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Vol. 28. TORONTO, NOVEMBER 2, 1894. No. 9.

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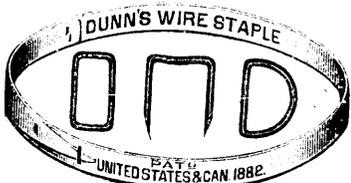
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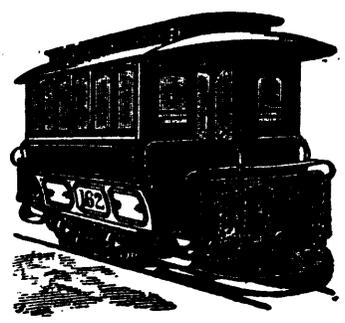
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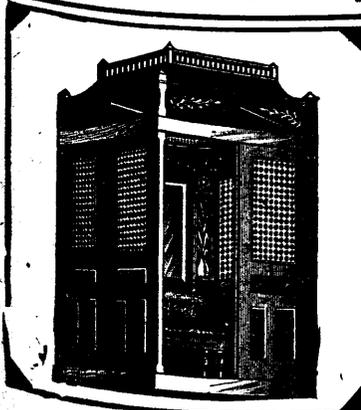
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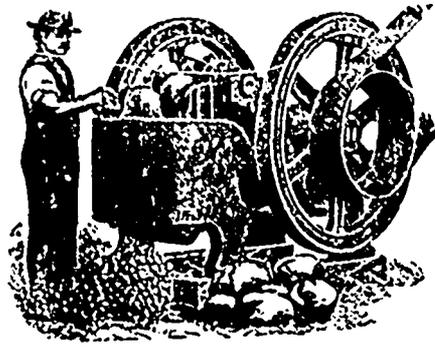
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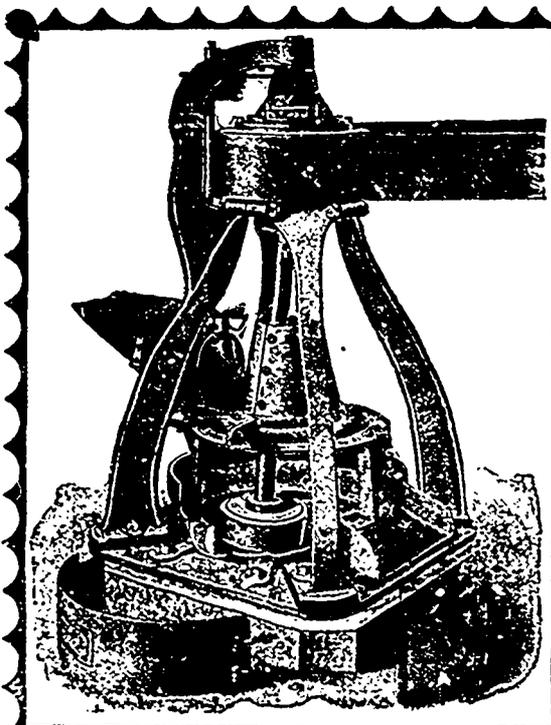
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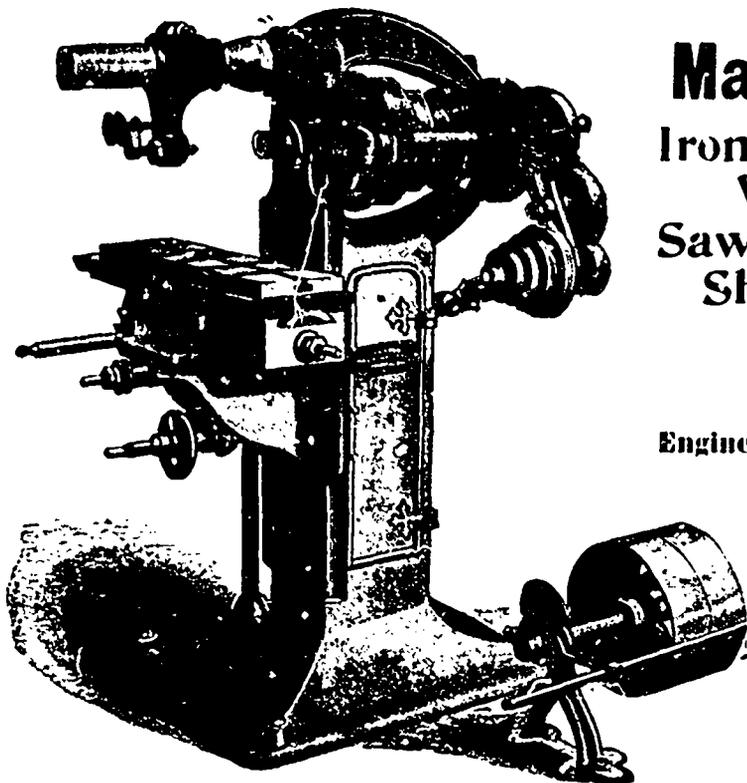
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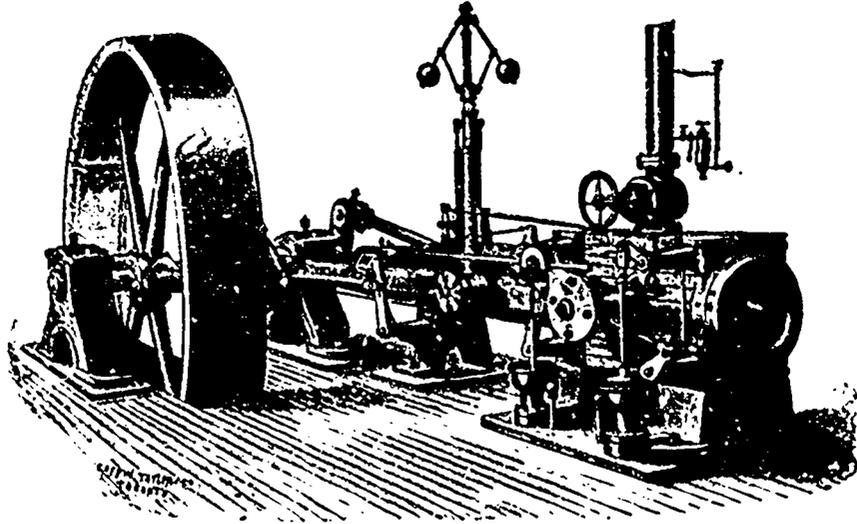
