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Vol. 38.

TORONTO, MAY 5, 1899.

No. 9.

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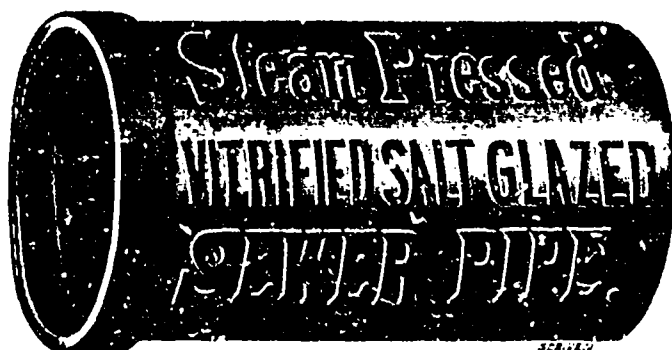
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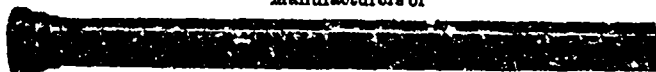
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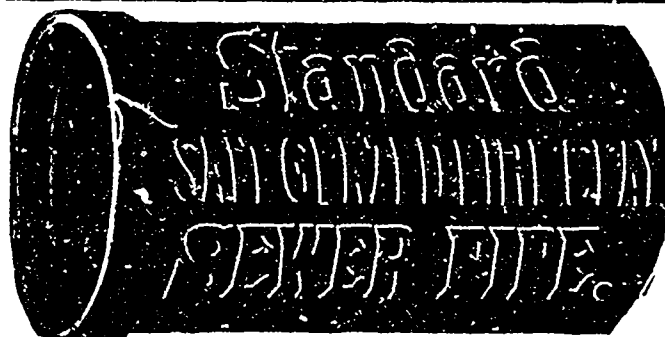
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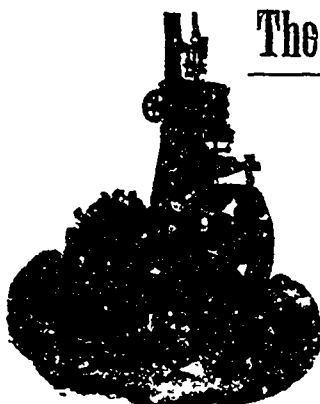
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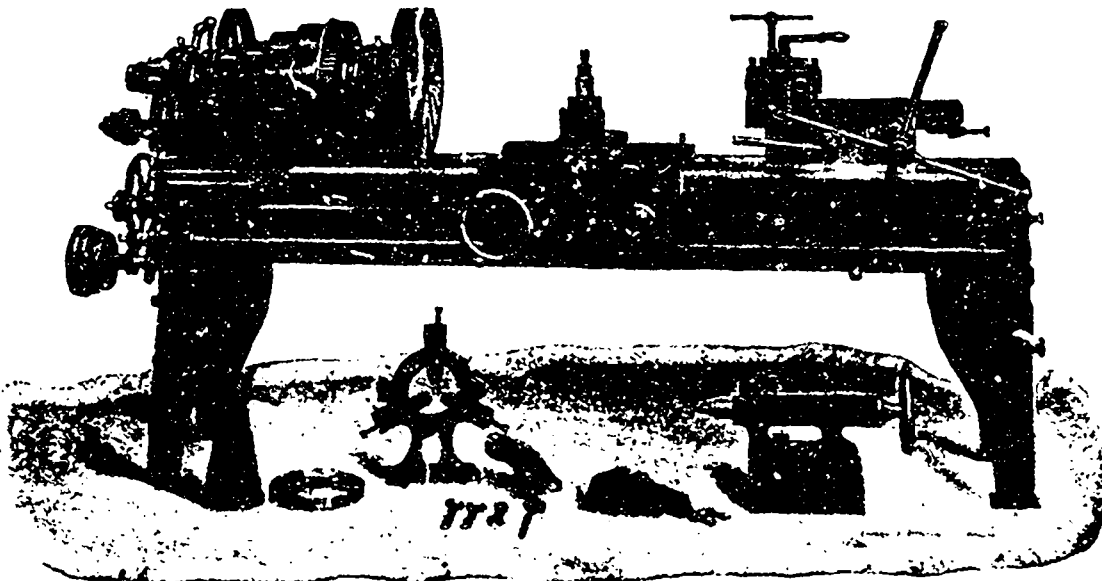
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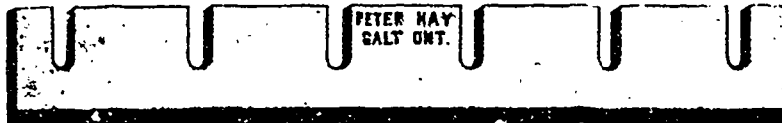
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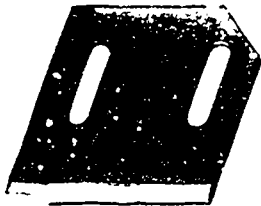
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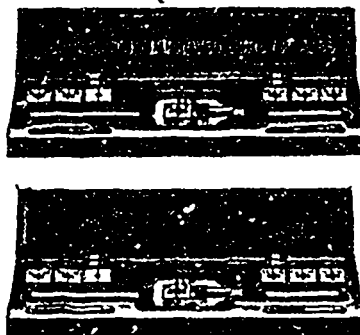
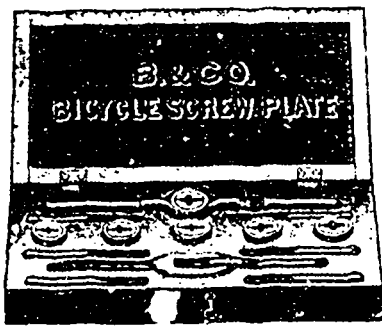
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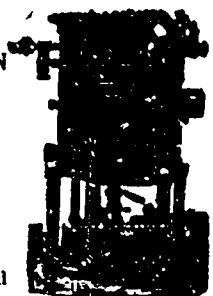
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Particular experience for ten years in this department of engineering, and the fact that over 1,000 Webster Heaters are in use is self-explanatory.

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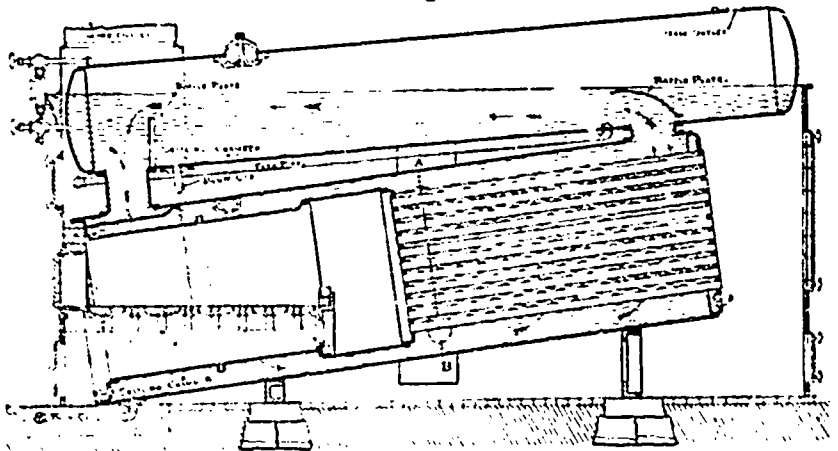
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Lamps and Transformers

Sole Agents for SCHEEFFER RECORDING WATT METERS

ST. CATHARINES ONT.

Mumford's Improved Boiler.



Usually built with a steel sheet case, but, if preferred, the case may be left off and bricksetting substituted.

HIGH ECONOMY is obtained on account of being internally fired, and having perfect water circulation, as shown in cut.

TWO SETTLING CHAMBERS are provided for catching deposits of scale, and every part of the Boiler is accessible for cleaning.

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The Wellington Mills, LONDON, ENG.

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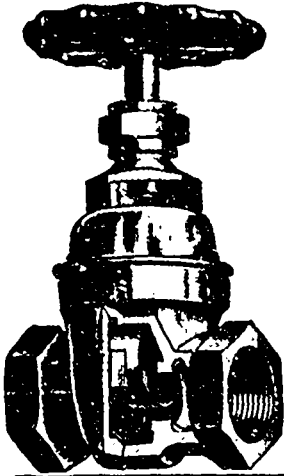
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For
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EVERY VALVE TESTED.

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FOR ALL PURPOSES,
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OF ANY DESCRIPTION,
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S.K.C. Two-Phase Alternators

Incandescent Light, Arc Light and Power from same Dynamo and Circuit.



Highest Efficiency

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Least Attention

No Collector

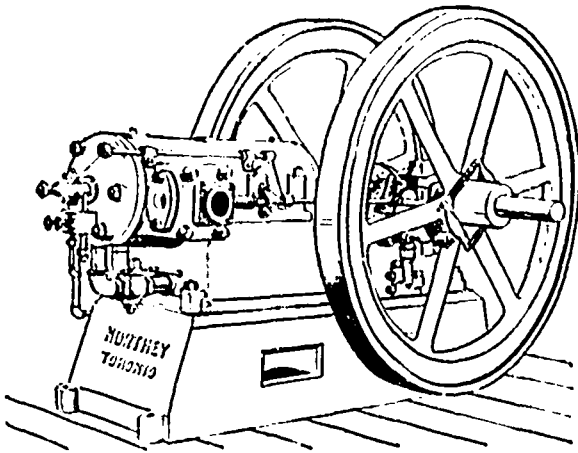
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Our Horizontal NORTHEY GAS OR GASOLINE ENGINE

4 TO 100 H. P.

It is CHEAPER than any other power, whether you want 4 h.p. or 200 h.p. It is replacing even Water Power. Let us hear from you as to your power needs. We furnish SMALL POWERS, geared to Electric Plants, for factory and house lighting.

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Manufacturers of STEAM AND POWER PUMPS OF ALL KINDS.

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OF ANYTHING THAT YOU MAY DESIRE.

FIRST-CLASS IN EVERY PARTICULAR.

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PUBLISHED ON THE FIRST AND THIRD FRIDAYS OF EACH MONTH

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TRICYCLES.

One of the most remarkable features of social life in the past few years is the advent of bicycles and the use of them by such a large portion of the people. In many instances vehicles drawn by horses have been discarded for bicycles, and thousands of people who never before moved about except upon their own feet, or in street cars, now bestride their own noiseless steeds, and are seldom seen upon the streets except upon bicycles. It goes without gainsay that old men and old women, as well as young men and young women, and even children ride bicycles, but it is equally true that there are very many, especially elderly people, who never have mounted and never will ride a bicycle. They know that there is an element of danger in the use of them; that even the most active and experienced riders are sometimes pitched headlong from them, and suffer from broken limbs, wounds, and contusions, with pain and anguish sufficient to tax the physical endurance of the strongest—a risk that most elderly people decline to subject themselves to, and which they should not incur. Why, then, is it that the enterprise that manifests itself in an almost innumerable number of factories for the manufacture of bicycles does not extend to the production of wheels adapted to the use of elderly people, invalids, and cripples? Surely the wants of this class should be looked after, and surely the class is sufficiently numerous to create a demand for cycles that such people could use with ease, comfort and safety, that would make it remunerative to meet. But strange to say, there is no concern in Canada, as far as our information goes, who manufacture tricycles for the purpose indicated, nor is there a sporting goods house in the Dominion that sells tricycles or offers them for sale.

Ever since the commencement of the bicycle craze in the United States there has been more or less prejudice in the minds of some against the use of the tricycle, which feeling

did not extend to Canada simply because it was not known here. With our neighbors this feeling has now worn away, it having been proved that for those who do not care to go at a terrific and dangerous speed, the tricycle is far more comfortable, practical and satisfactory. It is no harder to propel than the bicycle, and hills can be surmounted with even less difficulty, since the rider can go at a slow speed if desired and stop at pleasure without dismounting or danger of falling.

The chief objection urged against tricycles is that they are not as convenient to take care of as bicycles—that the rider may trundle his bicycle into a hallway and thus dispose of it for the time being, which could not be as easily done with a tricycle. This may be true, but it is equally true that a tricycle occupies no more room than a baby carriage, is as easily taken care of, and is no heavier than an ordinary bicycle. When a rider mounts his bicycle he has to move, for there is no standing still without a dismount. Not so with the tricycle, from which one cannot fall, and which can be started or stopped at pleasure merely by pedaling or ceasing to pedal, and upon which all the pleasure and exercise of bicycling is afforded without the nervous strain and danger incident to it.

The tricycle possesses many advantages over the bicycle in that it can be arranged to be propelled by either hand or foot power and that it can be steered by either hand or foot, or by the movement of the back. It can be used as a chair cycle for invalids, which can also be disconnected and used as a push chair for the same purpose, affording to the invalid or convalescent all the comfort of driving and the exhilaration of bicycling without the expense of the former or the nervous strain and danger of the latter. It can be arranged with the body suspended on elliptic or other springs, making it exceedingly comfortable for invalids; as a self-propelling crank power chair with adjustable foot rest; as a ladies' house chair; as a combination house and street rolling reclining chair; as a carrier and push cart for carrying parcels, and propelled by either one or two persons abreast; as a children's carryall, a hansom, an ambulance, and for many other purposes.

We fail then to understand why tricycles are not in general and common use. When used for pleasuring they can be made to weigh about the same as bicycles, quite as strong and durable in all its parts, and at about the same price.

WAR SHIPS ON THE GREAT LAKES.

Our esteemed contemporary the Cleveland, Ohio, Marine Record says:—

A Washington dispatch conveys the intelligence that it is a virtual certainty that the new cruiser for the Great Lakes will now be built. Diplomacy has about cleared the road of the treaty obstacle that stood in the way, Sir Julian Pauncefote having intimated to Secretary Hay that Great Britain will consent to amend or annul the Rush-Bagot convention in such a way as to permit the building of armed ships of modern types.

This agreement was made at the request of the United States in 1818 between the British Minister, Charles Bagot, and Richard Rush, Acting Secretary of State. It provided that the naval force of each nation should be limited on Lake Ontario to one ship, and on the upper lakes to two ships, not exceeding 100 tons and armed with one gun not exceeding in size an eighteen-pounder.

The agreement has been violated by both nations by mutual consent, and the old steamer Michigan, now nominally

guarding the upper lakes for this country, has a displacement of 365 tons and carries six six-pound rapid-fire and two one-pound rapid-fire rifles and two gatlings. Sir Julian's agreement to modify the antiquated convention will permit the Navy Department to build a modern ship.

Questions that present themselves to the mind of the average reader are: Why does the United States Government desire to have war ships on the Great Lakes? Why does that Government desire to amend or annul the Rush-Bagot convention in such a way as to permit the building of armed ships of modern types on the Great Lakes? Why is it considered that "the old steamer Michigan" now only "nominally" guards American interests on the Great Lakes? In what consists such "guarding?" In endeavoring to suppress the desultory smuggling that may be carried on from Canada in small skiffs and row boats would not rapid steam launches be more effective than any war ships that could be built? Or is it because the water is there to float them, and the ship-builders are there who would be pleased to construct them that our neighbors are so frantically anxious to have war ships on the Great Lakes?

Although "the old steamer Michigan" may be the only war ship our neighbors maintain on the upper lakes, it is one more than what Canada has; and it is not true that Canada has violated the agreement by maintaining any war vessels whatever on any of the lakes. If the United States really desire to have war vessels on the lakes, seeing that the war vessels of no other power are there to confront them, or to be a menace to the peace of that country, it could be for no other purpose than a menace to Canada. Canada does not desire to maintain war vessels on the lakes, and until she does there can be no necessity for the United States to do so.

It would not be wise to disturb the terms of the Rush-Bagot convention. The United States cannot build armed ships of modern types or of any other type on the Great Lakes for service in any other waters, and get them away from the ship yard in which they were constructed, except by the grace and permission of Canada, and Canada will never grant that permission.

THE ROSE BY ANY OTHER NAME WOULD SMELL AS SWEET.

We shall welcome that red glare in the sky by night which means not war but a blast furnace.—The Globe.

Our esteemed contemporary delights itself now-a-days in telling of the growing time in Canada. If there is a new factory started, or an old one enlarged, it throws up its hat and hurrahs in glee, and if it can tell of the probable erection of a new blast furnace, it shouts itself hoarse, declaring that it is the outgrowth of a change of Government. It does not say that there has been a change in the policy of the Government, its delight being in the fact that the party, whose henchman it is, during all the long years it was out of power, denounced the policy of the party that was in power, but now that there has been a change of rulers, but not of policy, it acts and talks as though the old policy were something entirely new and upon which its party holds a patent right cinch. But we do not blame The Globe for throwing up its hat and becoming hilarious over the effects that produce new blast furnaces in Canada, and seeing that blast furnaces are materializing, a condition led up to by the

National Policy, we are quite willing that it should attribute the event to the change of Government. What we desire is blast furnaces, and if we are to have them under the change of Government we can but smile and enjoy the joyous warbling of The Globe. But still we are of the opinion that the blast furnaces come through the operation of the National Policy that has not been abandoned, rather than through the access to power of The Globe's political friends.

It is amusing, though, to notice the manner in which The Globe quiets its conscience, and tries to begot its readers in accounting for its advocacy of measures that are in full accord with the National Policy, but which it endeavors to show are the outgrowth of a change of Government. In speaking of the growth of the blast furnace industry it says:—

No man is more concerned in an increased population than the farmer, for, as the old song has it, "the farmer feeds them all," and the more there are to feed the better it must be for him. The protectionist seeks to get this population by taxing heavily all the things the farmer buys and creating monopolies in them, so that any advantage derived from the feeding of the new mouths is cancelled by the enhanced price the farmer pays for whatever he has to buy. It might be urged that bonuses are protective in their nature, but the economists are practically unanimous in agreeing that a bonus to an industry is not so objectionable as the imposition of a protective tax. Even free trade England grants steamship subventions, and the position she occupies in the world's carrying trade seems to justify the policy she has adopted in that respect. The merit of a bonus is that you are always absolutely certain what the aid extended to an industry is costing the country. In the case of a protective impost on commodities there is no means of knowing this except by the most haphazard calculations.

Heretofore The Globe, before the access of its party to power, always preached to the farmer that protection in any form was injurious to him and to every one else, declaring that the duty was always added to the price; and as regarded the bounty paid on the production of iron in Canada, its argument was that this bounty plus the duty was the measure of the burden the people had to bear in the effort to foster and build up an exotic industry. It argued that the duty of \$1 per ton on pig iron, and the bounty of \$2 paid by the Dominion Government, and the \$1 paid by the Ontario Government, amounting in all to \$7 per ton, was added to whatever the price of pig iron might be in any other country. Of course this was a false argument, but it answered The Globe's purpose in endeavoring to get unreasoning people to oppose protection. But now that its party is in power there is a complete abandonment of its old arguments, and a complete acceptance of the old policy, advocated by the other party, for which we are duly and truly thankful.

But it is not fair that The Globe should continue to throw dust in the eyes of its readers by intimating that there is a material difference between tariff protection and the bestowment of bounties in the encouragement of home manufacturing industries. If protection taxes the things the farmer buys, certainly a bonus does the same thing. Protection forces the foreign producer to contribute to the revenue of the country and at the same time tends to give the home market to the home producer, while the bonus takes money from the treasury and gives it to the home producer as an inducement to carry on his enterprise which he could not do in the face of the fierce, unrestricted opposition of the foreign

producer. We observe, however, as far as this iron production question goes, that the Government, with which The Globe is in accord, continues a duty on the article and also gives a bounty on its production, with which we are well pleased. The Globe does not argue any more that because pig iron can be produced cheaper in the United States than in Canada consumers should not be restricted either by tariffs or bonuses from freely buying in the cheaper market. It knows that that is a Cobdenite idea that has long since been exploded.

SCHOOLS OF ART AND DESIGN.

