvantage. The dyeing with diaminogene blue costs considerably less than if done with indigo. Diaminogene blue completely penetrates even hard twisted material and does not impair the natural softness of the

fibre which is of the greatest importance especially for loose cotton on account of its excellent spinning capacity, if dyed with diaminogene blue. For producing more reddish and darker shades we recommend shading diaminogene blue with our diamine azo blue 2 R which is equal to the former in the average properties and also possesses a good fastness to light, although not quite coming up to diaminogene blue in this respect." For full description of methods of dyeing for the various sections see pamphlet, which will be sent along with samples and full particulars by the agents, Messrs. Wm. J. Matheson & Co., Limited, 182 and 184 Front street, New York. The American Rattan Company's new buildings, under construction at Walkerton, Ont., are being pushed rapidly to completion.

**Pure  
Chemicals**

Phosphorous,  
Sal. Ammoniac,  
Muriate Ammonia,  
Sal. Soda,  
Bicarb. Soda,  
Epsom Salts.

Hyposulphite Soda,

**FINEST QUALITY.**

Manufacturers Prices and Terms.

**Arthur P. Tippet & Co.,**  
**MONTREAL.**  
Canadian Agents.

**TO BELT USERS:**

IT IS NOT WIND YOU WANT.

RESULT OF MY TRIP:

GENUINE

**ENGLISH OAK**

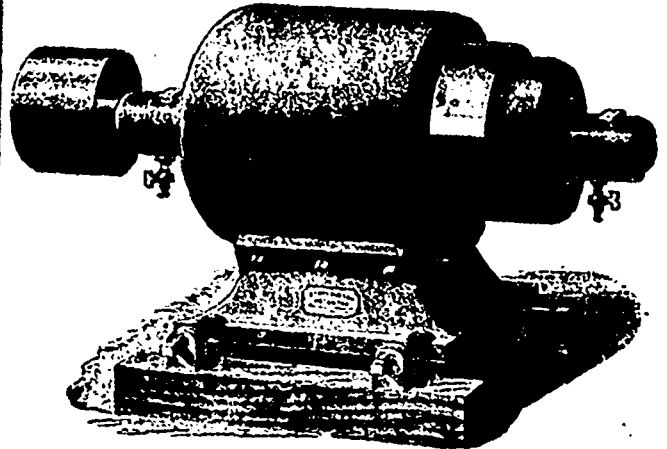
**TANNED BELTING**

**D. K. McLAREN**

24 Victoria Square, - MONTREAL

T H E

**Storey Motor and Dynamo**



MANUFACTURED BY

**THE STOREY MOTOR AND TOOL CO.**

John St. North, Hamilton, Can., and Philadelphia.

Send for Catalogue.

**FORD, RUTHVEN & CO.,**  
26 PITT ST., SYDNEY, AUSTRALIA.

**Wool Buyers' on Commission.**

Letters of Credit must accompany Orders.

BANKERS: Bank of Australasia, Sydney.

**ATTENTION** CENTRAL STATION  
MANAGERS!

**A GOLDEN OPPORTUNITY!**

Are you desirous of purchasing

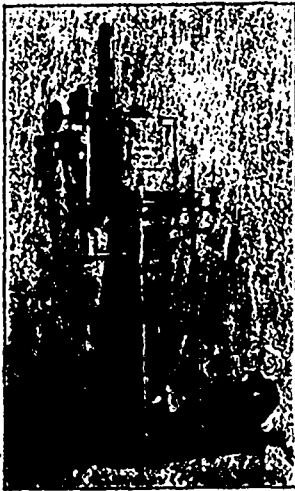
**ARC LIGHTING MACHINERY, LEATHER BELTING,**

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If so, you cannot afford to miss this opportunity. Owing to extensions necessitated at our generating station we are obliged to discard the above-mentioned material. Communicate with us at once for all information and particulars.

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DUNNVILLE, ONT.



Maker of

**YACHT ENGINES, 1 H.P. to 50 H.P.**  
**Safety Water Tube BOILERS**  
**PROPELLER WHEELS**  
**Stationary Engines and Boilers**  
**WRITE FOR CIRCULARS**



**ATLAS METAL**

Speak louder than words, and ATLAS does not rely on empty talk for its UNSURPASSED REPUTATION.

It Has Been Undenially Proved that ATLAS METAL is Superior to all, and has stood under Enormous Pressures and Phenomenal Speed.