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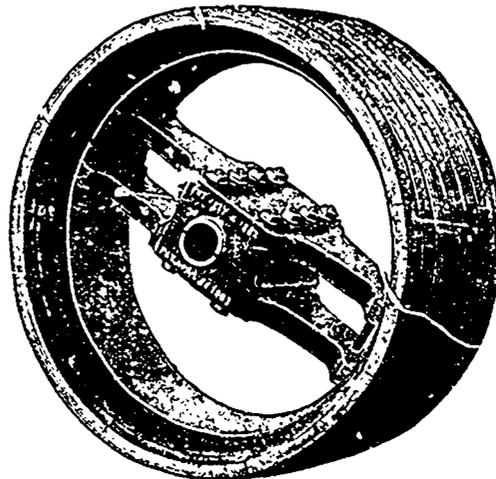
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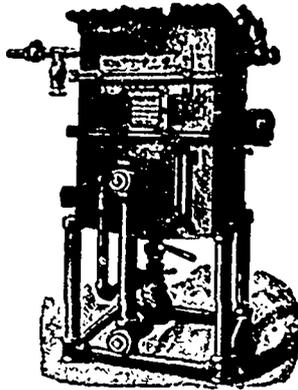
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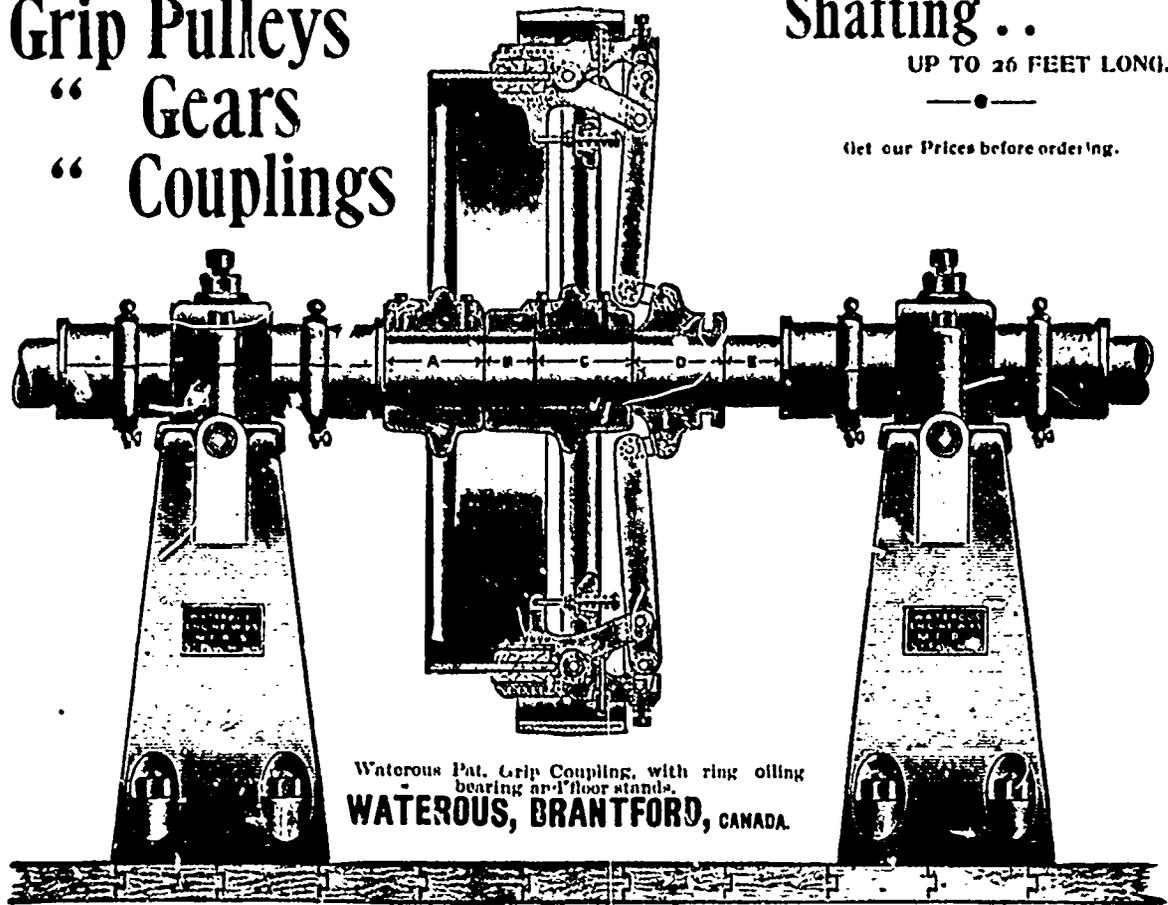
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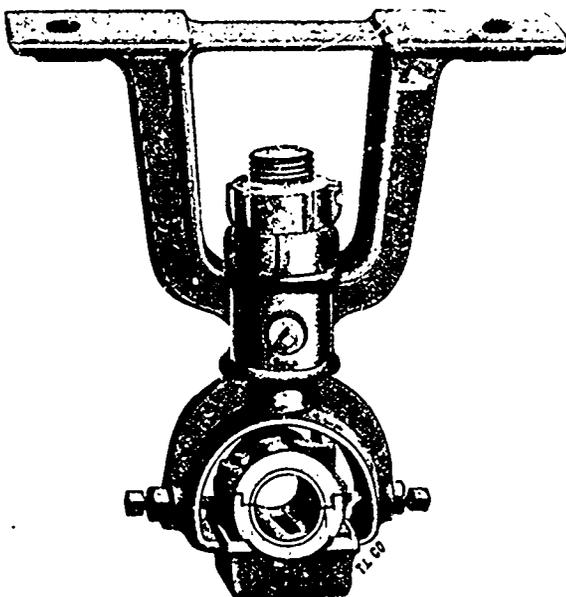
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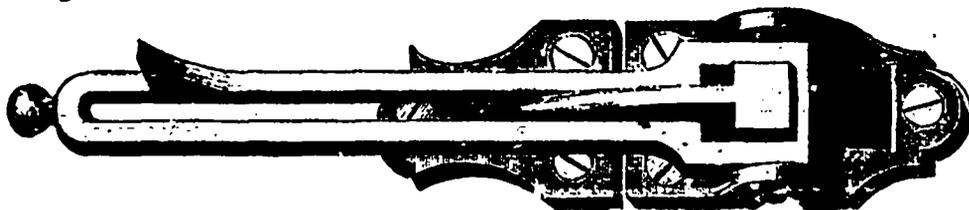
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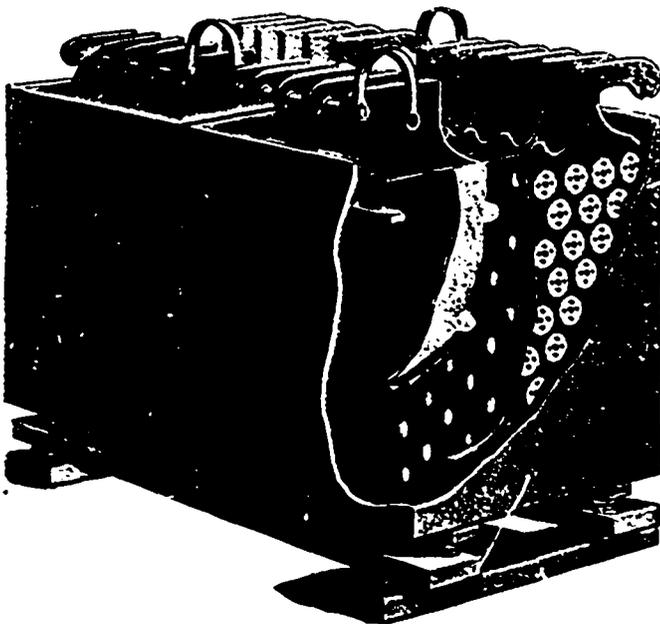
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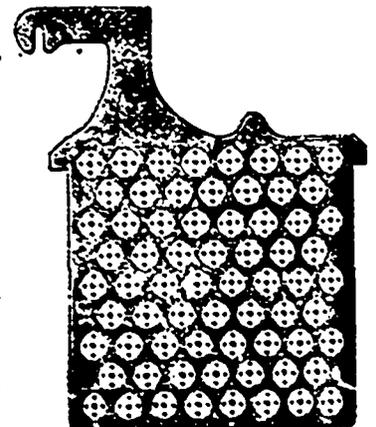
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TRADE WITH AUSTRALIA.