At a meeting of the Executive Committee of the Canadian Manufacturers' Association held April 28th, the following preamble and resolutions were passed with the request that they be printed in THE CANADIAN MANUFACTURER:—

Whereas;—fully appreciating the merits of all that may be said relative to the necessity of technical schools being established by those in authority to whom attaches the responsibility for the life and growth of our commercial enterprises, it is expedient to direct attention to the teaching of art and design which is an important part of the education which should be imparted to the young people of the country who propose to give their after years to labor in industrial pursuits.

Technique is all important in building a boiler, loom or other machine which gives the power or means to produce a finished article. This branch is important but it is only a very small part of the result to be attained.

The product, whether it be of metal, wool, cotton or wood, is only of value in the commerce of the country according to its utility and appearance.

Designing in all branches is so wrapped up in the values of a manufactured article that all countries are vying with each other to excel therein.

In designs the taste of the British manufacturer at the great Exhibition of 1851 was so crude as to shock the taste of the world, the result being that the Prince Consort at the request of Jones, Redgrave, Playfair and others established the Kensington School of Art and Design. This example was quickly followed by the establishment of many similar schools throughout the country, a notable result being that in 1867 Great Britain was awarded the palm in decorative art.

It was the art schools of France that made that nation the leader of the world for many years in the production of the finest chef d'oeuvres; but with the British, German and American nations all working for the highest excellence of design and color in their manufactures, the commerce of France soon found competitors of equal strength.

In Canada no strong effort has yet been made to develop, in our schools, the art needed in our manufactures. While our industrial establishments are giving every sign of extensive development and expansion, every facility should be afforded by our Government to supply competent designers to them; and in no way can this be so well done as by equipping and supporting industrial art schools, where art and technique work hand in hand.

It requires years to develop acknowledged lines of design in art and many countries and periods have become known in the commercial world by the peculiarities of their designs. This may be instanced in the following in design class, as

Persian, Turkish, Grecian, Byzantine, Renaissance, Empire, etc.

It is by going into the value of a design that appreciation of an article is forced upon us. Mr. Leslie Jones in an able paper says, "By going deeper into the study of a design we get down to examining and analyzing the forces and under-currents of power that lie in a great piece of work. We appreciate that there is something more than mere existence of form and color, even if it is arranged according to the laws of ornament which defy all errors. Take for instance two designs precisely the same in character executed by two different persons. Both works might be termed excellent, both true to the character of form and the laws of ornament. Yet one may have something the other has not. There seems to be a touch of life in one that speaks a gentle and thrilling message which the other does not do. Surely then, there must be more of the soul of the designer that finds its way to affect us in this mysterious manner than of the other which affects us not. All the knowledge we have from the ancients to the present day amounts to little when compared with this creative genius which flows from the inner soul."

This emphasizes the fact that it would be in the interest of the whole country that the Government should establish and equip industrial art schools in all the leading manufacturing centres of the Dominion to the end that our manufacturers might be supplied with designers possessed of artistic abilities.

Whereas;—there are no existing schools constructed or equipped to meet the necessities herein alluded to:

Resolved, that this Association use its efforts to induce the proper authorities to establish, or contribute to the support of schools of art and design in the manufacturing centres of the country that will promote the growth and development of our industrial institutions.

CANADIAN INDUSTRIAL DEVELOPMENT.

Some of our United States contemporaries are closely watching the development of Canadian industrial enterprises, and speculating as to the effect of these in that part of Ontario lying north of the lakes, and their possible effect upon similar industries in the United States south of the lakes. As to the commercial side of the question, as seen by the New York Financial News, the establishment of a line of large grain-carrying steamers and a chain of elevators from Port Colborne to Montreal, in order to divert wheat traffic from Buffalo and the Atlantic ports of the United States, is an evidence of strong importance inasmuch as those behind it think it capable of sending, within a couple of years after operations are begun, a hundred and fifty millions of grain to the St. Lawrence. Another very strong movement is for the building of a canal from Georgian Bay to the Ottawa, the money for which has been raised in London.

Speaking of the industrial powers which would be developed from the great wealth of timber and minerals along or tributary to the line of this enterprise, the London Financial News says:—"The map which is shortly to be published in Ottawa, showing the water power available within a forty-five mile radius of that city, should be circulated widely in this country. It is strange that the immense forces which lie idle among the rivers and lakes of Ontario should not ere this have engaged

the attention of enterprising capitalists seeking the means of creating fresh wealth. They bolster up South American Republics for a small profit and at considerable risk; they run up and down China hunting after concessions for railways of most problematical value; while just across the Atlantic, within their own Empire, is wasting an industrial power which might be used to make Canada one of the foremost manufacturing countries of the world. Water power is the cheapest power of any; the surrounding land in Ontario and Quebec is cheap; communication is already well developed by railway, and will soon, it is hoped, be well developed by water also."

There is still a third project, likely to come to the front at any time, in the building of a canal from Georgian Bay to Lake Ontario, which would be, by far, the shortest cut of all, and the one of greatest efficiency, as an outlet from the upper lakes to tidewater, and along this canal there would be a water power created by a controlled fall of some three hundred and fifty feet that would give enormous advantages for industrial productions. The northern side of the lakes is as rich in natural resources as the southern, and the Canadians seem to be inclined to make some use of their great natural resources.

THE CANADIAN WOOD PULP INDUSTRY.

Mr. George Johnson, Dominion Statistician, has recently written an article having reference to the manufacture of wood pulp in Canada and the conversion of wood fibre into paper in which he shows that the industry was not even mentioned in the census of 1871, and ten years later there was less than a hundred thousand dollars of capital embarked in it. By 1891, however, it had got a fair start. By that time \$2,900,000 were invested in the business, over a thousand persons were employed in the mills and the value of the product was \$1,057,810.

The local demand for paper appears to have absorbed a large part of the production, but the point has now evidently been reached when we are looking abroad for markets for our pulpwood products. Some mills, for example, have recently been established with the set purpose of marketing their product in England and Scotland. These countries purchased from abroad in 1897 \$9,410,170 worth of wood pulp, and of the total Norway and Sweden supplied \$7,727,322. Canada was the next largest source of supply, but, nevertheless, the amount, namely, \$465,258, was insignificant as compared with the shipments from Scandinavia.

The United States export is also small, but their export of paper, the finished article, is large. The year of their largest exportation was 1897, when \$3,111,688 worth was sent abroad to various countries, \$1,005,841 worth being sold to the United Kingdom and \$597,175 in Canada. From this time forward the pulpwood countries will undoubtedly find in Canada a dangerous competitor. The business only requires to be firmly established here to put us in a position of equality with Norway and Sweden, the leading pulpwood countries. These countries have the advantage of greater proximity to the market and the greater proximity of their forests to the seaboard. The quality of our spruce and its unrivalled extent will, nevertheless, it is believed, fully overcome these handicaps, and, indeed, already the competition has opened. There is a considerable area of spruce in the United States, but the domestic demand alone will soon exhaust it, and, as is known, the United States pulpmen are already looking to

Canada to supply their shortage. In Ontario the Government has for some years back attached a condition to all grants of spruce areas, that the logs cut must be manufactured into pulp in the province, and this principle, if the necessity arises, may be employed in the future to a still greater extent. In the meantime, however, our pulpmen will be chiefly concerned to secure a greater share of the millions imported into Great Britain every year.

THE CANADIAN SHIPBUILDING INDUSTRY.

Application has been made to the Dominion Government for the incorporation of the Canadian Inland Transportation Company, with a capital stock of \$4,000,000, to build a fleet of steel steamers and barges for transporting wheat, ore, etc., from Lake Superior points to Montreal, Toronto and other lake ports.

Some of the promoters of the company are Messrs. William Christie, J. K. Osborne and G. H. Bertram, M.P.P., of Toronto; Alex. Lumsden, M.P.P., and John McRae of Ottawa, and Hon. Senator Forget of Montreal. A fleet of ten steel carriers, measuring 276 feet in length by 43 feet beam, will be constructed forthwith; in fact, two of them are already laid down. Their capacity will be to carry 78,000 bushels of wheat, on a fourteen foot depth in the canals, which could be increased to 108,000 bushels with an eighteen foot canal system. The present Welland Canal could be utilized by the latter class of vessels by discharging at Port Colborne thirty or forty thousand bushels of cargo, by floating elevators. At present there are said to be on the upper lakes only four Canadian bottoms capable of economically carrying wheat through a fourteen-foot waterway. The present cost of carrying a bushel of wheat from Duluth or Port Arthur to New York is six cents, and the projectors of the Canadian line firmly believe that they can convey cargoes from Lake Superior to Montreal at a lower figure. The company will build its own elevators and terminals, which are considered to be an integral part of the system, and it is believed that a very large business can be done in return freights of coal and other commodities from Montreal and intermediate points.

For years the Americans have enjoyed a virtual monopoly of the upper lake carrying trade, as every Canadian ship owner knows to his cost, but there is now a certainty that within a year Canada will have on the upper lakes a fleet of steel steamships that will be able successfully to compete with the American carriers. Government statistics show that in 1898 88 per cent. of Canadian wheat product was carried to the sea in American bottoms via New York.

RAILWAY FREIGHTS.

Alluding to the chief source of supply of iron ore with which to feed the proposed new blast furnace to be erected at or near Toronto, and other furnaces built or to be built in other parts of Ontario, and to what The Globe says regarding the Ontario and Rainy River Railway that is intended to tap the Atekokan ore region of Western Ontario, and its connection with water transportation at Port Arthur, the Toronto World says:—We learn from the Globe that the blast furnace which it is proposed to erect here will be dependent upon the New Ontario district for a large supply of its ore. This is the district to be traversed by the Ontario

and Rainy River Railway. A big proportion of its freight will be made up of ore, principally iron ore. Three Liberal Governments—those of Manitoba, Ontario and the Dominion—have bonused this line beyond anything recorded in the history of Canada. The combined bonuses exceed \$10,000 per mile. This too, although long stretches of the line, so we are informed, will not cost more than \$8000 per mile. In spite of this unparalleled prodigality with the people's money, none of the three Governments above mentioned have made any stipulation as to freight rates, not even on iron ore, which is to form so large a part of the company's business. It is just as important that Ontario should insist on a low rate for iron ore as that Manitoba should demand a minimum charge for wheat. The Ontario Government was warned that the rate on iron ore should be settled before the bonus was granted, but no heed was given to the admonition.

This failure to regulate the freight on iron ore will be a serious matter for those engaged in the smelting industry. Especially is this the case if it be true, as we are informed it is, that the promoters of the railway are largely interested in the iron lands through which their railway passes. If it is a fact that Messrs. McKenzie & Mann have taken up—not in their own names, of course—4,000 acres of iron land, under twenty patents, and if they control the Ontario and Rainy River Railway, does it not follow that they are in a position to seriously handicap the development of the industry? Freight rates are everything in the production of iron. What independent company could engage in the business if the railway company desired to keep them out? Discrimination in freight rates could do the whole trick. Although the Ontario and Rainy River Railway has received such an enormous bonus, and although the railway would prove a good investment without any bonus at all, no restrictions as to freight rates, no effective restrictions of any kind, have been made by the Ontario Government.

EDITORIAL NOTES.

The Canadian Manufacturer Publishing Company, Limited, will, at an early date, begin the publication of an Export Edition of the CANADIAN MANUFACTURER.

The National Policy stands intact.

The policy of Sir. Wilfrid Laurier's government continues to be substantially what it was under the late Conservative government—tariff protection to Canadian manufacturing industries.

No matter whose hand holds it, the rose smells as sweet as ever. No matter by what name you call it, the same old fragrance is there.

You may break, you may shatter the vase if you will,
But the scent of the rose will hang round it still.

The thanks of the Canadian Manufacturers' Association, and of Canadian manufacturers generally, are due and are hereby tendered to Hon. W. S. Fielding, Minister of Finance of Canada, for the gracious manner in which he stands by the policy of tariff protection to Canadian manufacturing industries.

The Toronto World is responsible for the following startling information:—

For the past two years John Brown, No. 95, Canada Life Building, has been perfecting the details of a blast furnace to be established in Owen Sound. He has associated with him Toronto capitalists of recognized worth. At the recent session of the Legislature, an act was passed giving the town of Owen Sound permission to issue debentures for \$100,000 to take stock in the smelting works that will be built by the capital at Brown's disposal. The company will be known as the Canada Iron and Steel Works of Owen Sound, with a capital of \$1,000,000, all paid up. A blast furnace plant, the exact counterpart of Andrew Carnegie's works at Du Quesne, will be erected at a cost of \$800,000, capable of producing from 200 to 250 tons of pig iron per day. The furnace plant will be of the latest, up-to-date design. Apart from the furnace will be a steel melting plant, with a capacity of from 150 to 175 tons of ingots per day. Rolling mill departments and a mill for rolling light rails will be provided. So that the daily output of the whole plant will be:—Pig iron, about 250 tons; ingots, about 175 tons; plates, about 100 tons; rails, about 180 tons; miscellaneous, about 75 tons. It is the intention of the company to go extensively into the manufacture of steel. Mr. Brown is enthusiastic over his scheme, and claims that the market is ripe for a Canadian factory.

That steel melting plant will be something remarkable. With a capacity to produce from 150 to 175 tons of steel ingots per day the production of the rolling mill in connection therewith will produce of plates, rails and miscellaneous forms not less than 355 tons. No wonder Mr. Brown is enthusiastic over his scheme.

"To discontinue an advertisement," says Ex-Postmaster-General John Wanamaker, one of the largest advertisers in the world—and, naturally enough, one of the most successful business men—"is like taking down your sign. If you want to do business you must let the people know it. I would as soon think of doing business without clerks as without advertising."

Foreign trade cannot be found ready-made nor can it be created on short notice. There is a tendency among many who have made a fair beginning in the export trade to consider this branch of their business as something to be taken up only when all other resources fail, a sort of last resort in times of depression and stagnation in business at home. The pursuance of such a policy as this, however, is a fatal mistake. Like any other branch of business, foreign trade must be cultivated and cared for at all times. While it is the mainstay of the manufacturer when his home market is disturbed or narrowed it cannot be left for attention only when such an emergency arises. It takes a long time and a large amount of preliminary work to get a fair start and it requires just as much time and just about as much effort to regain what is lost through inattention or indifference. The constantly increasing activity in home trade tends to lessen interest in foreign business. Manufacturers who have sold their entire output at home for many months in advance are not much inclined to consider the development of the foreign markets, but the next period of business depression at home will find these same manufacturers eager for the largest possible share of foreign trade. Those who will derive first advantage under such conditions will be those who will at all times keep one eye open towards the foreign markets even while their home

trade disposes of all that they can produce. The old principle of providing in times of prosperity for a possible period of adversity applies here as effectively as elsewhere.—American Trade.

The amendment made by the recent Ontario Legislature to the Workmen's Compensation for Injuries Act provides that where the machinery or plant of a factory is required to be guarded or enclosed, or where dangerous structures or openings in a factory are required to be protected, or where any part of a railway or railway track or railway bridge or other structure is required to be constructed or kept by the company in any specified way, then, on any trial under the bill, the burden of proving that the machinery or railway structures were properly guarded or constructed rests on the employer or employing company. The bill permits an injured person to proceed by arbitration. Within four months from the date of his injuries a workman claiming compensation shall serve notice on the employer that his claim will be submitted to arbitration. Eight days are given the employer to object and make application to a judge of the High Court in Chambers for an order that proceedings are to be by action, not by arbitration. In case the judge orders an arbitration the proceedings shall be before the County Judge, and the costs are to be on the scale allowed in County Court actions. An appeal shall lie to a Divisional Court of the High Court, and their decision is to be final. The judge of the High Court in Chambers, when applied to, may, however, refuse to allow the claim to be tried by arbitration in complicated and difficult cases.

Speaking of the desire of the Sunlight Soap Company, a large English concern, to erect works in Toronto from which to supply their Canadian trade, not only in soap, but also in glycerine, the Toronto World says:

If the company finally decides to locate here it will not only establish a large soap factory, but it will begin an entirely new industry in this province, if not in Canada, viz., the manufacture of glycerine. The establishment of the company's factory in Toronto will not interfere with any other concern in the city. The selection of Toronto as the great soap emporium of the Dominion will do rival soap concerns more good than injury. Under these circumstances the city can afford to deal liberally with the Sunlight Company. Their factory is an institution the city cannot afford to lose. We believe it can be secured if diplomacy and good judgment are brought to play in the matter.

Scribner's Magazine for May has secured from Major-General Leonard Wood, the military governor of Santiago, the first official account of the great work which has been accomplished in that province. It is practically the making of a State by a military dictator, all of whose purposes are benevolent, and who has no legislature or other authority to consult—deriving his power directly from the President of the United States. The illustrations contrast the old Santiago with the new, and show the work of regeneration. A striking account of colonial government is given in the picturesque paper by G. W. Stevens on "The Installation of Lord Curzon as Viceroy of India," which reveals what long years of British rule have made out of a subject people. It is a brilliant piece of descriptive writing, giving pleasing glimpses of the personality of the new Viceroy and Vicereine.

Hardware Store Business Methods, compiled and edited by R. R. Williams, Hardware Editor of The Iron Age, New York: David Williams Co., 232 William Street. The articles which are gathered together in this volume have been, together with many others on similar topics, already published in The Iron Age. The authors are for the most part practical and progressive hardware

merchants whose contributions to the discussions of approved methods deserve to be presented in a permanent form convenient for reading and reference. The thorough and practical treatment of the important subjects discussed, the embodiment in these articles of the experience of men of ability and enterprise, the suggestiveness of the principles and maxims thus presented, should render the volumes useful to many and tend to still further elevate the business methods of the hardware trade.

The Methodist Magazine and Review for May is a patriotic Queen's Birthday number, with a fine portrait of her Majesty and an article on the Queen's private life, with illustrations of the interior of Osborne House, also Austin's fine poem on the Queen. Three articles are by contributors in the Maritime Provinces,—a study of "In Memoriam," by the Rev. Dr. Lathern; an article on "Christian Life in Germany," by the Rev. C. H. Huestis, M.A.; and a study of Runeberg, the famous Finnish poet, by Oskar Grunland. Accounts of Andrew Hofer—the Tyrolean patriot—of Sir John Franklin, by Miss E. Sanderson, and of the Queen of the Adriatic, by the Editor, are handsomely illustrated. Balloon Post during the Siege of Paris, and other articles will be read with interest. Toronto: William Briggs. \$2.00 a year.

"The Countess Emilia." Anthony Hope's new romance, is begun in the May Ladies' Home Journal, and "The Art of Listening to a Sermon" inaugurates the first of a series of articles on the pulpit and the pew by Ian Maclaren. Paul Leicester Ford writes "The Anecdotal Side of George Washington," Viola Allen tells "What it Means to be an Actress," and Joseph Edgar Chamberlin introduces "Helen Keller as She Really Is," giving some interesting glimpses of this marvelous blind and deaf girl. "The Building of the Ship," is the theme of the sixth of W. L. Taylor's series of illustrations of Longfellow's poems, and pictorial features of practical interest are "Nature's Garden," "The Prettiest Country Homes in America," "Rustic Arbors and Summer Houses" and "The Flag in the Church." The Curtis Publishing Company, Philadelphia. One dollar per year.

Outing for May is an exceedingly attractive number. Among its many breezy sketches angling naturally occupies a prominent position. The illustrations are numerous and beautiful. The contents are: "The Dam Leapers" (trout fishing), by Wm. A. Whitney; "Up to the Hills in India," by P. E. Stevenson; "Angling for Eastern Trout," by Mary Trowbridge Townsend; "Golfing 'Round the Hub," by Geo. H. Sargent; "The Challenge of the Shramrock," by A. J. Konealy; "Plover and Plover Shooting," by Ed. W. Sandys; "Fool's Gold," by Paul Pastner; "About Fly-Casting," by G. E. Goodwin; "Through the Yellowstone on Foot," by C. H. Henderson; "A Day with the Long-bills," by J. D. Ackerman; "Five Weeks Awheel in France," by Sidney Cross; "Loitering on a Canal," by R. R. Tybout; "A Cruise in the Dark after Duck," by E. W. Chubb; "A Fishing Convert," by Oliver Kemp, and the usual editorials, poems and records.

BRITISH-CANADIAN TRADE.

The following inquiries have been received at the office of the High Commissioner of Canada in London, England.