TRADE MARK. TRY ATLAS METAL WHERE ALL OTHERS HAVE FAILED.

**WE CHALLENGE A TEST**  
Against any Anti-Friction Metal on the Market.

**THE ATLAS METAL CO., Limited**  
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**Galvanized Steel Pails**

FOR FIRE PURPOSES ONLY.  
NO HOOPS TO FALL OFF.  
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PUBLIC ACCOUNTANTS, AUDITORS, ASSIGNERS, ETC.  
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It knows that every young man and woman should have a proper preparation for life's duties from a business standpoint. It seems to know also that the

**Central Business College OF TORONTO,**

is about the most reliable place in which young people can enjoy a thorough training in all commercial branches, including **Shorthand, Typewriting and Telegraphy.** This is suggested by the largely increased attendance of students from all parts of the country at the present time. Now members admitted each week. Particulars cheerfully given.

Address, **W. H. SHAW, Prin.,** Yonge and Gerrard Sts., Toronto.

**C. G. ELRICK & CO.**

MANUFACTURERS OF

**HORN and RUBBER COMBS, Etc.**

FACTORY—Sheppard Street, Toronto.  
MONTREAL OFFICE—Fraser Building.

The pulp industry of Newfoundland, though in its infancy, appears to be flourishing. One or two big Canadian companies have acquired large blocks of timber on the island, and are proceeding to develop it. A group of Amherst (N.S.) capitalists have recently purchased 820 square miles of limits about 250 miles from St. Johns. It was formerly the property of the Exploit Wood Company, of London, England. It is covered with pine and spruce, the latter being suitable for pulp wood. On the property are large sawmills, so situated that the largest ocean vessel can be loaded at their yards. Pulp mills are to be built, it is understood, by the new company. Newfoundland has plenty of other pulp wood timber besides spruce, and the owners of its iron mines see a demand for some of their pyrites in the manufacture of sulphuric acid for the chemical pulp mills which have already begun to come into existence.—The Wood Pulp News.

The Moore Steam Pumps are manufactured by Darling Bros., Reliance Works, Montreal. They are of simple construction, few parts positive, valve action, which cannot become balanced. The restriction of exhaust steam with slow start and steam cushion for the piston regulate the speed of the pumps so that they cannot take suction or injure the parts of the water supply stops. They will do more work at less pressure than any other pump. You can get them especially adapted to anything from an artesian well to an oil refinery or a brewery. Study the exact use to which you intend to put the pump and then adapt the pump.

(From "Free Press," London, Ont., December 9th, 1896.)

"Number two Committee of the Board of Education met last night. . . . It was decided to put in two No. 25 Heeson Fire Grates in the Collegiate Institute furnaces. One of these Grates is said to have saved four tons of coal at Princess Ave. School last winter."

These Grates, 16 x 26 inches, are supplied by

**The HEESON ROCKING GRATE BAR CO. OF TORONTO (Limited),**  
Phone 1924. 120 VICTORIA STREET.  
Twelve additional sets of these bars have since been put in for the London Board of Education.

ALEX. GARTSHORE, President. J. G. ALLAN, Sec.-Treas. JAS. THOMPSON, Vice-Pres. and Gen. Mgr.

**THE GARTSHORE-THOMPSON PIPE & FOUNDRY CO., Limited**



3 in. to 60 in. diameter.

**For Water, Gas, Culverts and Sewers**

Special Castings and all kinds of **WATER WORKS SUPPLIES** FLEXIBLE AND FLANGE PIPE. **HAMILTON, ONT.**

**BENT RIM WOOD SPLIT PULLEYS**

(REID'S PATENT).

**THE STRONGEST, LIGHTEST, AND BEST BELT SURFACE IN THE WORLD.**

No Glue, no Nails in Rim like Segment Rim Pulleys, to be affected by Steam, Dampness or Moist Temperature.

**EVERY PULLEY GUARANTEED**

**The Reid Bros. Mngf. Co., of Toronto,** 102-108 Adelaide St. West, Toronto.

The Atlas Steamship Company, Montreal, is being incorporated with a capital stock of \$500,000, to build steam and other vessels to do a general forwarding business on Canadian waters.

The Canada Fence Company, of London, Ont., have been awarded the contract to fence, with their Diamond Grip fence, the new line of Tilsonburg, Lake Erie and Pacific Railroad, running from the Air Line, Tilsonburg, Ont., to the Michigan Central.