Canadian manufacturers have a great opening for trade in the Australian Colonies. The Dominion Government is doing its utmost to provide facilities; the recent Inter-Colonial Conference paved the way by expressing a desire to reorganize existing tariffs; the sentiment of the people here and throughout Australia is favorable; the past trade of the United States in articles and products which we can

readily supply is proof of its possibility; and the general demand for more extensive markets indicates its desirability.

The appointment of Mr. J. S. Larke as Dominion Commissioner is a natural and practical result of the Conference and combined with the fact of the great success which has attended the Canadian-Australasian steamship line, should induce our manufacturers to look into the matter and see what can be done by each individual firm in the development of a profitable, and it may be, a large and growing trade. At the very least, they can send samples, make inquiries and await the result. The Massey-Harris firm, however, went into the venture years ago, when the results were doubtful, the route circuitous and the cost of shipment and freight very considerable. Yet their success was spoken of at the Conference as an indication of what might be done in greatly increased volume and variety under the new and improved conditions. For over thirty years the Americans have been exploiting the Australian market via San Francisco, and have succeeded fairly well in spite of antagonistic tariffs, a practical British monopoly of the markets, and in later years, a considerable German competition. As a consequence the trade has increased in the following ratio:

Year.	U. S. Imports from Australasia.	U. S. Exports to Australasia.
1860	\$130,000	\$4,070,000
1870	280,000	2,830,000
1880	2,292,000	4,600,000
1890	4,280,000	11,170,000
1891	6,240,000	12,890,000
1892	8,490,000	11,250,000

The bulk of this export trade, to say nothing of the import trade, can readily be done by Canada. The exports are largely composed of goods which can be made, or products which can be raised, within the Dominion, while the imports may at least go via our steamers and railroads, thus following the route adopted now by Chinese teas and silks for United States' consumption. The two hundred millions of trade which under past conditions the Republic would do with Australia during the next decade, might very fairly be cut in two by Canada, if the enterprise of its people is as great in this direction as it has been in supplying such aids to commerce as the Canadian Pacific and the Eastern steamship lines, or other projected methods of business communication and development.

As an illustration it may be pointed out that the export of lumber to Australia from this continent in 1890 was 300,000,000 feet, of which British Columbia only sent 15,000,000 feet, though it has admittedly the finest forests of North America—superior far to those of its southern competitor, the Puget Sound district. Of this American timber trade amounting to \$4,000,000 in value annually, Canada should get the larger part. So with kerosene oil which the Republic now sends to the tune of \$1,500,000, and of machinery which it exports to the value of \$1,250,000. Agricultural implements, pianos, organs, furniture and carriages should also find a considerable market together with chemicals, paper, matches, iron manufactures, steel, leather, tobacco, and various kinds of manufactured wood. We only export from \$300,000 to \$500,000 worth of these articles where the United States sends ten or twelve

millions. Surely, with a shorter route, faster steamers, and our continental highway, to say nothing of national sentiment and inter-governmental facilities and possible preferential duties, our manufacturers ought to be able to make themselves known and felt at the antipodes.

During the Ottawa Conference these details were discussed at some length. Mr. Lee-Smith of New Zealand, pointed out that agricultural implements were already admitted free into that Colony—as Sir Henry De Villiers observed subsequently, was the case at the Cape of Good Hope—and that the Massey-Harris company had shipped 4,000 implements to it in recent years. He also instanced fresh and canned salmon as affording a subject for extensive export, and also hops. But his most interesting remark was in regard to possible export of paper manufactures. Both the leading New Zealand newspapers now get their paper in New York, and would be very glad to obtain it in Canada if arrangements could be made. These two newspapers—the Dunedin Times and Star—have, as the speaker pointed out, a large circulation and the item of printing paper alone would be an important one. “I have,” he observed, “called at Eddy’s mills and I am satisfied from what I have seen there that there are opportunities of shipping large quantities of paper to New Zealand.”