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

22. An inquiry has been received from the Government Agent at Antwerp for the names of firms in the Dominion wishing to import Belgian starch, chicory and meerschaum.

23. The names of exporters of hides (salted and dry), tobacco (unmanufactured), furniture, and boots and shoes are also asked for from the same quarter.

24. A firm of pressed glass makers in the north of England ask for the names of importers and distributors of glass ware, or of glass, china and earthenware.

25. A Scotch firm of flour and grain commission agents wish to be placed in communication with a good shipper of oats from Canada. They would also like to represent a good provision house.

timbered as far north as Alaska. There is no white pine but spruce attains perfection in this section.

"The following table shows the area in forests in various countries of the world :

Country.	Area in forests. Acres.	Percentage of total area. Per cent.
Europe.		
Austria	24,172,360	32.58
Hungary	18,777,771	23.52
Belgium	1,243,507	17.08
Bulgaria	3,291,100	12
France	23,466,450	17.92
Germany	34,347,000	25.70
Greece	2,025,400	12.60
Italy	10,131,235	14.31
Norway	19,288,626	24.53
Portugal	1,163,841	5.25
Roumania	4,942,600	15.22
Russia	498,200,000	37.15
Servia	5,763,163	48
Spain	16,354,941	13.03
Sweden	44,480,000	40.65
Switzerland	2,259,018	20.12
Turkey	3,500,000	8.93
United Kingdom	2,695,000	4
America.		
Canada	799,230,720	37.66
United States	450,000,000	23.29
British Guiana	5,760,000	18
Asia.		
India	140,000,000	25
Turkey	17,500,000	
Japan	28,700,000	30.24

OBSTACLES TO EXPORTING MACHINES TO GERMANY.

The United States consulate at Dusseldorf, writes Consul Pettie, is frequently called upon to assist in the adjustment of annoying controversies between American manufacturers of machinery and tools and their German customers, arising from damage to goods in transit, delays in shipments, and vague contracts. These difficulties, unless guarded against more carefully, will become very serious obstacles to the progress of this important and rapidly increasing item of American trade in Germany. Damage to machinery and machine tools in transit has been very frequent, and I have just seen one shipment in which three very valuable machine tools were completely ruined, the cast-iron frames being broken in several places. It is impossible to ascertain whether the damage was done by the railways in America, the steamship companies, or by railways in Germany. Nobody seems to be responsible. It is alleged, however, by those interested that these heavy machines are subjected to very rough handling by the steamship companies. It is said they jerk them out of the vessels with steam cranes, often hooking to frail castings which are not strong enough to sustain the weight. Before accepting damaged machines, the German buyer examines them while in the possession of the railway at the final destination, and they are also exhibited to witnesses before being taken from the depots, resulting in protested drafts, long and disagreeable disputes, and sometimes expensive lawsuits. Delay in the delivery of machines has also in several instances resulted in heavy losses. In one case, an apparatus valued at over \$3,000 was to have been delivered in October, but did not reach Germany until the following February. It had been sold by a German house dealing in American machines, with the agreement that it was to be delivered in November. The result was a suit against the dealer, in which damages for about \$2,000 was demanded, and, in turn, the middleman claimed similar damages against the American manufacturer.

To prevent breakage during shipment, all machines and parts of machines should be boxed, when possible, and the cast frames securely bolted to heavy timbers. In some of these machines, there can be no doubt that the castings are too light for export without careful packing. Contracts should be made in writing when practicable, and should leave no

doubt as to where the responsibility of the exporter ends and that of the German importer begins. In several cases I have found that the American claimed that his responsibility ended when he placed the goods aboard ship in New York harbor, while the German importer alleged that the goods were to be delivered here in good condition. These points should be fully covered in the contracts, and in cases where regular customers order by cable from catalogues, standing contracts covering all these points should be entered into. Much trouble will also be avoided by detailed specifications, which will prevent disputes as to particular parts of machines, and by the delivery of goods within the specified time. Special care should be taken that the bills of lading show clearly that the machines are in good order, and forwarding agents should be given special instructions to carefully examine them at the seaports for cracks, bends and breaks, in order that the responsibility for damages may be easily fixed. While the transportation companies can be made to pay for the goods damaged in transit, the shipper will experience many difficulties in compelling settlement where all of the facts are not clear, and where claims are resisted.

Dusseldorf, being the financial centre and largest city of the great iron and coal district of the German Empire, has become the leading place in the country for the sale of American machines and machine tools and a number of firms employing large capital are engaged exclusively in the importation of these goods. Some of these firms—in fact, nearly all of them—remove the plates showing the names of the American manufacturers and replace them with plates bearing their own names as the makers. To avoid all of these difficulties and save the profit of the German middleman, a number of American manufacturing firms have opened permanent offices in this city, with American engineers in charge, where plans and specifications are prepared, estimates made, and contracts entered into. This system is very much more satisfactory to both the manufacturer and the German firms which buy the machines for use. There can be no doubt that many other American machine tool manufacturers could profitably increase their business by opening offices here, with competent engineers and solicitors.

PRODUCTION AND CONSUMPTION OF COPPER IN 1898.

The development of the electrical industry in Germany is best illustrated by the increase in the consumption of copper. The following interesting figures are collected from statistical returns :

The German copper production, which amounted to 24,688 tons in 1891, had in 1897 risen to 29,468 tons, and is estimated at 30,703 tons for 1898, complete official figures not yet being available.

The German copper consumption was as follows : In 1896 85,160 tons ; in 1897, 96,303 tons ; and in 1898, 101,518 tons. Since 1892, the copper consumption has, according to a statement made by Messrs. Hirsch, of Halberstadt, increased by eighty-one per cent., while the total copper production of the world shows an increase of only thirty-six per cent. for the same period.

Germany's exports of copper ware have risen from 33,093 tons in 1897 to 36,724 tons in 1898 ; the imports, chiefly composed of goods of American origin, have risen to 2,443 tons, an increase of 837 tons over 1897.

England consumed 106,000 tons in 1898, being a decrease of 4,500 tons from 1897. France consumed 55,000 tons, being about 4,000 tons less than the year before. The copper consumption of East Asia is shown to be 20,000 tons in 1898, and that of Russia 6,600 tons.

The world's total copper production amounted to 396,728 tons in 1897, and is estimated at 420,000 tons for 1898. By far the greater part of this increase in production is to be looked for in the United States, whose production was 216,000 tons in 1897 and 234,272 tons in 1898.

It is particularly interesting to note, as showing the immense development of the electrical industry, that the copper consumption of the United States in 1898 was more than one fourth of the copper production of the whole world—viz., 115,935 tons—and that that country has outstripped the leading nations of Europe in industries employing this material.

The Revue de la Semaine gives the following table, showing the copper production of the world for the years 1895-1898; increase being shown principally in Australia and the United States:

Country.	1895. Tons.	1896. Tons.	1897. Tons.	1898. Tons.
Algeria.....	50	35
Argentine Republic....	125	200	100	150
Australia.....	18,000	17,000	11,000	10,000
Austria.....	1,100	1,210	1,075	1,110
Bolivia.....	2,050	2,200	2,000	2,250
Canada.....	8,040	5,905	4,000	4,000
Chile.....	24,850	21,900	23,500	22,075
Cape of Good Hope....	7,060	7,440	7,450	7,080
England.....	550	555	555	580
Germany.....	20,085	20,145	20,065	16,555
Hungary.....	430	445	210	200
Italy.....	3,435	3,480	3,400	2,500
Japan.....	25,175	23,000	21,000	18,430
Mexico.....	10,435	11,370	11,150	11,620
Newfoundland.....	2,100	1,800	1,800	1,800
Norway.....	3,615	3,450	2,500	2,585
Peru.....	3,040	1,000	740	150
Russia.....	6,000	6,025	5,100	5,280
Sweden.....	480	545	500	515
Spain and Portugal....	53,225	54,060	53,325	54,950
United States.....	234,261	215,460	203,893	172,297
Total.....	424,126	397,190	373,363	334,562
Average price Jan. 1 of each year.....	\$250.08	\$238.97	\$229.85	\$208.40

BROOM HANDLES IN GREAT BRITAIN.

United States Consul Halstead, at Birmingham, England, writing to his Government, says: "In a report printed in Advance Sheets of Consular Reports, I stated that there was a great demand for and inability to procure American broom handles here, and that I would like to know why there should be that scarcity. I have received the desired explanation, very graciously volunteered by a gentleman in the United States, who evidently is thoroughly well posted, and his letter contains so much that is of interest that I give it below. He says:

'I have been in the past a very large handler of American broom handles. I have shipped a great many thousands—yes, hundreds of thousands—to England during the last fifteen or eighteen years, but I have not done very much for the last six or eight years, for the reason that they can not be sold in England at a price that will yield any profit to either the manufacturer or shipper. The broom handle that the trade wants in England is not what is known as a broom handle in this country. The English broom handle is used for a floor brush and must be 42 inches long, 1 1/8 inches in diameter, and the same size at both ends. An American broom handle is 38 inches long, seven-eighths of an inch in diameter at one end, tapering to three-fourths of an inch at the other. You will find by figuring it out that the English broom handle takes, including the saw calf for cutting it out of the lumber, a blank that is 1 1/2 inches square and 42 inches in length, which figured out in the board measure, is about six-tenths of a square foot, and this is figuring very closely. When you understand the fact that the English merchants expect, or rather want, to buy the English style of broom handles at about from \$15 to \$18 per thousand f.o.b. steamer and made of white spruce, and that the lumber from which these handles have to be cut is worth from \$23 to \$24 per 1,000 feet in the boards, you can at once see that the handles will not bring as much money all turned

and delivered to the vessel as the boards themselves would bring at the mill.

'Another reason why the handles are scarce is the fact that the English people will insist upon having nothing but white spruce, whereas the broom handles that are used in this country are either birch or basswood. I have tried very hard in my experience to introduce the American basswood handle into England, but they simply won't have it. Therefore, the high price of the spruce in this country and the fact that it is growing scarcer and scarcer every year, is the reason why there is an insufficient supply of broom handles in England.'

"In the same mail which brought the New York explanation, I received from an American in Hamburg, who is doing business there as an agent for a United States manufacturer, a letter in which the following paragraph occurs:

'The reason why broomsticks are so scarce is probably this, that there has been an unexpected boom in brooms in the United States. The price has gone up twenty-five per cent. within a few months, which is quite unusual for such a staple article, and my manufacturers are in consequence four or five months behind in their deliveries. Another reason is that for broom handles, long, straight spruce or basswood sticks are required, and they must be well seasoned in order not to crack. The boom has unquestionably taxed the manufacturer to the utmost, and their kilns are no doubt full and can not be emptied before the wood is thoroughly seasoned.'

Some months ago, I met in London an American citizen of Swedish nativity, whose relatives in Sweden have for many years derived their income by the sale of spruce timber from their lands, and he told me they wrote him that not only was spruce almost exhausted in their neighborhood, but pretty generally throughout Sweden and Norway. I have presented these facts to the manufacturer of brushes here who made the enquiry for broom handles, and I am anticipating that, as he must see in the near future it will be necessary for broom manufacturers to abandon the use of spruce, he will consent now to make an experimental use of basswood

ALKALI TRADE IN GREAT BRITAIN.

The following extract from the London Times of February 18, 1899, illustrates the actual effects of the United States tariff upon a very large British industry:

The eighth annual meeting of the United Alkali Company was held yesterday in Liverpool. The report showed a net profit of £198,262 (\$964,842), which added to £22,188 (\$108,977), brought forward, gave an available balance of £220,451 (\$1,073,819). In moving the adoption of the report, the chairman said it would be recollected that at the last annual meeting, he called attention to the high tariff imposed on their goods exported to the United States and to most European countries. The new scale of American duties had only been in operation about five months of the year then under review. In the past year they had to face those duties during the whole year, and their important trade with the United States in alkalis had been reduced to very small proportions, compared with what it was before those heavy duties were imposed. In 1895, for instance, the total export of soda ash from this country to the United States was 125,698 tons and in 1898 it fell to 29,323 tons. Of caustic soda, in 1895, the export to the United States was 33,625 tons, and in 1898 it fell to 11,171 tons. Thus the British manufacturer had been practically shut out for the benefit of the American manufacturer who had largely increased his production, and was not only able to meet his own country's requirements, but had a surplus for export. And they had to meet the same state of things all over Europe, a tax more or less severe being imposed on the British-made article. They would understand very clearly what hampered their trade. In the important trade of bleaching powder, they had not only those high duties to face, but opposition provided for their

special benefit. He mentioned last year that a syndicate of German manufacturers had bought up the whole production of over three years of bleaching powder made by an electrical process in this country, at a fixed price, and was offering it in the home market very much below what they had given for it, for the express purpose, as they phrased it, of "keeping us in order;" in other words, to induce that company by a system of reprisals to keep their goods out of the continental markets. It might have been thought that the heavy duties on British goods would have been ample protection to the continental manufacturer.

The transaction of the German syndicate, which had still eighteen months to run, had reduced the selling price of bleaching powder by 20s to 30s (\$4.86 to \$7.29) per ton, and had in fact, cost the Alkali Company a sum sufficient to pay ordinary shareholders a moderate dividend on their holding. The falling off in their trade had been attributed in some quarters to working with obsolete plant and not keeping pace with modern improvements, while the technical training of the heads and officials of the English chemical industry was defective as compared with those of other countries. Those were not the causes operating adversely, at least so far as that company was concerned. The true causes were those he had stated. With reasonable duties and fair play, they could hold their own, and hold it well. He made bold to say that their costs of production would compare favorably with those of other manufacturers—English, continental or American—but costs could not possibly be reduced sufficiently to make up for a duty of £11 13s. 4d. per ton on an article which sold at about £30 per ton; yet, that was what the American tariff required them to do. Hence the only way to retain the trade was to have an interest in manufacturing in the protected country. That they had done. A company had been formed and located at Bay City, in the State of Michigan, called the North American Chemical Company, in which they have a controlling interest. Those works, primarily established for the manufacture of chlorate of potash by electrolysis, began operations about November; and though not yet working at full capacity, turned out an excellent article at a cost quite within expectations, and promised to prove a very satisfactory investment. Having started so late, they did not contribute to the profit side of the present balance sheet. * * * They were advised that day by cable that the whole plant at the Bay City works was now running.

BOOTS AND SHOES IN DENMARK.

Vice-Consul Blow writes from Copenhagen:—

"I consider the present moment most opportune for the introduction into Denmark of American boots and shoes, as the tendency to use ready made shoes is increasing rapidly, since the difference in price with those made to order is becoming marked.

"The import of foreign-made shoes increases steadily, as will be seen from the following figures:

	Pounds.
1889.....	194,502
1891.....	208,663
1893.....	311,866
1895.....	364,445
1897.....	379,452

"Austria, Italy, Germany, and, to a small extent, Great Britain, control this market; but there is no reason why other manufacturers should not secure a large share of this trade. Pointed and narrow shoes will not sell here, the Danish foot is large. Styles made for the German markets would find favor here.

"Several of the Danish shoe manufacturers have imported American machinery, but the Danish duty on shoes being very light (it varies according to the quality), other manufacturers could no doubt compete in price.

"Denmark has a population of about 2,350,000 inhabitants. The Danish shoe manufacturers produce about 4,000 pairs of shoes daily. The imports of foreign shoes are about forty per cent. of the whole consumption.

"Manufacturers should address: The Wessel & Vett, 13 Kongens Mytorv; Skandinavisk Skotojsmagasin, 35 Ostergade; E. Oettinger, 44 Ostergade—all of Copenhagen.

"Mr. John Lund, 4 Læxegade, Copenhagen, is willing to accept agencies.

"The commercial agency of R. V. Fournais & Co., Copenhagen, will, for a small fee, rate any firm in Denmark."

OBSTACLES TO THE BICYCLE TRADE IN FRANCE.

Consul Jackson, of La Rochelle, writes:—

"If American wheels were sold at prices approximating those for which they sell in the United States, they would be purchased in this part of France in large numbers. It seems to me a serious mistake on the part of our cycle makers to give the sole agency of their wares for all of France to any one house. The result of this is that the prices are maintained at a very high figure. Machines which have always been known in America as "low priced" sell for about the same price as the most expensive at home. From figures recently shown me, one can buy certain wheels in New York at retail, pay the duty and transport, and then have them cheaper than the local dealer can purchase them from the agent at Paris. Consequently there is practically no competition in the market between American and French cheap wheels, and fewer American wheels are sold. The conditions which obtain here as to advertising, travel by railway, exhibition of goods, etc., are so different from those in the United States that it is an immense undertaking, if we demand high prices, to successfully introduce one particular 'marque' to 39,000,000 people.

PACKING FOR VENEZUELA.

Consular Agent De Sola writes from Caracas:—

"I cannot too strongly urge manufacturers to effect a radical change in their system of packing. The cases and crates are in many instances not strong, but are very heavy, owing to the thickness of wood employed. This is prejudicial, not only on account of the breakage, but because the customs duty in this country is collected on the gross weight.

HARDWARE IN LOURENCO MARQUEZ.

Consul Hollis, of Lourenco Marquez, writes:—

"Until recently, the dwelling houses in this town have been constructed upon the most primitive plans. They are, for the most part, merely boxes of galvanized corrugated iron, with inner walls, ceilings, and partitions of half-inch matched spruce boards. They contain no kitchens, bathrooms, hot or cold water pipes, stoves, or chimneys. The kitchens are generally galvanized iron shanties in the rear of the main buildings. As this place is getting more civilized, a demand is arising for a better class of houses. I recently had a talk with the leading builder and contractor here, Mr. William Blackwood. He told me that he wished to obtain full particulars relating to the following articles, which, I assured him, could be purchased at better advantage in the United States than anywhere else: Lead, steel and brass piping; water-closets, mosaic tiles, kitchen plumbing outfits, hot water boilers and connections, sinks, stoves for burning soft coal and with hot water connections, 200 to 300 gallon iron water tanks, outside galvanized iron guttering and piping; builders' fine hardware, such as locks, knobs, hinges, bolts, nails, screws, and special tools."

All these lines of goods can be purchased in Canada on as good terms as in the United States.

POTATO BREAD FOR HORSES IN GERMANY.

Potato bread is used by the natives of Thuringia to feed their horses, especially when they are worked hard in very cold weather. The animals thrive on it, and their health and strength are excellent. The method of preparation is simple and inexpensive. The potatoes are slowly stewed till soft; they are then mashed thoroughly, and an equal quantity of corn meal is added. It is mixed into a thick paste, with a small quantity of salt. The paste is then divided into 4-pound loaves and allowed to bake till thoroughly done. In the slow country ovens, it generally takes from fifteen to eighteen hours. When cold, they are fed to the horses and cattle doing heavy work at the rate of four loaves a day, viz., one in the morning, one at noon, one about 4 o'clock, and one at night. With the last, about ten pounds of poor hay are given. It is claimed for this method that horses can do much more work on the same amount of food, and that it is good for their teeth.

VALUE OF PROMPTNESS IN CONSULAR REPORTS.

The Frankfurter Zeitung calls attention to certain defects of the German consular service, and gives some practical hints as to the kind of reform that is most needed. In the course of its criticism, it says:—

“A still more important question is whether the officials and consuls, with the same expenditure of money and energy, could not do much more for German business interests. We have already criticised our commercial statistics, but our consular reports appear to be in still greater need of reform. The manner in which these reports are made would be comical if it were not so aggravating. We have just received the last number of the German Commercial Archives, in which the Minister of the Interior publishes the consular reports. This volume was given out in October and contains the reports of our consuls from Sheffield, San Francisco, Penang, Sweden, Persia, etc. All these reports relate to the year 1897. A Report from British India covers the period from April, 1896-1897. The only report for 1898 is one from Italy about the silk crop. These reports are certainly carefully prepared and contain a number of figures, but most of the facts are already old to those who are specially interested. They have been read in most cases in newspapers before they appeared in the reports of the officials who are specially sent to foreign lands to look after our interests. Of what use is it to the business man to know during the last days of the year 1898 what took place in distant countries during the years 1897 and 1896? During the time it takes the report to come to Germany to be revised and printed, the opportunity which it describes has been lost.