We notice that Mr. J. H. Walker, for the last twelve years manager of the Toronto branch of the Canadian Rubber Company, of Montreal, having severed his connection with that company, has opened offices at 88 Bay street, Toronto, where he will deal in all kinds of rubber goods—wholesale. Mr. Walker has had a large experience in the rubber trade, and, no doubt, will receive liberal patronage from his many friends in the trade. As an old friend we wish him success. One of his representatives is Mr. M. Matthews, who was also with the Canadian Rubber Company, for several years as their traveller.

#### NEW DYE STUFFS.

Gallo-cyanine (in paste), has been long known and appreciated by dyers (in powder form), as a blue of excellent fastness, combining well with logwood. The powder is ten times stronger than the paste. This color may be used to advantage where clear bright blues of good fastness at a low price are required. Circular with complete information, recipes, etc., is in rapid preparation.

Alizarine Red Brown R., also Alizarine Brown G.—Two new alizarines which resemble the anthracene very closely; dye on a chromo oxalic mordant fine full dark browns, the former being decidedly of a red tone.

Katigen Black Brown N. has been on the market now for about one year, is now being used extensively in France and Italy in the dyeing of velveteen so much in use for workmen's garments. In consideration of

this a new pattern card has been produced by the Farbenfabriken Co., of Elberfeld, called Katigen Black Brown N., on cotton velveteen No. 629, 1897. Shades produced with this color may be altered or modified by simply topping with any of the numerous basic colors. The remarkable fastness of this color is its chief advantage; fast to boiling soap and soda, light, alkali, etc., dyed cold without a mordant. For samples, prices, etc., apply to the Dominion Dyewood and Chemical Co., Toronto, sole agents for Canada.

#### BLACK ON HALF WOOL.

A good full fast black on half wool linings has long been sought after by the dyer, and with this end in view the Farbenfabriken Co., of Elberfeld, have produced several new pattern cards, showing the newer blacks with latest dye methods. One card on half wool, Italian cloth and serge, will prove of value as it shows a new method of dyeing Pluto black, a color admirably suited for this class of half woolen goods, as it is absolutely fast to steaming. Pluto black has the advantage that shades dyed direct with it resist a sour cross dyeing for wool without any after treatment, and without altering the shade, so that dyers can shade off in a sour bath according to pattern.

The following dye method is recommended, per 100 pounds of goods:—Italian cloth—seven to eight pounds Pluto black, twenty-five pounds Glauber salt, fresh bath, or, five to six pounds Pluto black, ten pounds Glauber salt, standing bath, boil one to two hours, rinse and shade in a fresh bath with six ounces fast green bluish, three ounces fast acid blue B. extra, two pounds acetic acid. If a harder touch is required, add half a pound chrome as soon as bath exhausts and boil half an hour longer. Serge cloth—seven to eight pounds Pluto black G., twenty-five pounds Glauber salt, three pounds calcined soda. Use one-third less amounts for standing baths. Goods to be dyed with Pluto blacks require about one-third of the time and less steam than a logwood black. Pluto black exists in three

brands, B., R. and G., viz., bluer, redder and greener shades.

New pattern card and samples mailed gratis by the Dominion Dyewood and Chemical Co., Toronto, sole agents in Canada for the Farbenfabriken, vorm., Friedr Bayer & Co., Elberfeld, Germany.

#### NEW EAST COLOR PROCESS.

A new process has been invented by the Farbenfabriken Co., of Elberfeld, Germany, for obtaining colors on cotton, fast to washing (May, 1896).

The process consists in dipping the cotton material, dyed with direct dyeing colors, into the diazo solution of paranitraniline (without previously saturating the cotton fibre with beta-naphthol, as in use with paranitraniline). In selecting dyestuffs suited for this method, shades very fast to washing are obtained. This applies specially to browns, maroons, etc., to a degree hitherto impossible to obtain with diazotising on the fibre, or by after chroming. The process itself is very simple. Dye with a substantive color, in the usual way, rinse two or three times, and develop in the paranitraniline bath by handling for half an hour.

Dye Liquor.—Twenty parts of this to one part of goods, that means a well-diluted liquor, or otherwise goods turn stripy, finally rinse and soap.

Prepare a paranitraniline bath as follows:

(a) Stir two pounds of paranitraniline in one pound of cold water, until the lumps have been removed, and the whole substance forms a uniform paste; add nineteen pounds boiling water, and five pounds concentrated hydrochloric acid, thirty-six degrees Tw., on stirring for a while the solution is complete.