The Hon. Mr. Fraser, of Victoria, proprietor of a large newspaper in that colony, spoke in the same strain. He referred to his own paper as having a daily issue of from 25,000 to 45,000, and the *Age* as having a circulation of 100,000 copies a day—the Hon. Mr. Fitzgerald interjecting the remark that one paper uses nine tons of paper in its issue every day. It is easy to see what an enormous trade might be developed in this direction alone. The same speaker expressed the belief that a considerable export trade in Canadian petroleum and matches might be created, adding that the latter were manufactured cheaply and appeared to be of excellent make. He also referred to the possibility of a lower duty in Victoria upon reapers and binders. Our own Minister of Finance, wound up the discussion by reiterating the possible openings in paper, implements and timber and incidentally brought out the fact that there was a considerable demand in Australia and New Zealand for paints. He also referred to the opportunities for creating a trade in cotton goods, which some of the colonies admit free at present, and instanced the case of a large mill near Quebec which runs by virtue of its exports to China and the East, where it competes with Great Britain and the States. If in that case why not in Australia generally?—especially if preferential tariff arrangements could be made.

It should also be remembered that as yet the Australians, though possessing unlimited wool and 125,000,000 sheep, do not manufacture woolen goods very extensively. We might very well get our wool direct instead of via London in future, and thus save the middleman’s charges. It might not be impossible to manufacture the same wool and send it back again to the colonies. But much will depend in this and other particular branches of trade upon the freight facilities provided by the Canadian railways. Given good rates, with some energy and a little enterprise on the part of our manufacturers, and there is no reason to doubt the establishment of a large and safe export trade in this

direction. Of the return trade it is hardly necessary to speak here. Mutton and tinned meats, raw hides and hard woods not produced in America, gums of various kinds, lemons, oranges, and mandarins, sugar and tin, wine and wool and flax may all be imported in differing degrees and amounts.

With the facilities now provided and the knowledge so rapidly growing of each other’s necessities and demands, there is, we repeat, room for a great extension of trade with Australia. With the further possibility of a preferential commercial policy amongst the colonies, there is every likelihood of an expansion which may yet be deemed marvelous. Lacking that great impetus to commerce, the United States has built up a trade of \$20,000,000 a year. With it, there is no reason why Canada should not establish herself as a successful rival of the Republic in many lines and a successful middleman in others. Meantime a little push and enterprise will work wonders.

THE CANADIAN-AUSTRALASIAN CABLE.

There is no greater inducement to trade in these days than swift steamship facilities and cheap telegraphic communication. To wait months between the giving and filling of an order, unless for some special purpose, is alien to the whole trend of modern commerce. It was all right in times when merchant-ships were fitted out for a year or two years of adventurous voyage and perilous traffic, but in the midst of intense competition such as the present age has developed, the country which boasts the fastest steamers and has the best cable or telegraph lines, is bound to capture the bulk of the business, if at least, her commercial magnates have a reasonable amount of enterprise and energy.

Hence the vital importance of the steps taken by the Dominion Government in recent years, and to which the seal of inter-Colonial approval was added at the recent conference in Ottawa. The China-Japan line of steamers was the first step on this ladder of development. Its success has been demonstrated in the capture of the bulk of the American trade in teas, silks and similar articles. The Canadian-Australasian line was the next step, and its success is admitted. Already more freight is offered than can be received and another and larger steamer is on the way to join the *Miowera* and its mate in catering to a steadily growing trade. Two more steps are necessary in order to reach the top, whence may be seen a glimpse of the Dominion as the commercial pivot upon which turns the destiny of the Empire, and over whose railways the trade of Britain with the East will pass together with much of the commerce of the Continent.

The fast line of steamers to England is one, the cable to Australia is the other. The success of the first project is well-nigh assured by the energy of Mr. Huddart, and the power of Sir Wm. Van Horn, to say nothing of the determination of the Dominion Government.

The second is on the road to establishment. Both have been approved by the Conference; both are supported by the people of Canada, and cannot but commend themselves forcibly to its industrial interests. The enterprise is not so formidable as would seem to be the case at first

sight. It is true that 7,000 miles have to be spanned, but Mr. Sandford Fleming, the father of the project, estimates the cost at from only eight to ten millions. The amount depends upon the route, and when divided between Great Britain, the seven Australasian Colonies and Canada, is by no means alarming. Mr. Fleming estimates further that the earnings of the Pacific line in ten years would be at the very lowest figure in the neighborhood of \$750,000 a year, and this at a rate of 3s. 3d. between England and Australia as compared with one of 4s. 9d. at the present time. The reduction from Australia to all parts of Canada and the States would be from 6s. to about 2s. 9d.

The Conference pronounced very strongly upon the necessity which exists for the establishment of such a cable. From the commercial standpoint its desirability is self-evident. The heavy charges rendered necessary by the circuitous route and frequent repetition of messages, make the present line of little use to business men on opposite sides of the Pacific, and ruinously handicap our young mercantile marine, while seriously affecting the interchange we all wish to see developed. From a defensive point of view it is still more essential. At present the British Empire has to depend upon a telegraphic system running from Northern Australia to Java—a Dutch possession—across the Isthmus of Suez where it might easily be destroyed, through Egypt, the immemorial battle-field of nations, and through the Red Sea swarming with possibly hostile cruisers. These and other considerations incident to the protection of our commerce brought from Hon. Mr. Thynne, the Queensland delegate at Ottawa, the remark that "It would be worth the while of the Australasian Colonies alone to bear the cost, if they could be sure of the cable being served for a week after a declaration of war by or against England."

Finally the Conference agreed to do four things:—

I. To have a sub-marine survey made, the Colonies to bear a fair proportion of the expense.

II. To ask the Imperial Government to secure neutral landing ground in the neighborhood of Hawaii, in case of that route being adopted. This has since been found impossible through the shrewd action of the Yankee rulers of the Hawaiian group in seizing Necker island.

III. To invite tenders for the work on certain bases. This has since been done by the Dominion Government.

IV. To pave the way for its ultimate extension to the Cape of Good Hope, thus ensuring the telegraphic unity of the Empire in time of need.

The matter is thus placed upon a definite basis and there is little doubt that the Government of Sir John Thompson will not let it rest at the present stage of development. Within three years indeed, it is hoped that cable communication will have been established with our brothers under the Southern Cross, and this in spite of the bitter and interested opposition of the Eastern Extension Cable Company, and Sir John Pender. The nine British Governments which are concerned in safe and speedy communication across the Pacific, appear to be in earnest in the matter, and if they push the project to completion, the last obstacle in the way of extended trade connection between Canada and Australia will have been removed. The manufacturers of the Dominion therefore

in starting business with the antipodes, may look forward with a reasonable degree of certainty to very much greater facilities and opportunities for development in the future than they now possess. But it seems not unlikely that when the time in question comes those firms which have already established themselves in Australian markets, and have done business in a comparatively small way at first, will have the greatest chance for permanent and important success.