“We can learn in this matter from the English, who publish their reports immediately in cheap editions, but still more from the Americans, who carry the consideration of business interests still farther. Americans would not publish

in November, 1898, information relating only to 1897. The American does not wait until a report is “due,” but makes it when an occasion occurs. These opportune reports, which are being adopted in England more and more, may be inferior to ours in scientific thoroughness and accuracy, but their practical value is twice as great. The Commercial Museum of Vienna gives some examples of the promptness of these reports. On the 10th of June a German vessel was plundered by pirates at Maracaibo. On the 20th of June the American consul sends a report about the equipment of a ship necessary to evade the pirates. The consul in Venezuela notices that there is an excellent opening for American coal at La Guayra and writes his report, exactly a page long, but containing all necessary information. Those interested receive prompt and exact information. Can not our officials do the same? Certainly they can do it, if they are informed as to the real needs of home industries, but it requires, of course, special training. The results obtained by the expenditure of time and money in our service fall so far short of being practically useful, that it is necessary to call attention to conditions that should be changed if possible. The right spirit and proper understanding are, of course, necessary.”

NEWFOUNDLAND'S TRADE.

A return recently presented to the British Parliament and received by the Canadian Department of Trade and Commerce contains information as to the import and export trade of Newfoundland for the year 1897, being the last year for which returns are available. In it the imports for that year are set down at \$5,938,334, and the exports at \$4,925,789, the balance of trade being thus against the island to the extent of \$1,012,545. A deficiency of 300,000 quintals in the catch and the diminution in the price of the codfish have together contributed to lessen the value of the exports by more than a million dollars. The exports are divided as follows:—

To the United Kingdom.....	\$1,349,273
British colonies.....	951,072
Foreign countries.....	2,625,444

The imports are as follows:—

From the United Kingdom.....	\$1,960,999
British colonies.....	1,765,562
Foreign countries.....	2,211,773

The report speaks of the severity of the competition from the Norwegians and French in the codfish markets, the dealers from these countries being in an exceptionally favorable position by reason of the large Government bounties, so that they are able to undersell all rivals. The exports of cod for the year under review are valued at \$3,111,368, as compared with \$4,648,397, the year previous. The export of sealskins also fell off from \$602,000 to \$363,467. The mineral products exported were valued at \$558,000, being \$100,000 less than in the year previous. The public debt amounted on June 30, 1897, to \$16,248,000, an increase of \$3,151,000 for the year.

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CAPTAINS OF INDUSTRY.

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

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

The starting of any such concern means a demand for some sort of machines, machinery, or supplies, such as steam engines and boilers, shafting, pulleys, 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 Oakville Navigation Company, Oakville, Ont., has been incorporated with a capital stock of \$40,000, to operate a line of steamers between that place and Toronto, and to build a summer hotel and resort at or near the town of Oakville.

The Steample Manufacturing Company, of Toronto, has been incorporated with a capital stock of \$24,000 to acquire the business of Anderson Bros. and Co., and will manufacture fire extinguishers, heaters, oil cans, etc. The provisional directors are Anderson, Pearson and Meldrum.

The North Alberta Farmers' Milling Co. will erect a new flour mill at Edmonton, N. W. T.

Messrs. Holden & Brooke, proprietors of the Sirius Works, West Gorton, Manchester, Eng., have sent us a new abridged catalogue of steam users' specialties, having special reference to the Sirius self-acting injectors; Brooke's patent exhaust steam injectors; The Giffard injector; Ball's patent equilibrium valve; the Sirius pulsating pump; Brooke's patent steam driers and anti-primers; the Sirius steam trap, (recently illustrated in these pages); Russell's steam pipe and water ejection valve; water lifters, ejectors, etc; boilers and circulators; back pressure valves; boiler feed valves; foot-valves, etc. All these articles are illustrated and described at length and there are other matters of information that cannot but be of value to engineers, steam users and others.

Macphoe & Meader, Moulinette, Ont., will erect a 100 barrel flour mill at South Finch, Ont.

The William Rutherford & Sons Company, Montreal, are applying for incorporation with a capital stock of \$150,000, to manufacture lumber and woodwork of every description, etc.

The Bay St. Paul Pulp Co., St. Paul's Bay, Que., is applying for incorporation with a capital stock of \$25,000.

The Canadian Rand Drill Co., Montreal, have increased their capital stock from \$18,000 to \$500,000.

The Expanded Metal Co., Toronto, has been incorporated with a capital stock of \$110,000, to manufacture expanded metal, etc.

The Winnipeg Elevator Co., Winnipeg, Man., has been incorporated with a capital stock of \$300,000.

The Parry Sound Copper Mining Co., Parry Sound, Ont., has been incorporated with a capital stock of \$500,000.

The Carman Natural Gas Co., Petrolia, Ont., has been incorporated with a capital stock of \$30,000.

The Baxter & Galloway Co., Burlington, Ont., has been incorporated with a capital stock of \$20,000.

Mr. Hobson of Lander, Man., will build a new flour mill at Headingly, Man.

The site for the calcium carbide factory to be built adjoining the mill of the Bronson-Weston Lumber Co., in Ottawa, is being prepared. Part of the old saw mill is to be torn away, including two gang saws and a band saw, to make room for the new building.

The Canadian General Electric Co., Toronto, has received an order from The T. Eaton Co., Toronto, for another 130 k.w. 110 volt direct connected generator.

The Canadian Office & School Furniture Co., Preston, Ont., are building a new brick wing 68 x 36 to their factory. The addition is three storeys high. They are also erecting a new Japanning house. The firm are doing a large business in bank fittings and fine house trimmings, in addition to their desk and school furniture business.

The Pallascio Hardware Co., Montreal, has been incorporated with a capital stock of \$20,000.

The American Kinetoscope & Novelty Co. are applying for incorporation with a capital stock of \$10,000, to acquire patents, and carry on a general business in electrical and automatic machines, etc.

The Canadian Breweries, Montreal, are applying for incorporation with a capital stock of \$600,000.

The increase of business has made it necessary for Mr. S. R. Gaudet, of Memramcook, N. B., to add more machinery to his wood working factory and flour mill. His present power plant being taxed beyond its capacity, he has ordered a 100 h.p. Robb-Armstrong engine with boiler from the Robb Engineering Co.

A dozen of the leading manufacturers of furniture in Ontario have issued a circular in which they allude to the fact that prices of lumber, benzine, turpentine, oil, varnish, nails, locks, screws, hinges, mirrors, glue, etc., have recently greatly advanced in price, in consequence of which prices of furniture has also been advanced.

The H. A. Lozier Co., bicycle factory at Toronto Junction, was never so busy as it is at the present time. During the past week about 15 new hands have been taken on daily, until now they number 500. Even with this number the factory is running night and day, and as high as 205 wheels have been turned out in one day. Next week, they expect, with the increased staff, to turn out 250 wheels a day, and when the week closes will have shipped 1,500 wheels.

Contracts have been awarded for the construction of the new Abbott rolling mills at Belleville, Ont. The works will include the manufacture of rolled rods, spikes, nails, horseshoes, etc.

The Ogilvie Milling Co. are calling for tenders for a 1,200 h. p. engine for the Winnipeg, Man., mill.

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Valleyfield, Que., has adopted a by-law to raise \$66,000 for sewerage and other purposes.

Galt, Ont., will vote on a by-law to raise \$75,000 by debentures for a sewerage system.

T. G. McMullen will erect a pulp mill at Union, near Truro, N. S., in which he will employ about 200 men.

The Massey-Harris Co. will erect a new implement warehouse at Plum Coulee, Man.

Messrs. Matthews Bros. & Co., Toronto, manufacturers of picture mouldings, etc., have their new factory nearly completed.

The Office Specialty Co., Toronto and Newmarket, Ont., will erect a large addition to their Newmarket factory.

Humphrey Bowser, Dorchester, N. B., will erect a factory, and engage in the manufacture of sash and doors on an extensive scale.

The Laurentide Pulp Co., Grand Mere, Que., are erecting a large band sawmill, which will have two band saws and all the latest and most up-to-date machinery.

A sawmill will be erected at Katrino, Ont., by the Thompson Company, with a daily capacity of 30,000 feet.

Messrs. W. D. Van Egmond & Sons, Seaforth, Ont., will double the capacity of their plant if \$10,000 bonus is secured.

The extension of the clothing factory of the W. E. Sanford Manufacturing Co., Hamilton, is to be well built, and with that object in view Thomas Oliver and Architect Mills are visiting large clothing factories in the United States for information.

The Cataract Power Co., of Hamilton, are installing in the premises of the Norton Mfg Co. three 15 h. p. and one 20 h. p. "S.K. C." induction motors to operate the entire factory by electricity.

Two large cargoes of pulp were recently shipped from Liverpool, N. S., to the United States. One load went to New Haven and the other to Boston.

The Town Council of Truro, N.S., has decided to purchase a 100 h. p. Mumford Improved boiler from the Robb Engineering Co. to replace the boilers at present in their pumping station.

The Town of Lachine, Que., has granted a bonus of \$15,000 and exemption for ten years to the Silver Boot & Shoe Company of Montreal and \$20,000 with exemption to the Rolland Brothers' furniture factory of that city, and other companies are thinking of moving to neighboring municipal ties in order to escape the additional taxation made possible under the amendments recently made by the Quebec Legislature to the Montreal city charter, giving authority to impose heavy taxes upon manufacturing plants.

REDDAWAY'S ORIGINAL

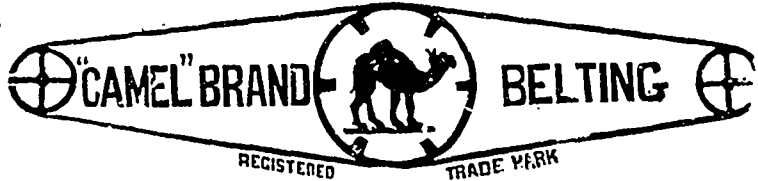
CAMEL BRAND HAIR BELTING

STRONGEST BELT MADE. NO STRETCHING.

NOT AFFECTED BY DAMPNESS,
HEAT OR STEAM.

WRITE FOR PARTICULARS. LARGE STOCK ON HAND.

Fire Hose, Steam Hose, General Mill Supplies.



W. A. FLEMING & CO., SOLE AGENTS FOR CANADA, 57 St. Francois-Xavier St., Montreal.

SADLER & HAWORTH

Manufacturers of

OAK-TANNED LEATHER BELTING

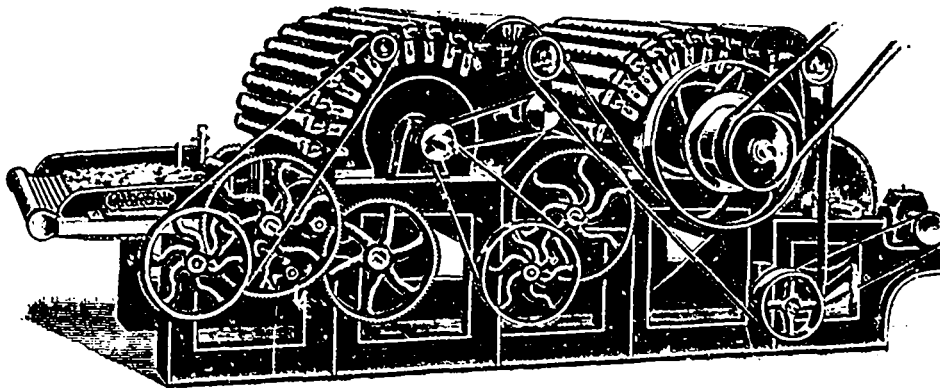
MONTREAL AND TORONTO.

Orders addressed to our Toronto or Montreal Factory will have prompt care.
Goods will be forwarded same day that order is received.

P. & C. GARNETT, Limited

CLECKHEATON, YORKS, ENG.

TELEGRAMS, - GARNETT, CLECKHEATON.



THESE Machines have a world-wide reputation. They are made in various widths up to 60 inches on the wire, and with one, two, or three swifts. They can be clothed as fine as 24 rows per inch so as effectually to open the finest threads.

Waste Opener or Garnett Machine, for Opening Hard Twisted Woolen and Worsted Wasts.

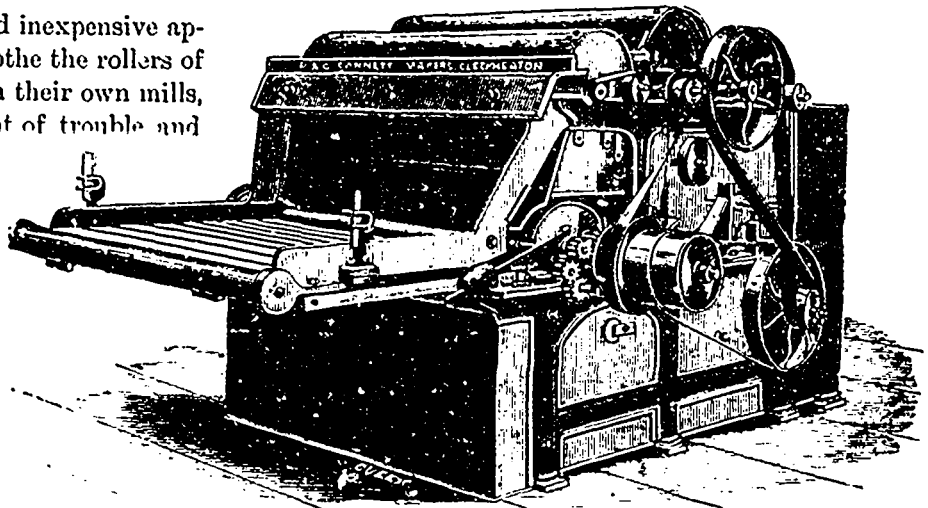


Garnett Wire.

Garnett Wire, or Metallic Card, made with any form of tooth, in Swedish Charcoal Iron or Cast Steel, with points hardened by electricity. This Wire is used for covering iron rollers, breasts of woolen cards, lickers of cotton cards, comber doffers, etc.

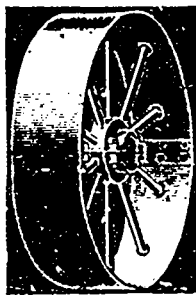
Patent Garnett Clothing Apparatus

BY means of this simple and inexpensive apparatus parties can re-clothe the rollers of their waste-opening machines in their own mills, and so save an immense amount of trouble and expense in sending their rollers away to be done.



WROUGHT IRON PULLEYS

Light, True and Unbreakable.



Cast Iron Pulleys.

Improved Wool Cleaning or Burring Machine.

Capable of cleaning 1,500 pounds of wool per day. The very best and most economical machine made for the purpose.

*Iron and Steel Shafting, Couplings,
Flummer Blocks, W. I. Collars,
Hangers, Wall Boxes, etc.*

The Acetylene Lighting Company, London, Ont., manufacturers of all kinds of acetylene gas apparatus, have adopted a new method of distributing their machines and bringing them more prominently to the attention of possible purchasers. These machines occupy about the same floor space as that required for heating furnaces, and as both articles are required for domestic and similar purposes, the company are jobbing them to stove and hardware dealers, plumbers, etc., all over the country; and they inform us that some of their travelling men are placing from three to a dozen machines with the trade in most of the towns they visit. Although the company moved into new and larger quarters in January, they find that they are being cramped for more room on account of their increasing business and will soon be forced to make a further enlargement of their works.

The Royal Electric Co. are installing in the premises of the Hudson Bay Company, at Winnipeg, a complete electric lighting plant.

The name of the Toronto Packing Co., Toronto, has been changed to the Toronto Pork Packing and Beef Company, Limited.

The Hugman Window Shade Co., who recently began the manufacturing of window shades, etc., in Montreal, have met with such prosperity in their business as to require the product of another factory to supply them with the necessary material, and they have therefore organized another company who have started a factory at Granby, Que., for the manufacturing of hand made opaque shade cloth, etc. For this latter concern Mr. Wm. T. Bailey, 27-29 Victoria square, Montreal, is selling agent.

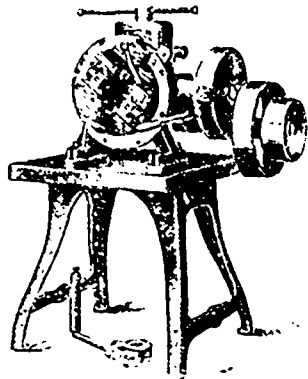
The motors of the Winnipeg Street Railway Company are being equipped with fenders built by the Sleeman Co., of Guelph, Ont.

The Durham Furniture Co., Durham, Ont., have just been incorporated with a capital stock of \$20,000 to manufacture furniture, etc.

The Shawinigan Water & Power Company, whose plants contemplate the largest water-power development in the world, outside of Niagara Falls, is showing that it means business, for it has just let contracts which will involve an expenditure of over \$300,000. This contract is for the canals,

bulkheads, foundations for power houses, etc., required to develop 30,000 horsepower, and a railway to connect the Falls with the Great Northern Railway, a distance of four and a half miles. The successful tenderers were Warren, Scharff & Co. of New York, and they have already sub-let contracts for rails, ties and other supplies. They intend to push the work with all possible speed so as to finish it within seven months. The Shawinigan Water & Power Company called for tenders for this work last fall, but owing to some difficulties in connection with the title to part of the property were unable to go ahead, but these have all been overcome. The development of the enormous power at these falls, situated on the St. Maurice River, about seventeen miles from Three Rivers, will have a great effect in stimulating manufacturing in the Province of Quebec, for it is estimated that at least 100,000 horsepower can ultimately be efficiently utilized. It is understood that the company has already closed a contract for the sale of a large amount of power, sufficient in fact to warrant the expenditure called for on the work given to Warren, Scharff & Co.

THE BEST PIPE THREADING and CUTTING-OFF MACHINES



No. 00 Machine, Power Attachment.

ARE MADE BY THE **ARMSTRONG MFG. CO.**
BRIDGEPORT, CONN.

Also Manufacturers of a FULL LINE of **ADJUSTABLE STOCKS and DIES**
And **WATER, GAS and STEAM FITTERS' TOOLS.**

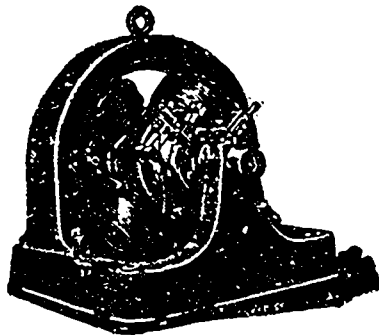
SEND FOR CATALOGUE 27.

Factory: BRIDGEPORT, CONN.

New York Office: 139 CENTRE STREET.

Toronto and Hamilton ELECTRIC CO.

(Late KAY ELECTRICAL MANUFACTURING CO.)



ELECTRICAL MACHINERY
HIGH-CLASS ONLY.

255-7 James St. N., HAMILTON.
Phone 958.

To Lease.

Two Large Four-Story Factories. One

140 x 40 ft.

The other 90 x 60 ft.

RENT, \$1,500 EACH PER ANNUM.

Well Lighted. Shipping facilities the very best by both rail and boat, premises being situated on water front at corner of

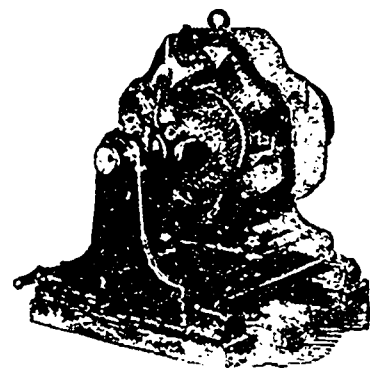
Esplanade and Jarvis Streets,
TORONTO.

Possession Immediately.

Apply to.....

TORONTO CARPET MFG. CO.
TORONTO.

Electrical Construction Co. of London, Limited.



MULTIPOLAR MOTORS & DYNAMOS

And Direct Connected Plants

for Isolated Lighting.

Repair Work a Specialty.