(b) Fill a wooden tub with thirty to forty pounds of cold water, and now pour solution "A" into the tub, and the hydrochlorate of paranitraniline precipitates in the form of a fine yellowish crystal; let this solution stand some hours to cool. Adding ice is not necessary, if the solution is prepared a few hours previous.

(c) To the above cold solution add, whilst stirring one and one-tenth pounds of nitrite of soda, ten pounds cold water, after about ten minutes the solution is almost clear; now make up the bath to 200 pounds, with cold water. The solution can be preserved for about three weeks in summer, or longer in winter. One pound of solution contains seventy grains of paranitraniline. Just before using add as many pounds of nitraniline solution to the cold water contained in the vessel reserved for developing purposes, that the calculation amounts to one-half pound nitraniline for every one pound of dyestuffs used for the bottom shade, further add 140 grains acetate of soda Xtls to every pound of the diazo solution, and finally enter the goods.

After having added the acetate of soda the solution will only keep two or three hours.

#### POWER CATECHISM.

For a long time back the New York journal Power has contained catechetical presentations of information about steam engineering and the transmission of power. They have dealt with various subjects in the simplest possible way and are of great interest to the engineer. Mr. F. R. Low, the editor of Power, has now published them in book form. We have been favored with a copy of the work, which has been revised and edited so that it contains some 225 pages of information very useful to engineers. Power Publishing Company, New York.

## JOHN J. KELLER & CO.

104 and 106 MURRAY ST.

NEW YORK

220 Church St., Philadelphia.

135 Pearl Street, Boston.

## Aniline Colors, Dyewood Extracts, Sumac and Nutmeg Extracts.

FAST COLORS for Wool Dyeing,  
One Dip Cotton Colors, Novelties  
and Specialties for Calico  
Printing.

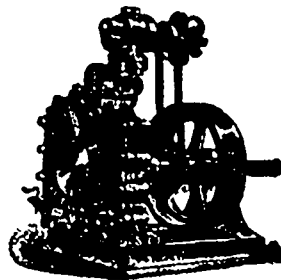
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JOHN R. GEIGY & CO.

SABLE, SWITZERLAND

## The Dake Engine

For Running  
Dynamos In



Small Isolated  
Plants.

### CONTRACTORS' HOISTS

STEADY AND EVEN MOTION,

ALSO FOR

Attachment Direct to Fans, Blowers, Centrifugal  
Pumps, Stokers, Steering Gear, Etc.

Correspondence Solicited.

Phelps Machine Co'y,

EASTMAN, P.Q.

### SKEIN SETTING AND FITTING MACHINE.

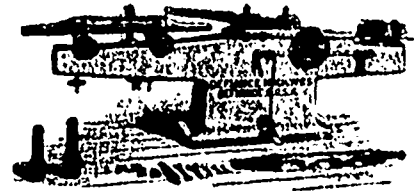
The engraving represents a patent automatic skein setting and fitting machine, designed for the use of wagon builders for turning the ends of wooden axles to the proper shape and size to fit either cast-iron or steel skeins.

This machine has been designed to reduce

the labor in dressing the ends of axles to correspond with the inner shape of the skeins, to increase the capacity over hand labor, and perform the work more perfectly. Previous to its introduction, this work was accomplished by hand and at great expense, requiring the utmost care by skilled workmen to obtain accurate fitting and to secure the proper dish and gather.

All this is now accomplished by the auto-

matic skein setting and fitting machine with unskilled labor to handle the machine; the work is performed at the rate of 200 axles complete in ten hours. The machine is simple in adjustment, can be quickly changed to fit skeins of all sizes, either cast-iron or steel. In fitting a skein by this method they will fit the axle perfectly and



not come loose, and the vehicle on which they are used will run true and track correctly.

The working parts are mounted upon a substantial iron frame cast in one piece having a broad floor support; at the rear end a double universal chuck is provided, into which the skein to be fitted is placed, firmly held between the jaws central with the cutter bar.

The cutter bar is made of forged steel in the form of a double arm; the arm at the rear end is fitted with a friction roller, which traverses the inner circle of the skein to be fitted, with an adjustable cutter attached to the opposite end; a heavy steel spindle through the center of the arm connects it to a circular sleeve which revolves in heavy bearings, mounted upon a sliding carriage; the carriage is fitted to the frame in heavy ways provided with gibs and has a horizontal adjustment by hand wheel to carry the cutter to and from its work.