THE FAILURES OF FREE TRADE.

During the last few years the principles of protection and free trade have been thoroughly ventilated in the United States. The manufacturers were denounced there, as for years they have been in Canada, as robbers, monopolists and oppressors. The men who made their money from stock gambling or railroad robbery or political plunder have been mixed up with those who have risen by the use of brains and the help of intelligent protection to wealth and perhaps to millions. The farmer who suffers from an over-production and world-wide cheapening in the price of wheat, has been told that the trouble is due to the protection given American industries against the pauper labor of Germany or the low priced products of English artisans. The workman has been taught that capital is the enemy of labor, that protection produces and centralizes capital, and that therefore the tariff must go, or at least be greatly reduced.

This has gone on until the political revolt of the farmers from Republicanism in 1890 and 1892; the approach of hard times as a result of business and fiscal uncertainty in the United States and of the wave of commercial disaster which had swept England, the Argentine Republic and Australia; together with the mistakes which were perhaps made in some parts of the McKinley tariff; resulted in President Cleveland's election and the complete dominance of disorganized Democracy in the government of the country. Then came the whirl of industrial disaster, the crash of banks, the closing of mills, the wholesale discharge of employes, the evolution of Coxeyism, the war of strikes and lock-outs, and the crushing of enterprise under the iron heel of depression and of distrust concerning the permanence of existing institutions.

There never was in history such a vindication of the necessity for clear, firm principles of fiscal administration; for the vigorous application of wise protectionism; for the promotion of stability in all matters pertaining to the National tariff. It was not so much actual legislation which brought about or made possible any part of the present paralysis; it was the threat of change; the dangerous uncertainty in legislation the fact that the Democratic party had the power to put in force the theoretical free trade which Mr. Cleveland and Senator Mills were known to favor; the probability that they would at least make the attempt. In some cases fear was the cause of ruin; in other cases the uncertainty merely restricted production and limited the quantity of labor; in all cases it added to and enhanced the existing depression. Had the Dominion Government not been firmly protective in principle and as absolutely protective in application as they believed was

practicable and desirable, the same state of affairs would have existed in Canada.

But the situation here during the last two years indicates, as no other historical parallel has ever done, the difference between a stable fiscal system and one which for a time at least "wobbled" in every direction. One Canadian bank of uncertain standing went under. There was, as is, a slight restriction of enterprise and energy as the inevitable result of a world-wide depression. But our total trade increased over that of the previous year, while the commerce of the Republic decreased one hundred and thirty-nine millions. The number of failures were only five per cent. greater than in the preceding year, whilst those in the United States increased 51 per cent. In the latter country 76 railways went into the hands of receivers, 23 were sold under foreclosure and the gross earnings decreased by \$12,000,000. In Canada one railway got into trouble, and there was a slight increase in gross earnings and a surplus of fifteen millions between general receipts and expenditures. The deficit which the American Treasury had to face ran up to \$50,000,000, while the Dominion Government had a surplus of over a million in spite of decreased Customs taxation amounting to two millions and a half. While American exports decreased \$74,000,000, Canadian exports of manufactured goods rose by \$3,300,000, and those of animals and their products increased \$5,000,000 and agricultural products increased over \$8,000,000. And although 240 banks failed in the States, and there were \$378,000,000 withdrawn from the National banks, and \$150,000,000 from other banking institutions during the year, yet the deposits in Canadian banks increased \$26,000,000 and in Savings banks over \$4,000,000.

It is a good thing to review these facts. The public memory is short, and although everyone remembers the crash in the neighboring republic during 1893, they are very apt to forget the superior position of Canada and to say, in view of the slight contraction of money and enterprise which followed in the Dominion, that matters were not so very much better after all. It was the difference between confidence which builds up a nation, and maintains individual credit, and distrust which for the time being destroys the nation and ruins the individual. It was the difference between a protective tariff moderate in terms and honest in application, safe for some years from the slightest fear of injury, and a national tariff which was in parts prohibitive rather than protective, but as a whole was too good to be the object of unmeasured vilification and attack and of a tinkering which destroyed myriads of industries, and finally developed a panic and commercial crash.

There are two leading lessons to learn from the situation in the Republic. One is that a party tinctured with free trade ideas, permeated with dislike of manufacturers, and filled with the idea of class-legislation where none is intended, never forgets and never forgives. Since the days of Walker and the crisis which followed his attempt at low duties, the Democracy have cried for the moon, have abused protection in season and out of season—except in certain states like New York where it would have been too dangerous politically—and have finally endeavor-

ed once more to apply the principle with a result ruinous to the national industries, to the laborers who are estimated to have had their wages cut down by \$35,000,000 in 1893, as well as to the many manufacturers who have had to close down or else to liquidate their business.

In Canada, it is to be feared, the same conditions prevail in the ranks of the Liberal party. The disasters of 1873-1878 seem to have no moral for them; the progress of 1880-94 seems to convey no lesson to their leaders; the crash in the United States, if we may judge by Mr. Laurier's recent speeches, has no meaning to their ears. It is apparently to be a renewed campaign against our national industries, a fresh appeal to farmers as against manufacturers, a new danger to that unity of classes which must prevail in a young community living side by side with a great nation.

The second consideration presented by recent fiscal history in the Republic is that if the Liberals were to be placed in power at the next election in Canada an era of the same absolute commercial uncertainty, of the same dangerous shock to public credit, the same withdrawal of invested capital, the same lack of confidence and contraction of money would inevitably follow. And for what? Lower duties in one direction and increased taxation in another. And would a lowering of the tariff on free trade lines benefit any large class in the community? It is safe to say that it would not. If prices in a few directions were lowered, wages would also be reduced by American competitors as the wages in the Republic have recently been pulled down by British competition. As soon as the American industries commence to revive, as they did in 1873 after the effects of war and depression had passed away, the same result would follow in the slaughtering of our markets by the surplus product of American mills and factories. Such a policy would not increase the demand for home labor. It would not start a single new factory. It would not light a solitary new fire. It would bring hope only to the alien manufacturer and artisan. It would remove all the large branches of American concerns which now find a place and provide work within our bounds. It would reproduce 1878 and precede a fresh period of beneficial protection by an interlude of disaster and distrust, loss of credit abroad and comfort at home.