HEAD OFFICE AND FACTORY:

No. 90 YORK STREET, London, Canada.
760 Main St., Winnipeg.

42 York St., Toronto. 131 Granville St., Halifax.

The Canadian General Electric Co., Toronto, manufacturers of electrical machinery and supplies at present situated on Front Street, have leased the building now occupied by the Hyslop Bicycle Co., on King Street East, for ten years. The ground floor will be used as offices of the company, and the salesrooms will be above.

A new method of supplying electric current for lighting, heating and other purposes, according to the New York Commercial, is about to be introduced. It is claimed by its promoters, with whom the process is yet a secret, that its introduction will work a complete revolution in the use of electricity. Experiments that have been quietly going on for some time have been so far successful as to warrant the company to put its inventions on the market. The company is organized to manufacture and sell to secondary companies the use of what

is styled the Roberts' Primary Battery, and will give exclusive territory to such companies, but as it owns patents on the new system in the United States, Canada and Europe, it will have a monopoly of the field. It is intimated that the new electric current is to be generated from chemicals in solution, and that it will be much cheaper than the ordinary current produced from dynamos. The battery, it is said, will furnish light, heat and power equal to a dynamo current, without the use of dynamo, engine, boiler, coal or engineering force.

Mr. A. Belanger, Montmagny, Que., general foundryman and manufacturer of plows, etc., informs us that he is about to enlarge his plant and would be pleased to receive catalogues and price lists from manufacturers of machinery adapted to his line of business, his intention being to install new

machines for about every branch of his industry.

The Syracuse Smelting Works, Montreal, inform us that their works are now being operated to the fullest capacity day and night to enable them to fill a number of large orders now in hand. This activity arises, they say, from the recent and prospective sharp advances in all metals, and the desire of purchasers to have their orders filled before prices still further advance. This company are manufacturers of brass ingots, phosphor tin, refined spelter, stereotype metal, etc., and dealers in block tin, lead, antimony, aluminum, nickel, drosses, old metal, scrap iron and steel, etc.

The Algonquin Milling Co., Algonquin, Ont., has been incorporated with a capital stock of \$10,000.

The saw mill belonging to John Calcott near St. Thomas, Ont., was destroyed by fire April 22. Loss about \$3,000.

The Farmers' Elevator & Shipping Co., Kincardine, Ont., has been incorporated with a capital stock of \$5,000.

The Kingan Hardware Co., Peterborough, Ont., has been incorporated with a capital stock of \$20,000.

The Ontario & Rainy River Contracting & Supply Co., Port Arthur, Ont., has been incorporated with a capital stock of \$80,000, to construct railways and other public works, etc.

McComb & Stanley's oatmeal mill at Lucan, Ont., was destroyed by fire April 20. Loss about \$10,000.

The Northern Pacific Railway will erect another elevator at Emerson, Man.

The Vancouver, B. C., council has passed a by-law to expend \$100,000 on a system of sewerage.

Lennoxville, Que., council will ask for tenders for \$22,000 debentures for a sewerage system and new sidewalks.

A new school house to cost \$22,000 will be built this summer on Winchester St., Toronto.

The city council of Toronto will pass a by-law for the setting apart of \$75,000 for a new technical school building.

..CHICAGO..

TIME RECORDER

A RELIABLE TIME RECORDER MUST POSSESS THESE THREE QUALIFICATIONS

1. - It must be an accurate Timepiece.

We use the famous SETH THOMAS CLOCK.

2. IT MUST PRODUCE A CLEAR RECORD, AND ONE THAT CANNOT BE DISPUTED.

Our Sight-opening feature, whereby each man can inspect his record when made, eliminates all chance for dispute.

3. - IT MUST BE SIMPLE, POSITIVE, AND QUICK OF OPERATION.

The "CHICAGO" has less complicated mechanism than any other Recorder made, and by the simple manner of operating employees can register two-fold more rapidly than on any other.

If you have none you pay for it in lost time every year.

CHICAGO TIME REGISTER CO., CHICAGO ILL

SOLE AGENTS FOR CANADA.

W. C. BULLOCK & CO.,

42 York Street, TORONTO, ONT.

PHONE 293.



Numerical (or Key) Recorder

The Economical Development of Water Power



Horizontal Setting, with Quarter Turn Elbow.

CHICAGO TIME PUMP COMPANY.

Requires, where the supply of water is limited, that every available foot pound of energy contained in it be properly set to work. On the other hand, if the source of power is abundant your interests suggest that the plant be made as compact and powerful as possible, to reduce the space occupied and the first cost.

The Crocker Patent Turbine...

Is primarily adapted for service under any of these conditions, as it possesses great efficiency under varying degrees of gate opening, and the ratio of power developed to diameter of wheel is remarkably large. To those interested we will supply catalogues and particulars of leading plants, together with a copy of latest official Holyoke test, 1899. Water powers reported upon, and estimates prepared. Correspondence invited.

The JENCKES MACHINE CO.,

42 Lansdowne St., Sherbrooke, Que.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

A representative of Messrs Rogers, Brown & Co., of Buffalo, N. Y., was in Hamilton, Ont., a few days ago with a view, it is said, of purchasing a controlling interest in the Hamilton Blast Furnace Co., and an amalgamation with the Ontario Rolling Mill Co., of that city, and the erection of an extensive steel plant.

Negotiations have recently been in progress between the St. Hyacinthe, Que., Hydraulic Power & Electric Light Co. and the St. Hyacinthe Gas Works Co. and a syndicate of Toronto capitalists for the purchase by the latter of the two plants with a view to the operating and managing of both under the one head. The negotiations have now reached such a stage that a final offer has been made of \$175,000 for the plants, subject to the approval of the town Council. When the St. Hyacinthe Hydraulic Power & Electric Light Company was organized some years ago certain privileges were granted by the city, which the Council very properly wish respected and adhered to. According to the contemplated arrangements the prevailing electric and gas rates will remain in force with but a few exceptions. It is the intention of the syndicate to rebuild a portion of the dam at the power house, which is considered somewhat small for the requirements, as well as to alter very materially the electric

system. The power house is situated five miles from St. Hyacinthe at a place called the flats, four heavy copper wires conveying the current for manufacturing and lighting purposes. The gas works will necessitate no great outlay, as they are conveniently situated in close proximity to the city, and call for slight repairs and alterations. It is the general opinion that the deal will be successfully consummated within a few days.

If the necessary water power can be obtained, The Acadia Pulp Co. will erect a paper mill at Milton, N. S., in connection with the pulp mill there.

Messrs. Robert Hunter, Joseph Murchey and associates have been incorporated as The Gasoline Engine Company of Toronto Junction, Limited, to manufacture gasoline and gas engines and motors, steam engines, electric motors, etc.

Messrs. Tooke Bros., Montreal, one of the largest shirt manufacturing firms in the Dominion, have decided to enlarge the scope of their operations. They now have three establishments in different parts of the city, which, of course, causes some inconvenience, and they have for some time been considering a scheme of concentration. The Town of St. Henri has voted them a bonus of \$35,000, with exemption for ten years, providing they will erect a factory to employ

600 hands. They have accepted the offer, and will move there and have all their business under one roof. In addition to the usual shirt business, they intend to go extensively into new lines, such as blouses, ties, etc. They now employ about 600 people, but it is altogether probable that with the extension of their business the number of the hands will be increased.

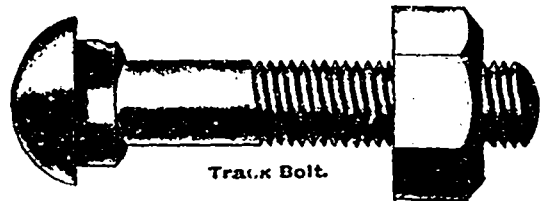
The Wm. J. Matheson Co, New York, have sent us their Bulletin No. 72, showing dyeings of milling fast colors manufactured by Leopold Cassella & Co. It includes a series of dyeings, fast to milling and fulling. Three methods of dyeing are illustrated; direct dyeing, an after treatment with chrome and dyeings produced upon a chrome-tartar mordant. The company say that their cheapness and ease of application, level dyeing properties and fastness to light render them valuable for the production of milling fast shades upon loose wool or slubbing. The Bulletin contains fifteen samples of wool dyed in as many different colors, with full directions for dyeing each color.

The Hamilton Brass Mfg. Co., of Hamilton, are installing in their factory a 30 h. p. "S.K.C." induction motor to drive their shafting. They are also being lighted throughout by electricity.

WE

MANUFACTURE

*Track Bolts and Nuts,
Bridge and Roof Rods,
Wrot and Cast Washers,
Railroad and Contractors' Supplies,
Carriage, Machine, Plow and Special Bolts,
Bridge and Boiler Rivets,
Drop Forgings of all Kinds.*



Track Bolt.

SEND FOR ILLUSTRATED CATALOGUE.



Coach Screw.

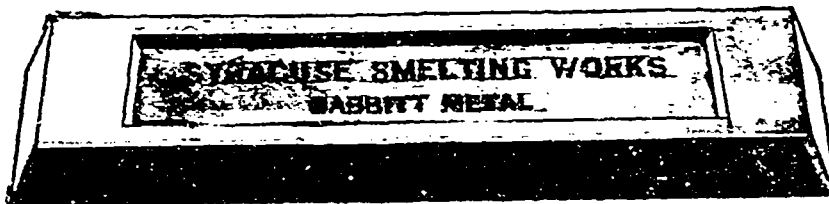
The SWANSEA FORGING CO., Limited

SWANSEA (NEAR TORONTO).

Use Syracuse Babbitt Metal

IT IS THE BEST AND CHEAPEST FOR

WORKS:
332 WILLIAM STREET,
MONTREAL,
Canada
AND
SYRACUSE,
N.Y., U.S.



Paper and Pulp Mills, Saw and Wood Working Machinery, Cotton and Silk Dynamos, Marine Engines and all kinds of Machinery Bearings.

Pig Tin, Lead Ingot, Copper, Brass, Aluminum, Zinc, Spelter, Antimony, etc., furnished promptly.

SYRACUSE SMELTING WORKS.

AGENTS IN CANADA:—A. R. WILLIAMS MACHINERY CO., Toronto; MECHANICS SUPPLY CO., Quebec; JOHN J. BARRY, St. John, N.B.; H. H. FULLER & CO., Halifax, N.S.

The M. Langmuir Mfg., Toronto, manufacturers of trunks, travelling bags, etc., a large portion of whose factory was recently destroyed by fire, are pushing the reconstruction of their works with great vigor. In addition to rebuilding the portion de-

stroyed by fire, a brick extension will be made along King street to the corner of Niagara street, covering an area of 160x50 feet, three storeys high. In this building, at the corner of King and Niagara streets, will be the offices of the company, which,

we are informed, will be of large and comfortable proportions and furnished in elegant style. The show rooms will be in this building.

A meeting of the shareholders of the Hamilton Blast Furnace Co. and Ontario Rolling Mills Co. was held at Hamilton May 1 for the purpose of ratifying the agreement of amalgamation between the two companies. The amalgamated company will apply for a charter at once under the name of The Hamilton Steel & Iron Co. Its capital will be \$2,000,000, and it will erect a steel plant by October in the vicinity of the smelting works. It will have several 100-ton furnaces, and the plant will be up-to-date. Representatives of the new company will visit Pittsburg, Cleveland and Minneapolis in a few days to get ideas on the manufacturing of Bessemer steel, and the information gathered in the American cities will be put to good use in the Hamilton steel plant.

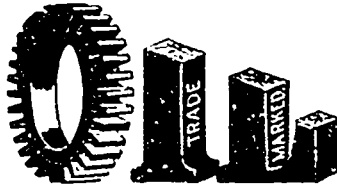
Application has been made to the Dominion Parliament for the incorporation of the Canadian Inland Transportation Company, among those interested being Messrs. Wm. Christie, J. K. Osborne, and Geo. H. Bertram, M. P., of Toronto, Alex. Lumsden, M. P. P., and John McRae, of Ottawa, and Hon. Senator Forget, of Montreal. The company propose to build a fleet of ten steel barges, 276 feet in length, by 43 feet beam, with a capacity of 78,000 bushels of wheat, on a fourteen-foot draft of water. The promoters think they can carry cargoes to Montreal from Lake Superior cheaper than the present rate to New York, and a profitable business in return cargoes. The carrying of ore from Lake Superior to the blast furnace at Hamilton, and to the proposed one at Toronto, is also contemplated. The capital stock of the company will be \$4,000,000.

The large vinegar factory being built in Toronto for the recently formed vinegar trust is about completed, it being expected that it would be put in operation about May 1. It is expected that the output will be about 500,000 gallons of vinegar the first year, after which it will be increased, the capacity of the works being largely in excess of that quantity. Mr. W. D. Wilson is general manager.

"Capitol" Cylinder

"RENOVN"
ENGINE

"ATLANTIC" RED



RELIABLE WELL-KNOWN BRANDS.

ALL ORDERS PROMPTLY FILLED.

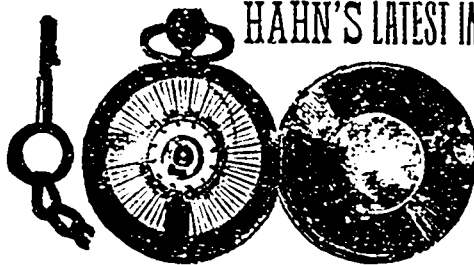
THE...

QUEEN CITY OIL CO.

LIMITED,

SAMUEL ROGERS, President.

TORONTO, CANADA.



HAIN'S LATEST IMPROVED WATCHMAN'S TIME DETECTOR

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

For Circulars, prices and further information address

A. NANZ & CO., 115 Chambers St.,
NEW YORK

This Clock received the First Prize at World's Fair

NAME PLATES FOR

WRITE FOR PRICES.

BECKER NAME PLATE CO.,

34 OLIVER STREET. - BOSTON, MASS.

DYNAMOS,
MOTORS,
ANY TYPE OF
ELECTRICAL
APPARATUS
AND ALL KINDS
OF MACHINERY

THE TORONTO PATENT AGENCY, LIMITED

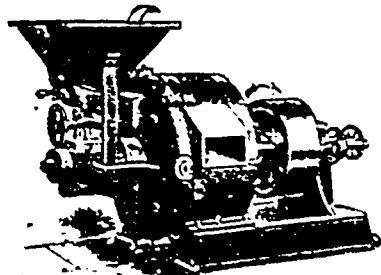
Head Office, 79, 80, 81 Confederation Life Building.
CAPITAL, \$25,000.00.

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

Pipe and Boiler Coverings, Engine Packings,

LUBRICATING OILS, GREASES, AND BOILER COMPOUND, COTTON WASTE, ETC.

EUREKA MINERAL WOOL and ASBESTOS CO., 136 Bay Street, - Toronto.



ROCK

CRUSHERS

EMERY

MILLS

AND

MILLSTONES.

FRENCH BUHR AND ESOPUS STONES. *Send for Circular.*

STURTEVANT MILL CO.

BOSTON, MASS.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

A CANADIAN NICKEL REFINERY.

Mr. R. G. Leckie, managing director at Sudbury, Ont., of the Orford Copper Company, of New York and New Jersey, was in Toronto a few days ago, and to a newspaper reporter expressed the anxiety of his company to establish a large plant in Canada for the refining of nickel and copper matte, which, he said, would be done as soon as the conditions are favorable. Mr. Leckie was en route to Ottawa on business in connection with the formation of a company to carry out the above intention. A charter has been applied for, the bill being in charge of Dr. Haley, M.P. for Hants. It will come before the Private Bills Committee at Ottawa in a few days.

The new company, as provisionally organized, will be composed of directors from the Canada Copper Company, Orford Refining Company and other Canadian capitalists. They are as follows:—Messrs. Robert M.

Thompson, President Orford Refining Company, New York; John J. Thompson, Manager Metallurgical Works, Constable Hook, N. J.; James R. Wilson, of James Robertson & Company, metal merchants, Montreal; E. Goff Penny, M.P., Montreal; Hon. C. C. Colby, ex-M.P.P., Stanstead; R. G. Leckie, Sudbury.

"We are exceedingly anxious to locate in Canada and do all our refining here," repeated Mr. Leckie. "At present all the nickel matte has to be shipped from Sudbury to our refining works at Constable Hook, N.J., to be reduced to pure nickel and copper. The Canada Copper Company is continually charged with desiring to work against the interests of Canada by doing its refining in the United States. I want to say that this is not the case."

"What are the conditions that are here lacking and which you now have in New Jersey?"

"In the first place we want cheaper coal. At present there is a duty of sixty cents per long ton on bituminous coal entering Canada. While coke, on which there is no duty, is used by the smelter at Sudbury, yet we need coal for refining, and it is too expensive here compared with what it is in New Jersey. Another important article of which we use a good deal is a flux of soda ash or of sulphate of soda, in refining the nickel. It is plentiful and cheap in New Jersey, but it is not so by any means in Canada. Should we establish here we should have to import it for a time, but no doubt a supply would ultimately be forthcoming. We would also want to be in a position where we had plenty of power, and where there would be good transportation facilities both for the shipping of ore from the mines to the refinery and for the export of nickel to the outside market.

"Given conditions that are at all approximately as favorable as we have in New

Shafting, - Hangers, - Pulleys.

WE MANUFACTURE

And carry a full line of the above requisites for Factory and Mill purposes. Send us your specifications! Our prices will surprise you! Afterwards our goods and prompt shipment will please you.

We issue a 270 Page Catalogue FREE for the asking.

DODGE MANUFACTURING CO. of Toronto, Limited,

Works, Toronto Junction. Office, 74 York St., TORONTO.

Headquarters in Montreal—LAURIE ENGINE CO, 321 ST. JAMES STREET.



B. GREENING WIRE CO.
(LIMITED)
WIRE MANUFACTURERS
& METAL PERFORATORS
**HAMILTON
& MONTREAL.**

Wire Screens for Every Class of Material.

Perforated Metal of Steel, Copper, Brass, Zinc for all purposes.

Special Attention given to Minors' Requirements.

TO MANUFACTURERS...

Bar Iron, Steel, Boiler Plate,
Rivets, Tube Expanders,
Hammers, Metallic Letters

and
Figures for Patterns.

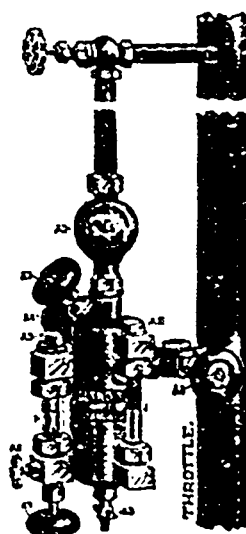
RICE LEWIS & SON

(LIMITED)

GOR. KING AND VICTORIA STREETS, TORONTO.

ADVERTISE IN THE CANADIAN MANUFACTURER.

SEND FOR RATES.



THE BEST JUDGES OF ENGINES

THOSE WHO BUILD HIGH-GRADE ONES
WILL USE

The Detroit Sight-Feed Lubricators

This is equally true of Canadian as of American engine builders. They know that the valve friction must be overcome if their engines are to work at their best. They know from experience that the Detroit Lubricators do this, and where so much is at stake they want only the best. It should be the same with all engine owners. The saving our Lubricators effect will pay for themselves very soon.

Send for Catalogue and Prices.

Detroit Lubricator Co.,
DETROIT, MICH.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Jersey, and we shall put up in Canada the largest refining plant in the world. We have ample capital and a staff of experienced metallurgists equal to any in the world. The President of the new company is Mr. R. M. Thompson, who is the chief promoter of the enterprise. The charter will provide for a capital of \$2,000,000, but it will probably permit of an increase to \$5,000,000.

"We will not only make use of Sudbury ore if we establish here," Mr. Leckie continued, "but will also draw on the ore from British Columbia. There is a great deal there now from the large mines which contains copper and other metals which are wasted on account of the lack of a refinery. We would have them shipped to our refinery, where all the metal would be extracted from them. This would, of course be dependent upon our getting satisfactory freight rates from British Columbia. Our refinery would be made capable of treating 200 tons of matte per day. We would be at an advantage here in establishing our plant, as we have much more experience than when we began in New Jersey. Our works in the latter place would not be given up, as we would supply them with matte from other places if necessary. As the United States only consumes one-fifth of the nickel product

of the world, we would no doubt look elsewhere for a market."