The axle to be operated upon is placed into the machine between self-centering jaws and firmly held by an automatic clamping device central with the cutter bar and skein.

In operating, the skein and axle are placed into the machine as shown by the engraving, and the carriage carrying the cutter is moved backward with the arm carrying the friction roll placed on the inside of the skein. When the friction clutch is engaged the cutter arm revolves and feeds into the cut, the friction roll following the inside shape of the skein which governs the path of the cutter and turns the end of axle to an exact duplicate of any skein placed into the machine. When the end of cut is reached the friction roll leaves the mouth of the skein and the cutter is lifted from the cut out of the way.

The friction pulley for driving the machine is sixteen inches diameter, four inches face, and should run 160 rotations per minute. It can be bolted to direct from the main line shaft, from above or below, no counter required except for convenience.

Manufactured by the Defiance Machine Works, Defiance, Ohio.

The Dominion Brussels Carpet Company, Elora, Ont., have in hand four months' orders, and are running to the full capacity of their mill.

## HAHLO & LIEBREICH, BRADFORD, ENG.

Machinery Merchants and Exporters

### NEW and GOOD SECOND-HAND WOOLLEN MACHINERY

SHAKE WILEYS, TEAZERS, RAG PICKERS, GARNETTS.  
AUTOMATIC FEEDS, WASTE CLEANERS, CARDS, CONDENSERS, SELF-ACTING  
MULES, TWISTERS, LOOMS, HYDRO-EXTRACTORS,  
SHEARING MACHINES, Etc.

### GOOD Second-Hand COTTON and WORSTED MACHINERY

BELTING, CARD-CLOTHING, PICKERS, PICKING HANDS, etc.

# Hamilton Blast Furnace Co.

HAMILTON, - - ONTARIO

(Limited)

Manufacturers of

## HIGH GRADE

# PIG IRON

## THE . . . DOMINION WATER WHEEL

SPECIAL FEATURES

**Economy in Use of Water, Great Power  
Equal Efficiency at any Gate-Opening  
Steadiness and Strength of Motion  
Sensitiveness to Change in Gate-Opening  
Ease for Regulation by Governor  
Strength and Durability  
Freedom from Trouble with Step  
Not Clogged by Ice  
Accessibility to all Parts**

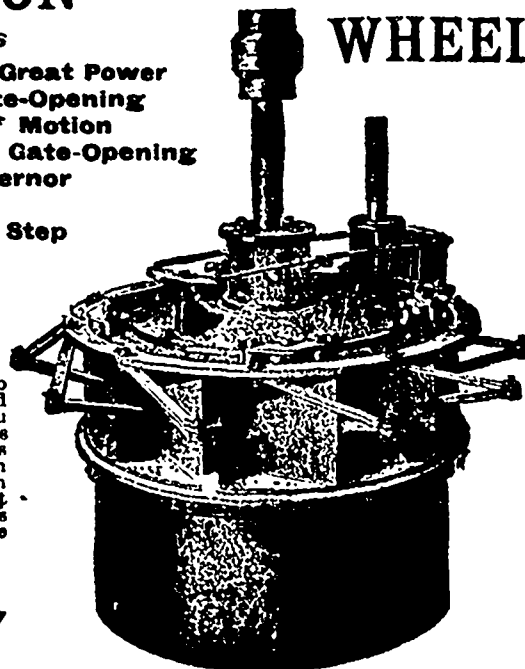
St. CATHARINES,  
February 9, 1897

Messrs. Wm. & J. G. Greey,  
Toronto.

GENTLEMEN.—Your favor of the 5th to hand. Have been away from home, and hence delay in answering your letter. You ask us how your Dominion Wheel compares with the . . . Well, sir, the comparison is this—we have been using two . . . 36 inch diameter, double wheels, and your 34 inch Dominion wheel we put in December last gives us as much power as both, and does not use but very little more water than one of the 36 inch wheels. Yours truly,  
COOKE & SON.