But free trade has had other failures besides its production of at least three crises in the United States. All the countries of Europe, excepting Belgium and Britain, have repudiated it. Japan, the most progressive country of the eastern world, has adopted protection, and India, as it advances in knowledge of its own wants, would like to have it in certain directions. England, after a century of the most stringent protection and careful development of her industries and agriculture, thought that she at least could stand free trade. It was duly established and glorified. The creation of a net-work of railways and the development of steam and electric communication together with the discoveries of gold in Australia, California and British Columbia helped to carry the attempt through some three decades of growing commerce—a result greatly aided by the dependence of European markets. Now, through protection, European states have become independent; other countries than England possess manufactures, rail ways, telegraphs and steamers; British agriculture is almost destroyed, Bri-

ish industries are deeply depressed and British workmen are grumbling at low wages, looking for work which they cannot find or perchance starving in the garret of some wretched hovel in the centre of a great city.

Had Great Britain modified its high protection to suit the times; had it controlled and used the tariff as a means of obtaining reciprocity in days when other countries would have been only too glad to negotiate; had it looked upon protection as a useful weapon and valuable defence, instead of destroying it root and branch, the Mother Country would have been mistress to day of the industrial world as she is of the banking world and of the ships which plough the seas. But the bigotry of free trade—the narrowness born of prejudice—has lost to Great Britain, though it may be hoped not for ever, the advantages which are obtainable from an honest and moderate application of the protective principle.

Failure and nothing but failure has therefore stamped free trade wherever it has been tried or even attempted in a modified form. The Confederate States tried it and were ruined through inability to raise money as much as by any other cause, while the Northern States adopted a high tariff and obtained all that was required. The United States tried it in 1812, in 1832, in 1846, in 1857, and again in 1893. Disaster followed upon each occasion and it is almost a moot question whether the slave power in the Republic caused the greatest financial injury by its repeated efforts to obtain free-trade or by the policy in regard to the negro which brought about the Civil War. New South Wales tried a free trade tariff for years, although it stood alone in doing so amongst Australasian colonies. But two years ago it had to come into line in order to compete with prosperous Victoria. Had it not been for a period of inflation following upon the evil of borrowed money, Australia to-day would be in as good a position as Canada is shown to be by the sale which has just been made of its bonds in London.

Great Britain has tried free trade with every sort of collateral advantage and has for result ruined farmers, poorly paid workmen and industries which in past years and again as soon as protection obtains the mastery in the Republic, have flocked to the United States, Germany and other countries to obtain the protection which they are refused at home. Finally, Canada tried it from 1846 to 1858 and from Confederation to 1878 with results known to every student and to most business men. It is safe to say that in the Dominion at least the error will not be repeated, that the lesson taught by history and recent events will be well learnt, and that as a limited monarchy is the best form of constitutional government, so in days to come, moderate protection will be admitted as the best form of fiscal administration.

THE DOMINION COAL COMPANY.

During the recent tariff debate in the United States Congress, regarding the proposition to put bituminous coal on the free list, much was said regarding the Dominion Coal Company, a wealthy concern composed chiefly of American capitalists who have acquired a monopoly of about all the known coal deposits in Nova Scotia. The opponents of free coal declared very loudly that certain

close friends of Mr. Cleveland were stockholders in the company and would be greatly benefitted if coal should be placed on the free list, in answer to which the friends of the company declared that the proposed duty, if imposed, would have but little effect one way or the other upon the prosperity of the company. It is understood that Sir William Van Horne, the president of the Canadian Pacific Railway Company, interested in the coal company; and a few days ago that gentleman in an interview with a newspaper reporter is reported as saying:—

It is quite true that the Dominion Coal Company has not yet made any move towards the extension of its trade outside of Canada, for the simple reason that it has not yet been able to supply its home market, but when that market is supplied, and the Dominion Coal Company has a surplus of coal, it will find a more profitable market for the surplus at the coaling stations in the West Indies than in the New England states, where the competition is very sharp and prices rule low.

The shipment of coal to the New England states was not thought of by anybody at the time the Dominion Coal Company was formed. At all events I have never heard it spoken of. The primary object of the Dominion Coal Company was by means of the superior facilities for mining and transporting coal that the large capital would command, to so reduce the cost of production as to admit of a very large extension of its trade in Canada, where there is an ample market for their coal—a market which is, however, largely held at present by the Pennsylvania and Ohio producers, notwithstanding the Canadian duty.

I do not imagine that the removal of the American duty on coal will affect the Dominion Coal Company very much one way or the other. It is pretty well understood that Canada will reciprocate, and the removal of the Canadian duty would enable the Pennsylvania and Ohio producers to continue to hold the Canadian market so far as they now have it, and it would, of course, prevent the Dominion Coal Company from materially extending its Canadian trade; but the company would have an opportunity to 'even up' to some extent in New England.

The talk about the company having used corrupt influences at Washington or in Nova Scotia is rubbish. The same is said of every important enterprise everywhere.

On February 15 last at a meeting of the Dominion Coal Company held in Boston, Mr. Henry M. Whitney, the president, and Mr. J. S. McLennan, the treasurer, made their first annual reports, copies of which are now before us, and from which we gather the following facts.

The company was organized on February 16, 1893, since which date up to December 31 of that year, a period of ten and a half months, all the properties then held under option had been acquired and paid for in full: About \$200,000 had been expended in the construction of the railroad to Louisburg, N.S.; about \$150,000 for discharging plants and for mining machinery, and about \$100,000 for tugs and barges; and there was, at the date of the report, cash assets in the hands of the treasurer amounting to \$134,068.10. The other assets of the company were: Accounts and bills receivable, \$141,894.22; merchandise in store, \$22,129.85; mining supplies in warehouse, \$45,059.98; property, \$17,429,407.48, and coal at distributing points, \$81,504.27, a total of \$18,154,063.85.

The total quantity of coal mined in the said ten and a half months was 834,019 tons, which was exclusive of the output of the Victoria mine, which by the terms of the option was not to be delivered until the season for mining and shipping coal was ended; but this output will be in-

cluded in the business of 1894. The shipment of coal from the mines under the control of the company from February 16 to December 31, 1893, was about 90,000 tons greater than during the preceding year.

The proceeds of the coal sold, 834,019 tons, was \$1,189,499.44, or \$1.42½ per ton. Against this is charged for cost of mining, railway transportation, royalty, etc., \$929,278.52, and bad debts, etc., \$29,058.21, a total of \$958,336.73, or \$1.15 per ton, the net profit being, as shown, \$231,162.71. Besides this the profit credited to steamers, barges and railway owned by the company amounted to \$103,267.95, a total profit of \$334,430.66.