Mr. Leckie was firmly of the opinion that Canada has no monopoly of the supply of ore, and quoted from a letter he had received during the day from the Secretary of the Orford Copper Company at New York, in which he stated:—"The active agitation of the Canadian papers is having the effect which we have expected, for to-day we are in receipt of a cablegram from Mr. R. M. Thompson, our President (now in England), informing us that he has purchased and is shipping 3,000 tons of New Caledonia nickel ore to New York, and is offered 5,000 tons more of the same at eleven cents per pound f.o.b. New York."

Mr. Leckie is firmly opposed to the imposition of an export duty on nickel matte by Canada, saying it would simply tie up the business at once and close the Sudbury mines, as there would be no market that could buy the product at the increased price.

Although not saying as much, it appeared from the conversation that the new refinery, if erected, will be located in central Ontario, where there will be good water communication, and in this connection it is understood that Toronto has a very good chance of securing the industry.

"INDIGO J."

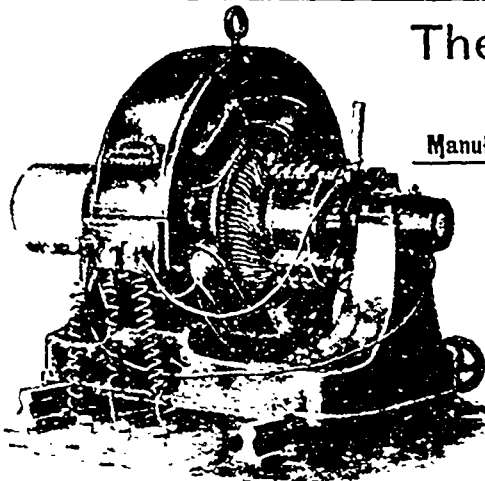
A few weeks ago a telegram from Berlin, Germany, announced as follows:—

As long ago as 1880 a German chemist, Dr. A. Von Bayer, discovered several methods of obtaining indigo blue from cinnamic acid and bitter almond oil, which themselves are a product of coal tar, but all were too costly for commercial purposes.

Other chemists took up the work where Bayer had left it, and after years of toil it was announced eighteen months ago that the "Baden Aniline and Soda Works" at Ludwigshafen, on the Rhine, were in a position to supply indigo obtained by an improvement of the process discovered by Dr. Bayer, and at a price low enough to compete with natural indigo.

The raw material for the new product is naphthaline, a constituent part of coal tar, known to the public as an excellent remedy against moths, etc., and which by a series of elaborate operations, is converted into indigo blue. The factory has gradually increased its producing powers and hopes soon to be able to export to other indigo-using countries.

Coincident with this rather stale news the Textile Manufacturers' Journal, of New York, published the following:—



The Jones & Moore Electric Co.,

Manufacturers and Contractors

All Work Fully Guaranteed

ELECTRIC LIGHT and
POWER PLANTS a Specialty

A Few Second-Hand A 1 Machines
For Sale Cheap

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CORNHOLME MILLS, TODMORDEN, ENGLAND.

BOBBIN AND SHUTTLE MANUFACTURERS.

FORTY PRIZE MEDALS AWARDED.

HIGH-CLASS WORKMANSHIP. SEVENTY YEARS' REPUTATION.

LARGEST BOBBIN MAKERS IN THE WORLD—(Over 1,400 Workmen).

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ATLAS BOBBIN WORKS, GARSTON, LIVERPOOL.

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14 MARKET PLACE, MANCHESTER

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Engine Packing,

Magnesia Pipe Covering

Lubricating Oils

and Grease.

The

William C. Wilson Co.
Limited

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TORONTO, ONT.

JNO. R. GASSIN CO'Y.

Spokane, Washington.

**MINE PROMOTERS
and ASSAYERS.**

Reports made on Mining Properties,
and advice given on the merits of
Mining Stocks and Properties.

CHARLES F. CLARK Pres. JAMES CHITTENDEN, Treas.
ESTABLISHED 1849.

**THE BRADSTREET
MERCANTILE AGENCY**

THE BRADSTREET COMPANY, Proprietors
346 & 348 Broadway, NEW YORK.
Offices in the principal cities of the United States, Canada, the European Continent, Australia, and in London, England.

The Bradstreet Company is the oldest, and, financially, the strongest organization of its kind—working in one interest and under one management—with wider ramifications, with more capital invested in the business, and it expends more money every year for the collection and dissemination of information than any similar institution in the world.

TORONTO OFFICES:
McKinnon Bldg., Cor. Jordan & Melinda Sts.
THOS. C. IRVING, Superintendent.

The hearing before the Board of General Appraisers in the case of the importers' protest or "Indigo J," or synthetic and artificial indigo, as it is sometimes called, was resumed last Wednesday. The session was devoted entirely to the consideration of rebuttal testimony on the part of Messrs. William Pickhardt and Kuttroll, the protestants. The array of witnesses produced by the protestants was startling in its numbers, and the competence of its members to give the most complete and conclusive testimony as to the practical workings of the said "Indigo J." Some twenty-seven representatives from the most prominent woolen and cotton mills and dyeing establishments of the country were present including millowners, treasurers' buyers, and several prominent dyers. Their testimony was that "Indigo J" was in no sense different from vegetable indigo, and was sold to them as indigo, used by them as such and in precisely the same manner as any other indigo; that the so-dyed fabric was

absolutely indistinguishable from a fabric dyed with vegetable indigo, that "Indigo J." had been used in executing army contracts, that the goods so dyed had satisfactorily withstood all the rigorous tests to which the Government chemists had submitted the goods. Those competent to do so testified that the only thing that prevented the exclusive use of "Indigo J" was a mere matter of price alone.

Proceeding then to the next point in dispute, namely that as to commercial designation in the trade and commerce of this country, it was shown on behalf of the protestants that long before the disputed date, July 24, 1897, protestants had sold "Indigo J" in large quantities. The meaning of the letter "J" in the title was the subject of not a little cross examination on the part of the Government. The Government desired to show that the letter "J" has a special meaning. It was shown that this letter had been selected quite arbitrarily to designate this particular strength or quality of indigo, just as all individual producers of, or dealers in, indigo are in the habit of doing.

In addition to all this evidence the importers proved by competent witness Charles M. Stillwell, of the well-known firm of Stillwell & Gladding, analytical chemists of this city, that as regards commercial methods of valuation "Indigo J" behaved in exactly the same manner as any other indigo which he had met in his twenty-five years' experience.

Profs. Morton and Chandler were then recalled to show the difference between "Indigo J" and what is commercially known as indigo paste or indigo extract, which are well known to be sulfoacids of indigo. Both these gentlemen again affirmed their inability of certainly and definitely distinguishing between synthetic and vegetable indigo, and in addition showed by actual exhibition chemically there was no difference between "Indigo J" and indigo as sold in lumps. This testimony was supported by evidence submitted showing that even with all their experience the Government chem-

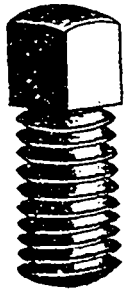


WATER WHEELS

For Heads of 3 Feet to 2000 Feet.
ADAPTED TO MILLING AND ALL POWER PURPOSES.

Recent tests at Holyoke enable us to guarantee:
The Largest Power ever obtained from a wheel of the same diameter. The highest speed ever obtained for the same power. The highest mean efficiency ever obtained when running from half to full gate. We guarantee also a runner of the greatest possible strength. A gate unequalled in quickness and ease of opening and closing.
Write for pamphlet, stating your Head.

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CATALOGUE
and
PRICE LIST.

SEND FOR
CATALOGUE
and
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The Diamond
Machine & Tool Co.

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Manufacturers of....

Machine Screws

OF EVERY DESCRIPTION.



BELTING

Leather Belting,
Lancashire Hair,
English
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Head Office and Factory—
MONTREAL

OAK

WESTERN TRADE:—Toronto Stock Depot.

BAY STREET.

Phone 374.

STORAGE BATTERIES

THE LIGHTEST. THE STRONGEST. THE BEST.

If you use Electricity wo Batteries Repaired and Recharged
can save you Money. at Reasonable Rates.

The Croftan Storage Battery Co.

W. M. H. NELLES. CANADIAN BRANCH. REIN WADSWORTH.

22 Sheppard Street, Toronto, Ont.

THOMPSON & CO., Manufacturers
of

BOBBINS and SPOOLS

FROM SELECTED STOCK.

Correspondence Solicited
Orders Promptly Filled..... • SHERBROOKE, P. Q.

DO YOU USE
CORRUGATED SHUTTLES

FOR WEAVING FROM COP?

WE MAKE THEM. Write for Prices and Samples.

JOHN HOPE & CO., LACHUTE SHUTTLE and
BOBBIN WORKS,
LACHUTE, QUE.

ists, who deal with these articles day in and day out, had been unable to distinguish vegetable indigo from synthetic indigo when they examined it.

Finally it was shown that synthetic indigo occurs in commerce not only in the paste form known to the trade as "Indigo J" but also in cubes and in powder.

This concluded the protestants' rebuttal testimony, and an adjournment was taken, when the arguments will be presented.

SMALL ELECTRIC MOTOR USES.

Those who have the management of public electricity supply undertakings know full well the value of the electric motor as a factor in the reduction of the working costs.

But there are other probably greater effects which the electric motor will produce with its more complete adoption in the near future—the writer refers to the beneficial effect upon the trade and productions of the country, and the hygienic and social effect on the community generally. In the first of these aspects it is possible to foresee the revival once more of a number of small and independent industries, such as existed, but under different conditions, in former years. The possibilities are already being grasped by the artisan in France, Germany, Switzer-

land and the United States. By the aid of the electric motor he begins to find that he can at least hold his own in competing with immense manufacturing concerns and combinations; he has a practically unlimited available power at his own door—which is a great boon to the artisan, and one which offers him an inducement to become his own master.

In a very small and limited degree the gas engine has already accomplished something in this direction, but its many imperfections, its cost, and the fact that it has never been available on the hire system, have kept it more or less in the background. The effect of hiring-out electrical motors is thus mutually advantageous, and its natural tendency is to create fresh demands, in fact

the municipality which includes this schomo in its electric light undertakings offers a great inducement to the influx and establishment of new industries within its area.

With a more complete return to a multiplicity of industrial operations, there may also revive some neglected trades. From an hygienic point of view, the electric motor is far and away the best; it is cleanly in its working, gives off no deleterious gases and displaces the boiler and smoky chimney. One of the ultimate results must also be the raising of the status of the working part of the community. By becoming his own master the artisan gains self-respect, becomes more resourceful and therefore a more important member of society; and the more intelligent interest which he will display in his business must appreciably affect the general welfare of the country.—Cassier's Magazine.

Paris Exposition, 1900.

KELLY'S DIRECTORIES, LTD.,
OF LONDON, ENG.,

DESIRE to announce to their many patrons in the Dominion, and to Canadian Manufacturers generally, that they have made arrangements for prominent space in the Paris Exposition in 1900, in which to Exhibit their

COMMERCIAL DIRECTORIES

prominent amongst which are the Merchants, Manufacturers and Shippers of the World. Employes conversant with the French, German, Italian, Spanish and other languages will be in daily attendance, and the names and addresses of British and Colonial Manufacturers will be furnished all enquirers interested therein.

..TO LEASE..

....OR....

FOR SALE

LARGE THREE-STORY BRICK FACTORY

Formerly occupied by Cobban Manufacturing Company, corner Terauley and Hayter Streets, Toronto. Over 40,000 square feet flooring, Boilers, Engine, etc., also yard accommodation.

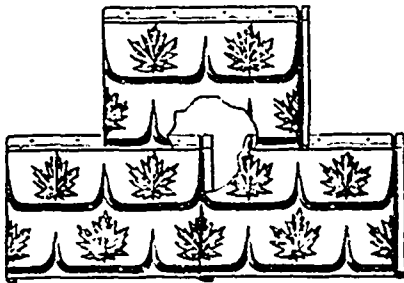
W. & E. A. BADENACH,

15 and 17 LEADER LANE, TORONTO.

A destructive fire occurred in Montreal on April 30, involving a loss of about \$100,000. It started in Vinetto & Co's shoe factory, loss about \$10,000, also destroying the premises of the New York Laundry Co., loss about \$10,000; Lymburner & Matthews, machinists, loss \$5,000; The Universal Patent Developing Co., loss \$10,000; Kieffer Bros. shoe factory, loss \$10,000; Bernard & Magor, carriage factory, loss \$10,000. The building in which most of these concerns were domiciled and which was totally destroyed, belonged to the Beaudry estate, and was valued at \$25,000.

IF PEOPLE ONLY KNEW

the advantages of using metal roofing constructed on our patent "SAFE-LOCK" principles they would not accept a substitute.

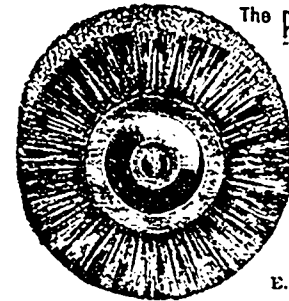


OUR "SAFE-LOCK" SHINGLES

interlock each other on all four sides—leaving no openings for snow or rain to get in. They are easily put on by anyone—are practically fire and lightning proof and give a building a neat finished appearance. We can tell you more. Ask for free catalogue and samples.

THE METAL SHINGLE & SIDING CO.
(LIMITED)

PRESTON, - ONTARIO.



The **PRESTON BRUSH**
FACTORY

Manufacturers of ALL KINDS OF BRUSHES.

ORDERED MACHINE BRUSHES } Specialty

Mail Orders Promptly Filled.

E. B. S. Lynds, Prop. Pat. U.S. & CAN.

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MANUFACTURERS OF

Hydraulic, Steam,

Electric

and Hand-Power

. ELEVATORS .

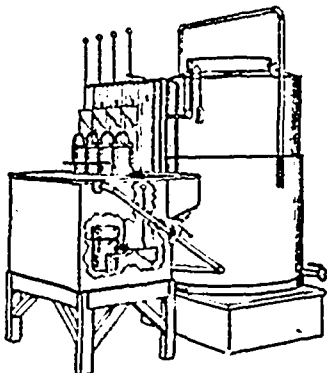
78 ESPLANADE ST. W. TORONTO.

FRICTION PULLEY

BOARD If you are not yet using it, send for sample.

The Dominion Leather Board Co.,
MONTREAL, QUE.

Please mention CANADIAN MANUFACTURER



Sizes—25 light to 2,000 lights.

ACETYLENE GAS

Ideal Generator the only machine that submerges the carbide.

No Opening of generator.

No Heat in generator.

No Overgeneration.

No Bad Odour through house.

No Danger.

Recognized by all EXPERTS as the PROPER PRINCIPLE

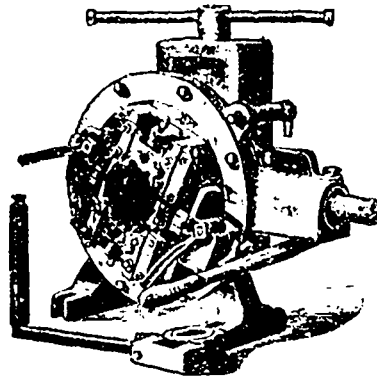
Town Lighting and Large Plants a Specialty

J. WALLACE & SON, 150 King St. East, Hamilton, Ont.

A NEW PIPE THREADING MACHINE.

A new machine which has just been placed on the market by the Armstrong Mfg. Co., of Bridgeport, Conn., is shown in the accompanying illustration. It is built on the same general plan of some smaller machines manufactured by the company, but it has some important modifications. The new machine will thread pipe from one to four inches in diameter. It uses the regular Armstrong stock dies which are put into the machines and adjusted in the same manner as the hand stock. The dies can be opened after cutting the thread, and when the pipe is removed can be locked back to the standard size without resetting. This is accomplished by an automatic locking device which is operated by simply pulling a lever. This lever is an improvement over the old form of machine, and is shown at the left of the illustration. The dies however, can be adjusted to the variations

of fittings the same as in the stock. All the gears and moving parts of the machine run



Armstrong Pipe-threading Machine.

in oil, being enclosed in a chamber which covers them from chips and dust. The die

head has no teeth on the part where it fits into the shell and forms a bearing, in this way preserving its bearing surfaces and making it impossible to get loose. In addition to this bearing being preserved by not revolving on top of the gear teeth, there is an inner journal of large diameter, thereby still increasing its wearing surface, and preventing the die head from becoming loose. A powerful, self centering vise, which exerts its power on the centre of the jaws and not on the side, is used with this machine, and will hold the pipe being threaded with a light pressure of the lever. The construction of the machine admits of its being fastened to a bench or placed on an iron stand which is furnished when desired. The machine here shown is designated as No. 00 and has a cutting off attachment for cutting pipes the same as the Armstrong Co.'s larger machines. The total weight of the new machine, without the stand, is 370 pounds.

ROOFS FOR THE BARN.

"A good barn is not a good barn unless it has a good roof."

Pedlar's Steel Shingles and Siding

Are water, fire, lightning and storm proof, and being constructed by modern machinery from the best stock obtainable, are superior to any similar goods on the market.

Sold by all dealers.

Do not accept any others that are "just as good," but get the genuine, old reliable "The Pedlar Patent."

Made only by
Pedlar Metal Roofing Co.
OSHAWA, CANADA.

THE SMART-EBY MACHINE CO.,

Steam and Gas Engines,
Pumping Machinery,
General Machinery.



LIMITED
193 BARTON STREET EAST
HAMILTON, ONT.

WRITE US BEFORE PLACING YOUR ORDER.

CHEMICAL COMPOUND COMPANY **C**ORRECTLY COMPILED CHEMICAL COMPOUNDS **C**IVILITY CAREFULNESS COMPLETENESS CONTINUITY

DO YOU KNOW

That you are paying for Boiler Compound all the time whether you use it or not?

IF YOU DO NOT BUY

You will pay your coal dealer more than its cost in the extra Coal you burn.

Zinkolene Saves Money

THE CHEMICAL COMPOUND CO., 66 River Street, - TORONTO.

ONTARIO GOLD MINING DISTRICT :

- Sultana Mine.
- Foley Mine.
- Mikado Mine.
- Olive Gold Mine.
- Cameron Island Mine.
- Hammond Reef Mine.

A Few Mines



WHO USE

BRITISH COLUMBIA :

- Le Roi Mine.
- War Eagle Mine.
- Old Ironsides Mine.
- Centre Star Mine.
- Crown Point Mine.
- Knob Hill Mine.

CANADIAN RAND DRILL COMPANY, Montreal

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

FUEL COST AND MECHANICAL DRAFT.

The possibilities in the way of reduction of fuel cost in modern boiler practice by the introduction of mechanical draft are well exemplified by the accompanying results obtained at the United States Cotton Co., Central Falls, R.I. This record covers a period of fifty-two weeks.

Number of hours run.....	2,998.
Average indicated horse-power....	1,543.84
Coal.....	Pounds burned. Cost.
Buckwheat.....	6,074,400 \$7,316.89
Anthracite coal.....	1,173,826 800.34
Cumberland.....	565,906 836.00
Total.....	7,814,132 \$8,953.23

Cost per ton.....\$2.20
 Cost per 1 h.p. per year.....5.80

COMPOSITION OF MIXTURE.

Buckwheat.....78 per cent.
 Anthracite dust.....15 "
 Cumberland.....7 "
 100 per cent.

The plant consists of three Babcock & Wilcox boilers of 325 rated horse power each, a total of 1,005 rated horse power. The engine is a cross-compound Harris-Corliss, developing, as will be noted, an average of 1,543.84 indicated horse-power. The remarkably low fuel cost of \$5.80 per 1 h.p. per year in a plant without economizers, is primarily due to the employment

of a low grade mixture costing only \$2.20 per ton, the burning of which has been rendered possible by the introduction of mechanical draft. The draft of the chimney which was previously employed lacked the intensity necessary for the free combustion of this fuel, and as a consequence it had been necessary to use Cumberland semi-bituminous Coal.