MANUFACTURED ONLY BY

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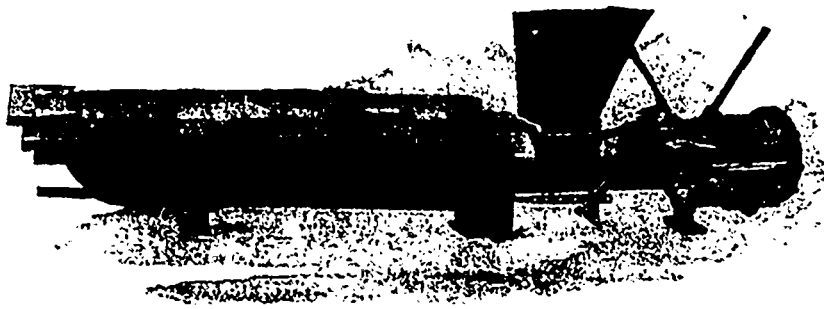
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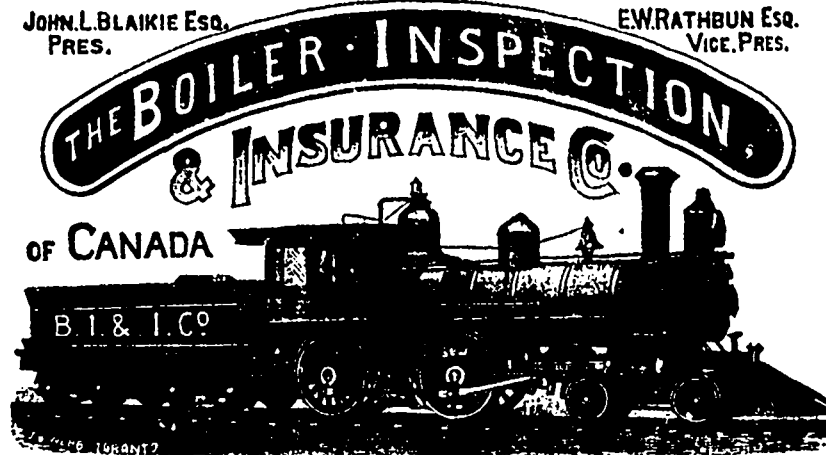
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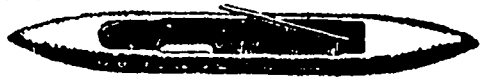
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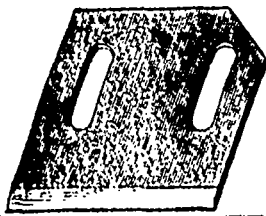
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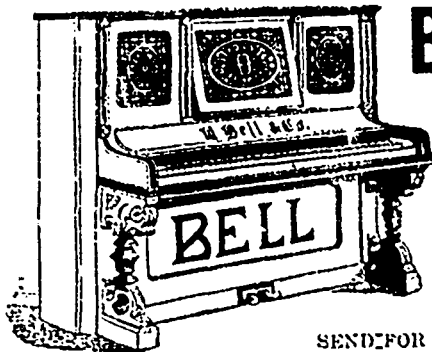


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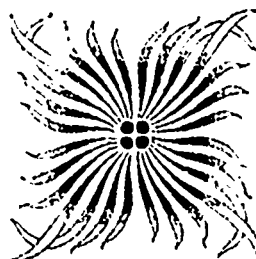
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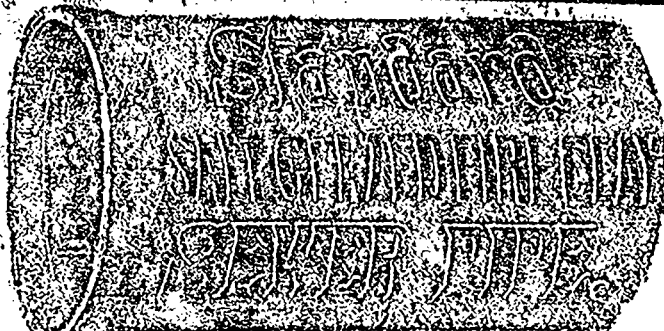
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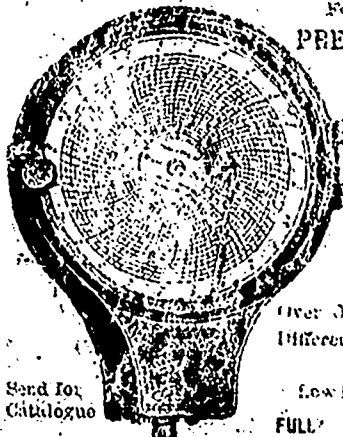
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