From this amount was written off to profit and loss account all expenditure for machinery, etc., at mines, \$67,989.84; office furniture, \$3,160.19; ten per cent. of cost of tugs, barges and equipment, \$8,242.42; ten per cent. of cost of discharging plant in Montreal, \$5,828.77 and one third of investment in hotel at Sydney, \$2,500, a total of \$87,721.22, leaving a net profit of \$246,709.44. The capital stock of the company, both common and preferred, is \$16,500,000; and first mortgage bonds have been issued to the value of \$1,500,000. The net profit above shown was disposed of by the payment of \$105,000 in dividends on preferred stock; coupons on mortgage bonds, \$45,000; and accrued interest on bonds, \$30,000, amount carried to sinking fund being \$14,731.96, the total thus disposed of being \$194,731.96; the amount carried forward to credit of profit and loss account being \$51,977.48.

The figures obtained from these reports are very remarkable. They show that upon an output of 834,019 tons of coal which cost \$958,336, a profit of \$231,162 was made; and an additional profit of \$103,267 was made in transporting the same to market. The total earnings of \$334,429 on an outlay of \$956,336 is practically 35 per cent. profit. This is an enormous profit, particularly when it is remembered that these results were obtained in the operations of the first year, when the business must have been attended with many difficulties.

Another noticeable fact in these reports is that the product of the mines of this company can be placed at tide-water, ready to be loaded into vessels, for \$1.11 per ton; for Mr. Whitney states that the cost of thus placing his 834,019 tons was \$929,278.

That this Nova Scotia coal will be a powerful competitor with American bituminous coals in the New England markets is shown by the following: The distance from Louisburg, Nova Scotia, to Boston, is about equal to the distance from Newport News, Virginia, or Norfolk to Boston—about 700 miles. The average price of coal at Newport News for the past four years, 1890-1893 was \$2.38 per ton; the average ocean freight from that shipping port to Boston during the same time was 98.8 cents per ton, and the average price of coal on board ship in Boston was \$3.30. These figures are based on \$1 per ton the selling price of coal free on cars at mines in West Virginia. At a valuation of \$1.11 per ton at Louisburg, and the freight from there to Boston being the same as from Newport News, and all other expenses the same from either place, it is evident that the Nova Scotia coal can be delivered in Boston for \$1.27 per ton less than the

Virginia coal; but from this must be deducted the duty imposed upon the foreign article.

THE SUGAR OCTOPUS.

The New York Shipping and Commercial List in an excellent editorial on the American sugar tariff, points out the great inconsistency of the tariff reformers in Congress in shaping legislation so that the sugar trust would be greatly benefited thereby. In alluding to the statement made by Mr. Wilson, chairman of the Ways and Means Committee, in announcing the decision of the House of Representatives to accept the Senate tariff bill without any change whatever, that the sugar trust had bought sugar to the value of \$112,000,000 in foreign markets in anticipation of the passage of that schedule of the tariff which imposed 40 per cent. duty on raw sugar, and that under that schedule the trust would reap a profit of \$40,000,000, says:—

If Mr. Wilson and his friends believed that they could establish the fact that the Senate schedule would entail a tax of \$40,000,000 on the consumers, without any increase of public revenue, and that there is really sugar on hand of the value of \$112,000,000; and if they had been really desirous of securing to the public revenue, instead of to the Trust, the equivalent of the \$40,000,000 of asserted profit, a short act imposing an excise or inland revenue tax of \$1.00 or \$1.25 per 100 pounds on all sugars refined from imported sugars would have been a simple way of securing to the revenue a sum equal to what would be realized if the \$112,000,000 of sugar were still to be imported. Having proved that there is actually this value on hand, the question would not be as to free trade or protection, but merely this: If the consumers are to be made to pay \$40,000,000 more for their sugar, whether should the public revenue or the Sugar Trust realize this amount.

There are but few respectable newspapers or persons in the United States who uphold the system by which the Sugar Trust monopoly are wringing millions of dollars every year from the consumers of that country. Under the operation of the McKinley tariff the profits of the Trust have amounted, it is said, to some \$32,000,000 per year, and this is in excess of the full amount to which the sugar refining industry should receive under the policy of tariff protection.

The idea advanced by our New York contemporary that if the Sugar Trust are really in position, by the importation of nearly a year's supply of raw sugar in advance of their regular requirements, free of duty, as under the McKinley tariff, that a sure and easy way to prevent the robbery is to impose a countervailing internal revenue tax upon the manufacture of refined sugar from imported raw sugar, is a good one; for while the industry would not be deprived of any proper advantage it might be entitled to under the policy of protection, the \$40,000,000 spoken of, or whatever the amount might be, would go into the public treasury instead of into the coffers of the Trust.

It is remarkable that such general interest should be awakened in the United States regarding the operations of the American sugar trust, while in Canada, although the conditions have been almost identical, no interest is aroused in that direction. If there were any differences in these conditions in the two countries they were and are much more favorable to the Canadian than to the American trust. In the United States, under the McKinley tariff, the duty imposed upon refined sugar was only \$10 per ton, the free list including sugar grading not higher than number 16 Dutch standard, while in Canada, until the late Session of Parliament, the duty upon refined sugar was \$16 per ton, all sugar not higher than number 14,

Dutch standard being admitted duty free. It seems that for very shame the Government in March last reduced the duty upon refined sugar 20 per cent. to 12.80 per ton, and extended the free list to include number 16 Dutch standard; but this great concession left the situation much more favorable to the Canadian Trust than that which had been enjoyed by the American Trust under the McKinley tariff. The advantage being so much greater in favor of the Canadian Trust no doubt the patriotic concern made quite as large a percentage of profit in the business as did the American Trust. Under the new American tariff about the only heavy profits the American Trust will be able to realize will be upon whatever raw sugar they may have had on hand when the tariff went into operation; while under the Canadian tariff the Canadian Trust will continue to rake off most inordinate profits.

The Shipping and Commercial List observes that the American Trust have it in their power to retain the advantages they possess under the new tariff by making fair and moderate prices for their outrun, which will be judged by the relation which these prices maintain between raw and refined as compared with the difference between same qualities in England and elsewhere. We do not know precisely what the advantages referred to are, but we do know that in Canada the selling price of refined sugar is as close to the cost of English refined plus the duty as the figures can be made to conform.