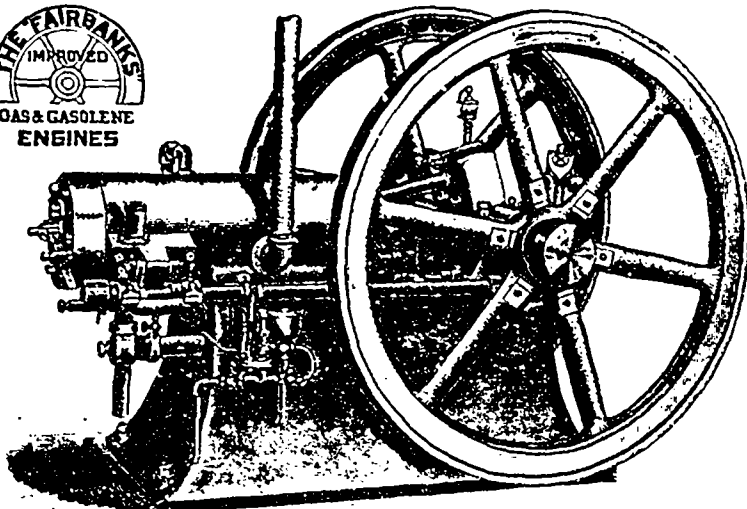
The installation of the fan, costing less than \$600, brought about an annual saving of no less than \$6,500 in the fuel bill. The fan, which was built by the B. F. Sturtevant Co. of Boston, is provided with a direct attached engine, the speed of which is regulated by a device of the Chief Engineer, Mr. Thos. P. Burke, whereby a scarcely noticeable change in the steam

You Want Cheap Power.

FAIRBANKS GAS AND GASOLINE ENGINES

WILL DO YOUR WORK AT LOW COST.

ESPECIALLY ADAPTED FOR



ELECTRIC LIGHTING,	Running Printing Presses
HOISTING,	Agricultural Machinery,
DAIRY MACHINERY,	Pipe Threading Machines,
MACHINE SHOPS,	Ore and Stone Crushers,
CARPENTER SHOPS,	Grain Cleaners, and
	Elevating Machinery.

YOU SAVE

Wages of Engineer and Fireman,
 Difference of Cost in Fuel,
 Repairs to Boiler and Pumps,
 Time Spent in Starting.

Isn't it Worth Investigating?

THE FAIRBANKS COMPANY, 749 CRAIG STREET, MONTREAL.

**Reduce Your Fuel Bills
 Increase Your Output...**

BY USING

The IMPROVED JONES UNDERFEED STOKER

Guaranteed Increased Economy, from 10 to 30 Guaranteed Increased Boiler Capacity from 10 to 100.

NO ASHES. NO SMOKE. NO TROUBLE. NO MONEY REQUIRED IF GUARANTEES ARE NOT FULFILLED.

The First and Only Successful Underfeed Stoker.

No Underfeed Stoker is successful without infringing our Patents, and the public are warned against importing or using infringing devices.

N.B.—Have you seen our Underfeed as applied to Houses, Schools, Churches, etc.? (Send for Circular).

For Estimates and other Information write

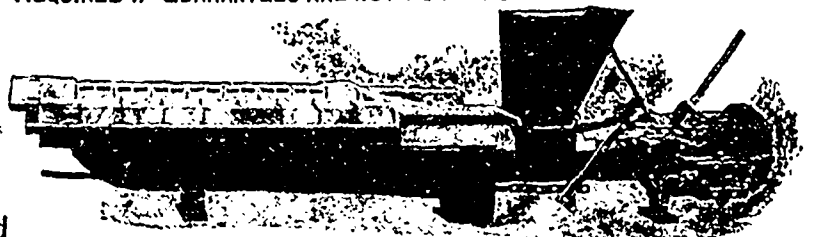
The General Engineering Co. Limited

SOLE MANUFACTURERS FOR CANADA,

Head Office.... 80 CANADA LIFE BUILDING, - TORONTO.

Montreal—A. TREVETHICK, - Box 1123.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



pressure immediately alters the speed of the fan, and consequently the intensity of the draft, and instantly brings the pressure back to normal. As a result the steam pressure remains almost absolutely constant.

IRON IN NOVA SCOTIA.

Nova Scotia is to have a generous share in the industrial expansion of the day, as a project is fairly launched for the development of one of the richest iron deposits in Cape Breton, if not on the continent. The new iron plant is to involve an expenditure of from three to six million dollars, and to establish iron production on a scale that will make competition possible with the gigantic smelters of Europe and the United States. In Cape Breton, where immense deposits of iron and coal are side by side, the natural conditions exist for a great iron industry, and the situation is further improved by the proximity of shipping facilities for the largest ocean vessels. The offer of Mr. H. M. Whitney to establish smelting works for a total outlay of not less than \$3,000,000 has a satisfactory business aspect, as he asked only the exemption of his coal from the Provincial royalty for five years. After considering the proposition the Government decided to remit half the royalty on the coal consumed, and to extend the period of exemption to eight years, that policy being found more in accord with the needs of Provincial revenues. The amended proposition has been accepted, and work will soon be under way.

The Province now obtains a revenue of \$278,000 from coal royalties, a substantial share of a total revenue of \$856,000. Mr. H. M. Whitney, who has entered into this agreement, is head of the Dominion Coal Company, which secured control of extensive coal deposits in the island. Under his management the output of coal rapidly increased, and the Provincial royalties swelled from \$70,000 to \$278,000. Mr. Whitney provided a large market for this output by organizing a coke and gas company in Boston, which involved an expenditure of \$5,000,000. The proposed smelting works will be another opening for the coal output. In the agree-

Felts for Pulp Mills

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

HAMELIN & AYERS, Lachute Mills, P.Q.

ACETYLENE GAS...

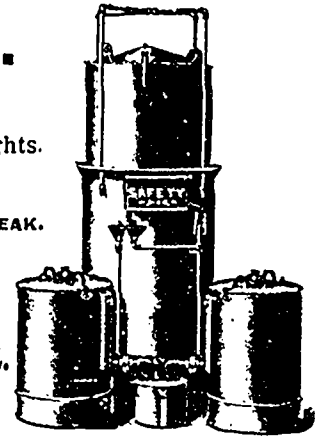
THE SAFETY LIGHT AND HEAT CO.

Have in successful operation Machines from 5 to 200 Lights.

SIMPLICITY AND SAFETY are the leading features. Being deeply water sealed **IT CANNOT LEAK. IT MAKES THE GAS COOL**, washes it twice, and thus makes only **PURE GAS. NEVER CLOGS THE BURNERS.**

THE SAFETY LIGHT & HEAT CO., Dundas, Ont.

Sole Proprietors and Manufacturers of the **CELEBRATED CLIFF-WARDLAW GENERATORS.** SEND FOR BOOKLET.



The London Machine Tool Co., LONDON, ONT.

Toronto Office, (PHONE) 42 York Street. (293) **MANUFACTURERS OF GENERAL MACHINERY....**

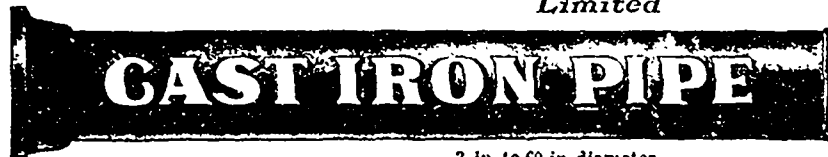
Having recently sold our patterns and plant to the A. R. Williams Co., of Toronto, retaining only such machines as are useful in our business, we beg to say that we are rapidly putting in New Machinery, from new and improved designs, and are now in a position to receive orders for all Standard Tools for Metal Working in all branches. It will be our aim, by personal supervision of the product of works, with expert men of large experience at the head of each department, to turn out nothing but first-class work at moderate prices. And as we intend to deal directly with the manufacturers, they will be enabled to get their machinery at first cost.

As we shall not be able to personally visit each manufacturer, it is for this purpose that we publish this advertisement. This is our agent who is going about to solicit a share of your patronage. We are thankful for the patronage extended to us in the past, and hope that we may secure an extension of the favors for the future.

- All correspondence relating to the following Tools will be promptly answered, viz:
- LATHES** Engine, Gap, Break, Turrot, Fox, Spinning, Etc.
 - PLANERS** - Standard, Crank, Plato, Etc.
 - DRILLS** - Standard, Sensitive, Multiple, Radial, Etc.
 - MILLING MACHINES** - Lincoln, Plain, Universal, Etc.
 - SHAPING MACHINES** - Whitworth, G. & E. Rack-Driven, Etc.
 - HAMMERS** - Steam, Sandage Drop, Stiles Drop.
 - BULL-DOZERS** for all purposes.
 - PUNCHES AND SHEARS** for Plato, Angles, Channels, Gauges, Etc.
 - PRESSES** for Cutting, Stamping, Drawing, Wiring, Rivoting, Etc.
- We shall also esteem it a pleasure to give quotations on Special and General Machinery in our line.

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

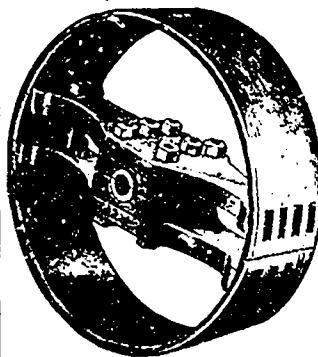
THE GARTSHORE-THOMSON PIPE & FOUNDRY CO. Limited



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 WOOD SPLIT PULLEYS, RIM... (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. Manufacturing Co., of Toronto, 257 King St. West, Toronto.

ECO MAGNETO WATCHMAN'S ELECTRIC CLOCK.

Without Batteries.

Write for descriptive circular to

Reo Magneto Clock Co.,

Room 71, 620 Atlantic Avenue, BOSTON, MASS.

MONTREAL ELECTRIC CO., 1898 Notre Dame Street, (Balmoral Hotel Block).

Agents for Province of Quebec.

John Starr, Son & Co. (Limited), HALIFAX, N.S.,

Agents for the Maritime Provinces.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

mont with the Dominion Coal Company there is a minimum royalty which must be paid every year, even if the production falls below the requisite figure to incur that impost. A clause in the new agreement guards the interest of the Province in that respect by providing that the partial royalties will not be included in making up the minimum. The new industry will cause an immediate increase in Provincial revenues, and will make an additional return of about \$100,000 a year after the eight years of partial immunity expire.

LUXFER PRISMS.

Thomas W. Horn, William McKenzie, E. B. Osler, M.P., Frederic Nicholls and associates, all of Toronto, are applying for incorporation with a capital stock of \$400,000 to take over the business of the Luxfer

Prism Co., Toronto. The company will erect a large factory on King Street comparatively adjacent to the centre of the city. The manufacture of luxfer prisms will be gone into on a large scale, the business of the old company having developed to such an extent that a larger plant had become an absolute necessity.

The factory which will be erected will occupy a space of about 175 by 40 feet, but because of the heavy machinery used the building will only be two storeys high. In addition to the manufacture of luxfer prisms, the company will make all the better classes of building materials, such as artistic iron work and galvano ornamental designs. The building will be specially adapted for turning out luxfer prisms, however, and two immense electro-glazing tanks will be one of its features.

The development of the luxfer prism company is interesting, because it was in Toronto that the first luxfer prism was put to a commercial use and the first company to control it was formed. Since that time the prisms have been patented in every commercial country in the world, having an average of sixty patents in each country and commanding a capital of \$3,000,000. The business since its inception three years ago has been handled by Mr. T. W. Horn.

The new company will, as quickly as the final arrangements in connection with existing leases on the property secured have been completed, proceed with the erection of the factory.

Messrs. Rider & Kitchener will erect a veneer and excelsior factory at Lindsay, Ont.

JOHN J. KELLER & CO.

104 and 106 MURRAY ST.
NEW YORK

220 Church St., Philadelphia.
135 Pearl St., Boston.
18 Pryor St., Atlanta, Ga.

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

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

MANUFACTURED BY
JOHN R. GEIGY & CO.
BASLE, SWITZERLAND

**LIGHT YOUR
FACTORY WITH**

LUXFER PRISMS

The latest device for

LIGHTING

dark rooms and
offices

By Daylight

For catalogue
and estimates
write to

**Luxfer Prism
Co'y, Limited.**

58 Yonge Street, - TORONTO.



**The
Best
of
Everything**

is not a bit too good for us. It is the kind of material we use in the manufacture of Shafting, Pulleys, Hangers, Tube Cutters, Pipe Cutting Machines, Swing Saws, Wood Lathes, Dough Mixers, and Paper Box Machinery.

Prices furnished
on application.

G. T. PENDRITH & CO.,

73 to 81
Adelaide St. West, TORONTO.

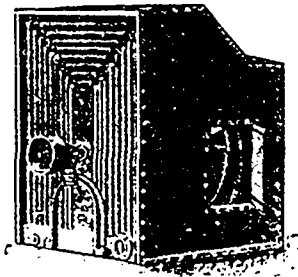
HEATING . . .

The Fan System of Steam Heating for Heating
of Factories and all Classes of Buildings.

DRYING . . .

Appliances for Drying

**Lumber, Brick, Wool, Cloth,
Hair, Soap, Glue, etc.**



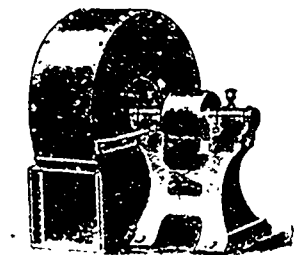
Heater and Housing.

VENTILATING . . .

Ventilating Fans for removal of Dust, Foul Air, etc.

WRITE FOR CATALOGUE AND PRICES.

**McEachren Heating and
Ventilating Co., GALT, ONT.**



Fan.

F. E. ATTEAUX & CO.

53 Colborne Street,
Toronto.

15 Lemoine Street, Montreal.

Boston, New York,
Philadelphia, Chicago, and
Gloucester, N.Y.

**Dyewood Extracts,
One Dip Alizarines,
Aniline Colors,
Dyestuffs and
Chemicals.**

A NEW ELECTRIC PROPELLER VENTILATING FAN.

Since the B. F. Sturtevant Co., of Boston, Mass., has entered extensively upon the manufacture of electric motors and generating sets, it has been carefully studying the

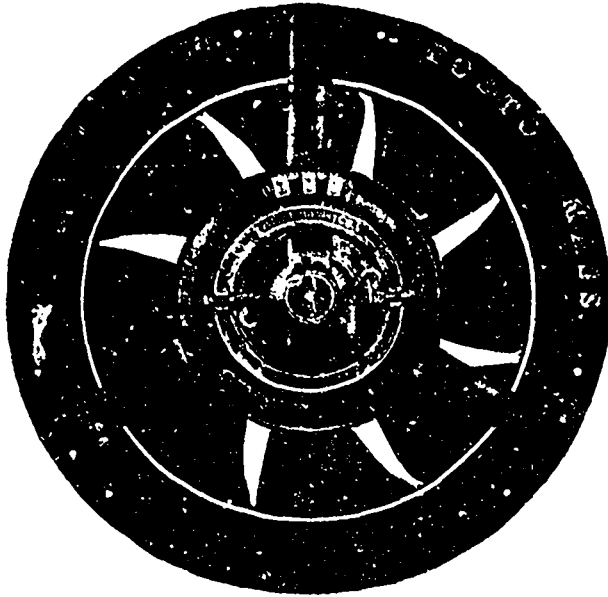
panying engravings, showing views of one of their electric ventilating fans, which have just been put upon the market.

The fan wheel has eight blades rigidly attached to a spider at the centre, and held in place by a hoop at the periphery at an angle of approximately thirty degrees. The angle is increased in such a manner that as the centre is approached, the theoretical velocity of the air remains practically constant. In other words, the delivery edge is helical, and the air is picked up on the inlet edge of the blades at low velocity. When well under the influence of the blades, it is accelerated to its maximum velocity with the least amount of slip. The result is an extremely efficient wheel.

The motor likewise has been the result of very careful study in the attempt to provide a light machine, entirely enclosed, and at the same time to avoid the excessive temperature which is incident to the operation of most enclosed motors. The result is a machine capable of continuous operation for ten hours, with a maximum temperature rise of not exceeding thirty degrees F. A practical efficiency of over eighty per cent. is obtained even with the small sized motors, and an excess load of seventy-five per cent. above the rated capacity may be carried without sparking, and without change of brushes.

This feature, combined with the small temperature rise, allows of carrying temporary overloads with impunity.

The bearings are self-oiling and self-aligning, and are fitted with phosphor-bronze sleeves which are removable from the outer ends of the boxes.



problem of the manufacture of a compact, efficient and convenient type of electric ventilating fan. Exhaustive tests were made with different types of fan wheels. The result is rendered clear by the accom-

panying engravings, showing views of one of their electric ventilating fans, which have just been put upon the market.

The wheel is partially enclosed within a conoidal inlet ring, which decreases the frictional resistance to the entering air, and furnishes at the same time a rigid support for the motor to which it is attached by the tripod hanger.

The Sturtevant IMPROVED PORTABLE FORGES

TWENTY-FIVE SIZES AND STYLES

HAND POWER AND BELT POWER **Hand Blowers** FOR FORGE.



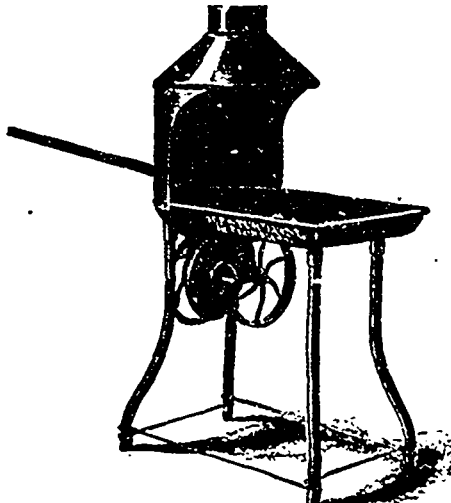
The Sturtevant STEAM : FANS

For BOILER FIRES

FORCED OR INDUCED DRAUGHT

MANUFACTURED BY

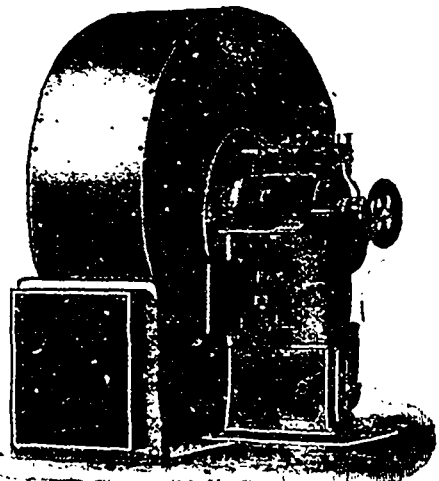
B. F. STURTEVANT CO. Boston, Mass., U.S.A.



The STURTEVANT Blowers and Exhausting FANS

Known as the Monogram Pattern, For Blowing Boilers and Fires, Exhausting Dust and Gases.

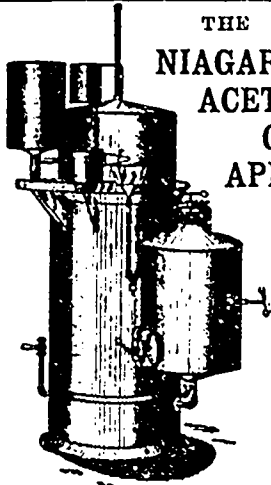
SEND FOR CATALOGUES



A.R. WILLIAMS MACHINERY CO., General Canadian Agents, Toronto, Brantford, Montreal.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

MERCHANTS AND CAN MANUFACTURERS SHOULD **ADVERTISE EFFECTIVELY** At Lowest Cost. ESTIMATES FREE. **SPECIALIZE.** Correspondence Invited. **C. A. G. Browne,** Advertising Agent. 145, Fleet Street LONDON, ENGLAND. Sole Agent for Advertisements in Great Britain for this Journal.



THE **NIAGARA FALLS ACETYLENE GAS APPARATUS**

Patented in Canada, United States and Great Britain.

This is the only machine perfectly automatic in its action, requiring little or no attention. Machines made in 70 sizes costing \$15 and upwards.

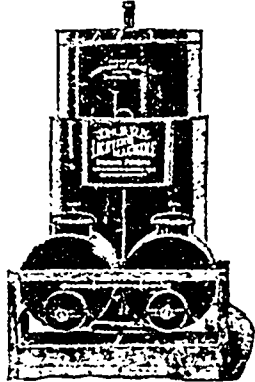
Acetylene Gas the Coming Light. CHEAPER THAN ELECTRIC LIGHT COAL GAS OR COAL OIL

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.

Sun Lighting Machine.

ACETYLENE GAS.



The Acme of Perfection in Lighting.

At the Minimum of Cost.

Suitable for any place where Artificial Light is required. Dwellings, Stores, Churches, Factories, Hotels, Street Lighting etc

Write for Catalogue

THE **Acetylene Lighting Co.**

(LIMITED).

LONDON, ONTARIO.

These fans are built in sizes from eighteen inches to 120 inches, with motors designed for either medium or maximum speed, and to run at any ordinary direct current voltage. A speed controller is always provided, by means of which the fan can be efficiently operated at different speeds.

BELTS AND BELT DRESSINGS.

That it is necessary to apply to leather belts some sort of a dressing from time to time is generally conceded. That whatever preparation is used should be of such composition as to suit the particular conditions of speed, temperature, humidity and other circumstances would seem to be indisputable. Belts running in a dry and hot location require oil to keep them soft and pliable and to insure such an adhesion to the pulley as to enable them to transmit the power proportioned to their width and velocity. Otherwise the belts will dry up, crack and become worthless in half the time that they should. Belts running in a moderate temperature, and where the oil from machinery occasionally splatters on them, will usually get more oil than they need, and if mineral oil is used, it is apt to do more harm than good.

Where oil is applied to belts, it would seem that an animal oil would be preferable, although castor oil seems to have many friends. The engineer usually has his own favorite preparation for the main belts, and his preference generally works well when he uses it himself, but not always as well if

issued to the workmen throughout the shops. Therefore the necessity still remains for the use of some kind of belt dressing that may be put in the hands of employes generally for use by them as occasion seems to demand. These occasions are usually when a belt slips from becoming dry and hard, and occasionally where a belt is required to transmit for a limited time a greater power than was originally intended.

After using and seeing used many of the usual belt dressings in the market, experiments were made to ascertain what composition would be best suited for ordinary, everyday use in the shop, and the following compounds are the result. These preparations have been in use for several years and give good satisfaction.

For a liquid dressing to be used in summer, take: Beeswax, four pounds; pitch, five pounds; resin, three pounds; neatsfoot oil, thirteen pounds. Melt the beeswax first, and add the other ingredients in the order named.

For the same dressing for winter use, the neatsfoot oil should be increased to fifteen pounds.

For a solid preparation for summer, take: Beeswax, six pounds; pitch, five and one-

PAPER

Printing Paper, Writing Paper, Ledger Paper.

Paper for Books, Paper for Catalogues, Paper for Newspapers.

PAPER

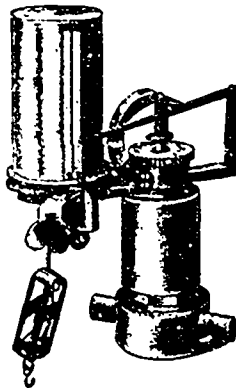
COLORED AND WHITE For all Purposes.

W. BARBER & BROS.

Mills and Office:

GEORGETOWN, ONT.

The McInnes Indicator...



(Patented).

With Vulcanite Sheathing for all Speeds and Pressures. Adopted by the British Admiralty.

SPECIAL INDICATORS

For Gas and Explosive Engines, Ammonia Compression Machines, Torpedo Boats, Launches and Locomotives.

Patent Flexible Unstretchable Wire Cord for Indicator Leads.

Catalogue on application SOLE MAKERS

T. S. McINNES & Co., Limited 42 CLYDE PLACE, GLASGOW, - Scotland.

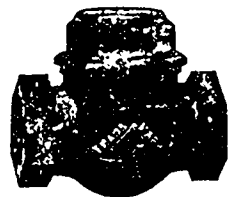
GOOD THINGS GO TOGETHER

GRESHAM INJECTORS

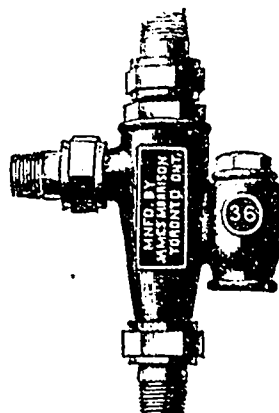
NONE BETTER. PRICE LOW.

J. M. T. VALVES

THE STANDARD FOR EXCELLENCE.



Trade Mark on every Valve ALL DEALERS HAVE THEM.



Engineers' and Plumbers' Supplies

The **JAMES MORRISON BRASS MFG. CO., Limited, TORONTO**

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

GALVANIZING

We are prepared to attend to all orders **Promptly** and **Economically**.

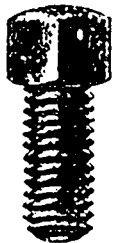
WINDMILLS, PUMPS, TANKS, Etc.
ONTARIO WIND ENGINE and PUMP CO.
 LIMITED,
 95 ATLANTIC AVE., TORONTO.

PATENTS

TRADE MARKS, Etc.
HANBURY A. BUDDEN
 NEW YORK LIFE BUILDING,
 MONTREAL.

TORONTO MACHINE SCREW CO.

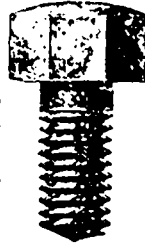
Manufacturers of



Hexagon AND Square Head Cap Screws.

Steel and Iron Set Screws, Hanger and Planer Bolts, Studs, etc.

Send for Price List and Discounts.



109 1/2 Adelaide St. W. - TORONTO.

PATENTS PROMPTLY SECURED

Write today for a free copy of our interesting books "Inventors Help" and "How you are swindled." We have extensive experience in the intricate patent laws of 50 foreign countries. Send sketch, model or photo for free advice. **MARRON & MARRON, Experts,** New York Life Building, Montreal, and Atlantic Building, Washington, D. C.

F. R. F. BROWN, M.I.M.E. Consulting Engineer,

Telephone Main 2651.

Machinery, Rolling Stock, Engines and Boilers of every description supplied. Inquiries a specialty.

ARBITRATIONS VALUATIONS

22 Street Railway Chambers, Montreal.

WOOD ENGRAVING PHOTO ENGRAVING HALF TONES

OR ANY CLASS OF ENGRAVING FOR ADVERTISING PURPOSES, CATALOGUES, MAGAZINES, &c.

J. L. JONES ENG. CO.
 6-8-10 Adelaide St. W. TORONTO.

half pounds; resin, seven pounds; neatsfoot oil, one pound

For winter the resin should be reduced to six and one-half pounds.

This composition is prepared in the same manner as before, and poured into moulds of convenient size—say, three by six inches, and one and one-half inches deep. These moulds may be of metal or wood. They should be so constructed as to be easily taken apart, as the preparation adheres quite strongly to them. To avoid this, they may be rubbed over with chalk, whiting or graphite.

As to the relative qualities of the solid and fluid preparations, it may be said that the fluid state is the best if it is properly used, but that it is so readily applied that, ordinarily, two or three times as much is applied as is necessary. On the contrary, that in a solid form, being held against the running belt until a sufficient quantity is carried off, is not so apt to be wasted, and is therefore more economical. But it is also to be considered that the solid preparation does not contain as much neatsfoot oil as the liquid, and this oil is valuable as a preservative. Hence, the choice should be made with reference to these features.

As to cost, it is, at present prices, as follows, taking the solid preparation for winter use:

6 pounds beeswax, at 35c.....	\$2 10
5 1/2 pounds pitch, at 8c.....	44
6 1/2 pounds resin, at 4c.....	26
1 pound neatsfoot oil at 12 1/2c.....	12 1/2

19 pounds \$2 92 1/2

Which is practically 15 1/2 cents per pound. The liquid is within a small fraction of the same cost; so that it will be seen that it is not expensive. The expense might be still reduced, but practice indicates that, all things considered, the above proportions will give the best satisfaction.

The scheme to erect a large palace hotel Toronto, heretofore alluded to in these pages, is assuming tangible shape. The company has been organized and it is said that work will be begun upon it at an early day. Included among the promoters are: Messrs. George Gooderham, E. B. Osler, B. E. Walker, W. R. Brock, D. R. Wilkie, D. Coulson, A. E. Kemp, H. N. Baird and Emilius Jarvis.

It is the business of the E. Dosbarats Advertising Agency, Montreal, to plan advertising campaigns and carry them out in every detail. Their many customers like their system.

WANTED.

A FIRST CLASS window shade painter and color mixer wanted immediately, for new factory near Montreal, good wages and yearly engagement to right man. Apply to **CANADIAN MANUFACTURER**, McKinnon Building, Toronto.

The Metropolitan Railway will put on a large number of men to work on the further extension of their road from Bond Lake to Newmarket, Ont. Work on the supplementary power house at York Mills, Ont., will also be commenced immediately.

A. C. NEFF

CHARTERED ACCOUNTANT

Room 509 McKinnon Bldg.,

Tel. 1330.

TORONTO.

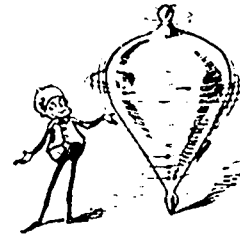
Audits and Investigations a Specialty.

METAL "SPINNING"

in BRASS, COPPER, ALUMINUM, ZINC, SILVER, etc.

We are the only Job Spinners in Canada. Write for prices on anything in the Spinning line.

EDMUNDS & CO.
 14 Temperance St. TORONTO



THE London Brush Factory

Practical Painters prefer to bridle their own brushes with twine. With the help of the **JENKINS PATENT BRIDLE CATCH**.

This is now easily accomplished. These Catches are attached to all our large Paint Brushes without extra cost.

Ask for **BRYAN BRUSHES**.

THOMAS BRYAN, - London, Ont.

MALCOLM MILLS CO.

Manufacturers of

Fancy Twist Yarns, in Worsted, Silk, Cotton, etc. Polished Threads. Silk No. 18 Yarns.

Metal Threads and Tinsels.

MILLS - Frankford, Pa.

OFFICE - 229 Chestnut Street, Philadelphia.

CARBONIZER

A neutral substance, harmless to animal fibre or tissue, while it destroys burrs, etc., as efficiently as acid. It leaves the wool in fine condition. Manufactured by the

Merrimac Chemical Co., 13 PEARL ST. BOSTON.

J. ALEX. CULVERWELL,

Electrical and Mechanical

BROKER,

Special Agent Royal Victoria Life,

6 King Street West. - TORONTO.

CANADA IN NEW ZEALAND.

We are Importers of Canadian Goods and Manufacturers' Agents.

The YEREX & JONES CO.,

WELLINGTON, - NEW ZEALAND.

REFERENCES—The Union Bank of Australia, Limited, Wellington.

SPORTSMEN

NOTE

The ABBEY IMPROVED CHILLED SHOT

NEWCASTLE-ON-TYNE, ENGLAND.

Is made by a NEW PROCESS, and is highly spoken of by sporting papers and sportsmen. Kills at greater distance than soft shot. Send to your Gunmaker for Samples.

The Leading Canoe Manufacturers

CANOES

FOR PADDLING, SAILING, RACING and PROSPECTING

A SPECIAL LINE for the Klondyke and Gold Regions.

Write for Catalogue J.

Correspondence Solicited.

BOX 107.

THE CANADIAN CANOE COMPANY, Limited, PETERBORO, ONT.

A. KLIPSTEIN & CO.,

122 Pearl Street, New York.

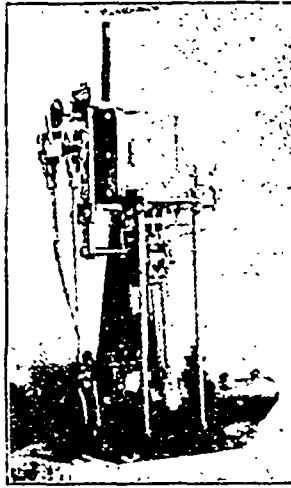
**Anilines,
Dyestuffs
—and—
Chemicals**

DELIVERY MADE AT NEW YORK,
MONTREAL OR HAMILTON.

WRIGHT & DALLYN

AGENTS,
Hamilton, Ont.

ALBERT BELL ENGINE WORKS
DUNNVILLE, ONT. Makers of
YACHT ENGINES, 1 H.P. to 50 H.P.
Safety Water Tube BOILERS
PROPELLER WHEELS
Stationary Engines and Boilers



WRITE FOR CIRCULARS

**Mills,
Factories,
Warehouses**



Are best protected
against fire by being
equipped with

**Eddy's Indurated Fibreware
FIRE PAILS**

We are the only manufacturers in Canada
of this celebrated ware.

The **E. B. EDDY CO., Limited.**
Hull, Montreal, Toronto

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.*

Office and Works
Cor. St. Catharino and Parthonsals Sts.,
MONTREAL, Que.

BROWN & CO.



Manufacturers of
Square and Hexagon
HOT PRESSED NUTS.

PARIS, - ONT.

Paris Electro Plating Co.

PARIS STATION, ONT.
Manufacturers of
Stove and Piano Trimmings and Novelties
Fine Grey Iron Castings a Specialty.
Nickel, Copper and Brass Electro Plating.
WRITE FOR PRICES.

FIRSTBROOK BROS.

Dovetail and Packing Boxes
Top Pins, Side Blocks and Cross Arms. Wood
Printers, Etc.
Cigar Boxes. Shipping Cases.
TORONTO, ONTARIO
Write for Prices.

JOHN J. GARTSHORE,
19 Front St. West, Toronto.
RAILWAY, TRAMWAY, and
Contractors' Supplies
METALS and SCRAP IRON
Bought and Sold.

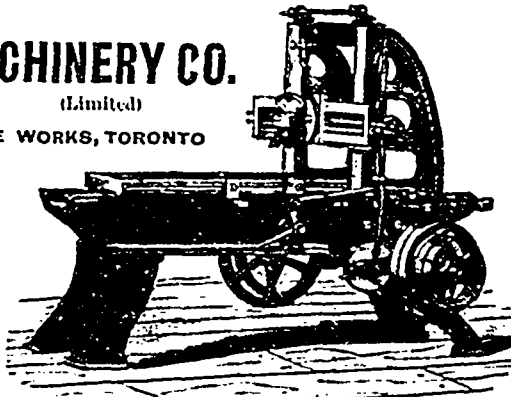
Send for Catalogue and Price List to
THE JOHN MORROW MACHINE SCREW CO.
INGERSOLL, ONT.
*Mfrs. of Set, Cap and Special
Screws, Studs, Finished Nuts, &c.*

THE ...
A. R. WILLIAMS MACHINERY CO.

(Limited)

Head Office, - SOHO MACHINE WORKS, TORONTO

Manufacturers of and Dealers in
High-Class Iron Tools,
Wood-working Machinery,
Engines, Boilers,
Motors, Water Wheels,
General Machinery
and Supplies.



Iron Tool Works

At London.

BRANCHES

193 Colborne St.,

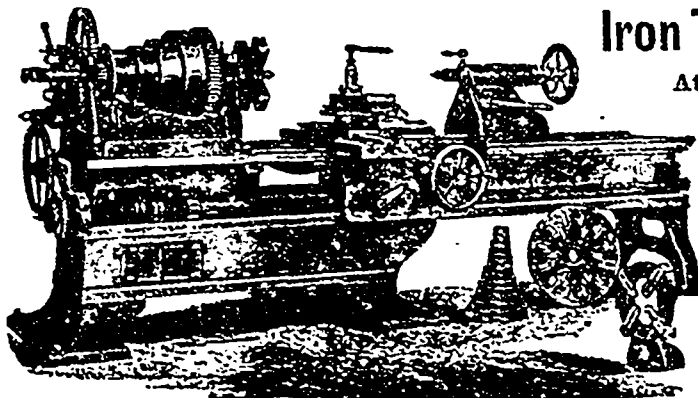
BRANTFORD

345 and 347

St. James St.,

MONTREAL

Send for Circular,
referring
to this Advt.



THE
**PETERBOROUGH
CANOE CO. LTD.**
PETERBOROUGH,
Ont. Canada.
SEND FOR CATALOGUE



Toronto Fence & Ornamental Iron Works
10 Queen St. East, Toronto.

For IRON FENCING,
BANK and OFFICE RAIL-
INGS and all kinds
of IRONWORK

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When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Smith Wool-Stock Co.

219 FRONT ST. E., TORONTO.

Makers of

**WOOL STOCK,
SHODDIES, Etc.**

LEITCH & TURNBULL, Canada Elevator Works,
HAMILTON, ONT. Queen and Peter Sts.,
Patent Safety Hydraulic,
Hand and Power ELEVATORS.
.....Telephone Connection.

GEO. PATTINSON & CO.

PRESTON, - ONTARIO.

Manufacturers of

FINE AND MEDIUM **TWEEDS**

Guelph Woolen Mill Co.,

QUELPH, ONT. LIMITED.

Manufacturers of

Underwear, Hosiery, Wheeling,
Fingering and Worsted Yarns,
Eiderdown Flannel, Etc.

Selling Agents—Donald Fraser, Montreal.
E. H. Walsh & Co., Toronto.

PENMAN MANUFACTURING CO.

PARIS, ONT. LIMITED.

Manufacturers of

Hosiery, Shirts, Drawers,
Glove Linings and Yarns.

Selling Agents—D. Morrice, Sons & Co.,
Montreal and Toronto.

**ROSAMOND
WOOLEN CO.**

ALMONTE, ONT.

Fine Tweeds, Cassimeres,
and Fancy Worsted
Suitings and Trouserings.

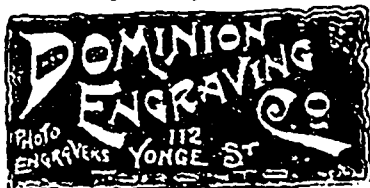
**JOHN HALLAM
TORONTO.**

WHOLESALE DEALER IN

DOMESTIC and FOREIGN **WOOLS**

Sumac, Japonica, etc.

Reproductions Made for Eight
Cents per Square Inch.



Half Tones Made Direct from
Photos.

It Leads Them. All.

THE OLDEST,
THE LARGEST,
THE SAFEST,
THE CHEAPEST,

CANADIAN LIFE INSURANCE COMPANY IS

THE CANADA LIFE ASSURANCE COMPANY.

CAPITAL AND FUNDS OVER \$13,000,000.

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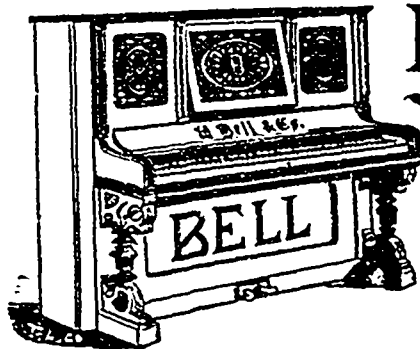
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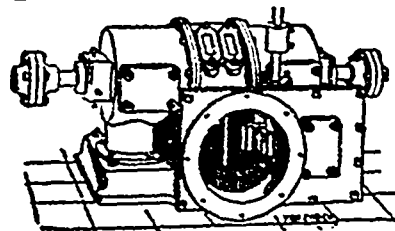
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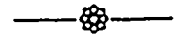
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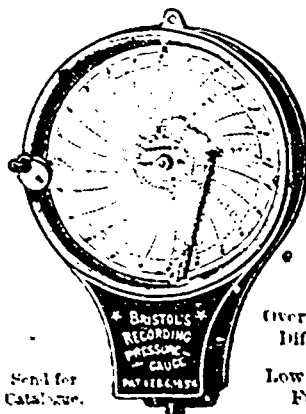
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