ELECTRICAL PROMISES.

If it be true that methods have been devised for the transmission of electrical power over long distances without serious loss of energy, possibilities of a remarkable character will at once present themselves. That the difficulties in the way of such transmission would one day be overcome has been confidently expected. The wonderful advancement made in late years in electrical invention and discovery, says an American contemporary, warrant this expectation, and now reports have it that at least an approach to the desired result has really been made. These reports have whatever justification may be given by the fact that two great companies have been organized in New York State, one for supplying from Niagara Falls electricity for a trolley system for the Erie canal, and another for furnishing light and motive power from Niagara for many cities and towns in the Western part of the State. It is a fair inference that the persons who have taken these steps have some sort of assurance that their undertaking is not wholly speculative.

Consider what the meaning will be that electrical power may be generated by natural forces and carried 50 or 100 miles with energy so little diminished that it can still be used for propulsion, lighting, and heating. All through Pennsylvania, for example, there are multitudes of small water powers, once immensely valuable, but, since steam propulsion became cheap and easy, possessing almost no value at all. If electricity may be transmitted economically over moderately long distances, every one of these water powers will regain its value. Indeed it will be far more valuable for all time to come than it ever was in the past. Philadelphia stands upon two tidal rivers. In the Delaware twice every day the tide rises and falls through a space of five and a half feet. Here is a force capable of producing electricity, by means of simple appliances, in great quantities; and that which is true of tide water is true also of the current of the upper Delaware, and of the

power procurable from the Schuylkill by the canal construction.

All along the Atlantic coast from Northeastern Maine to the tip end of Florida, there is not only a tidal movement but a surf-beat of immeasurable force, capable, one would think, of utilization for the generation of electricity. So far as the mechanical uses of man are concerned the whole of this force is now beyond reach for practical purposes. Properly managed it could be made to pump water, the fall of which would light every city, run every trolley line, and move the machinery of every mill within the distance through which the electrical current thus produced could with economy be carried. At the very worst, such an anticipation is not more unreasonable or extravagant than the actual achievements of electricity within the last twenty years would have appeared to judicious observers only forty years ago.

The discovery of methods for carrying over long distances electrical currents of force not greatly diminished would produce a revolution, industrial and otherwise, of hardly less dimensions than that which followed upon the application of steam to the production of power. With transportation, mill operation, town and house lighting, and house heating, all done by electricity supplied at a very low price, assuredly the world would enter upon a new era of cheap and comfortable living. It is interesting to conjecture what the effect of such a change would be upon the value of coal properties and of coal carrying railroads. It is also interesting to note that advancing civilization is constantly giving value to things made valueless by the preceding civilization. Steam deprived of their utility small water powers and canals. Electricity promises to bring both of them again into profitable use. Old men have witnessed marvelous mechanical changes since the century began. Not unlikely the new century will have greater marvels for those who enter it in their youth.

EDITORIAL NOTES.

According to the Toronto Telegram the representatives of some of the daily newspapers of this city have been again demonstrating themselves to be nuisances that ought to be suppressed. They were bad enough at the Toronto Fair where they pestered exhibitors most disgustingly in endeavoring to obtain permission to write up notices of exhibits at so much per line; but when as in the matter of the young man who was shot to death while standing in the door of his father's residence in this city a few days ago, these reporters made themselves so obnoxious by their impertinent intrusions upon the privacy of the sorrowing family that they had to be expelled from the house. In such occurrences the presence of a good heavy, thick soled boot on the foot of a healthy athlete should be in attendance and made to vigorously perform a necessary duty.

At the recent convention in Montreal of the Canadian Electrical Association a resolution was adopted reducing the annual membership fee from \$5 to \$3. The Association don't seem to prize its privileges of membership as highly as heretofore.

Farm Machinery very pointedly says :

If a paper can not benefit an enterprise by saying good things about it there is reason to believe no injury will come to it by any bad things such a paper might take a notion to publish—and yet there are business men who view the matter in a different light.

That's it. The mossback merchant or manufacturer says : "Oh, your paper ca n't do me any good." But let an unkind item appear in it concerning his business and he will howl like a cur dog hit with a brick.—St. Louis Grocer.

At a meeting of the Junior Engineering Society, recently held in London, an interesting lecture on "Boiler Incrustations and Deposits" was delivered by Prof. Vivian B. Lewes. The lecturer, having pointed out the serious injury occasioned to boilers, and the waste of fuel due to the formation of incrustations, traced the history of various sources of water supply, and showed how the water acquired the power of forming deposits in steam generators. These deposits consist mainly of calcic carbonate, calcic sulphate, magnesian hydrate and silica, the chemical processes which lead to their deposition in the feed-water differing in each case. Calcic carbonate, which constitutes the principal ingredient in fresh water deposits, is thrown down in a dense form by the breaking up of soluble calcic bicarbonate under the influence of heat, and if it is nearly pure it forms a mud in the boiler, which can to a great extent be got rid of by blowing off. Calcic sulphate, however, is deposited by an entirely different action, as its solubility decreases with rise of temperature, high pressure

or great increase in the saline properties of the solution ; and its wonderful power of hardening deposits and binding them together into an incrustation, which can only be removed by the use of hammer and chisel, makes it a most dangerous constituent of such deposits. This hardening power is due to the fact that it deposits from water in the form of small angular crystals, and in this form gets mixed with the calcic carbonate mud. As these crystals become heated, they lose water of crystallization and change their form into fine needle-shaped crystals, which bind the mass together. Magnesian hydrate, which is found in many scales, has always been supposed to be due to decomposition of magnesian chloride at a high temperature ; but this is a mistake, the magnesian hydrate being produced by the interaction of magnesian chloride and calcic carbonate, which results in the formation of soluble calcic chloride, evolution of carbon dioxide and deposition of magnesian oxide, which, by combination with water, forms the hydrate. Examples were given of scales from various waters, and it was shown that fresh water incrustations may be looked upon as consisting chiefly of impure calcic carbonate, while the deposit formed by the use of sea water is principally calcic sulphate. Brackish waters give incrustations consisting of nearly equal portions of these substances. The question of oily deposits on plates was next considered, and the lecturer stated that, according to recent researches, mere wiping of a boiler plate with a greasy rag causes a serious diminution in its power of transmitting heat, while with an oily deposit one-sixteenth of an inch in thickness plates in some cases become so

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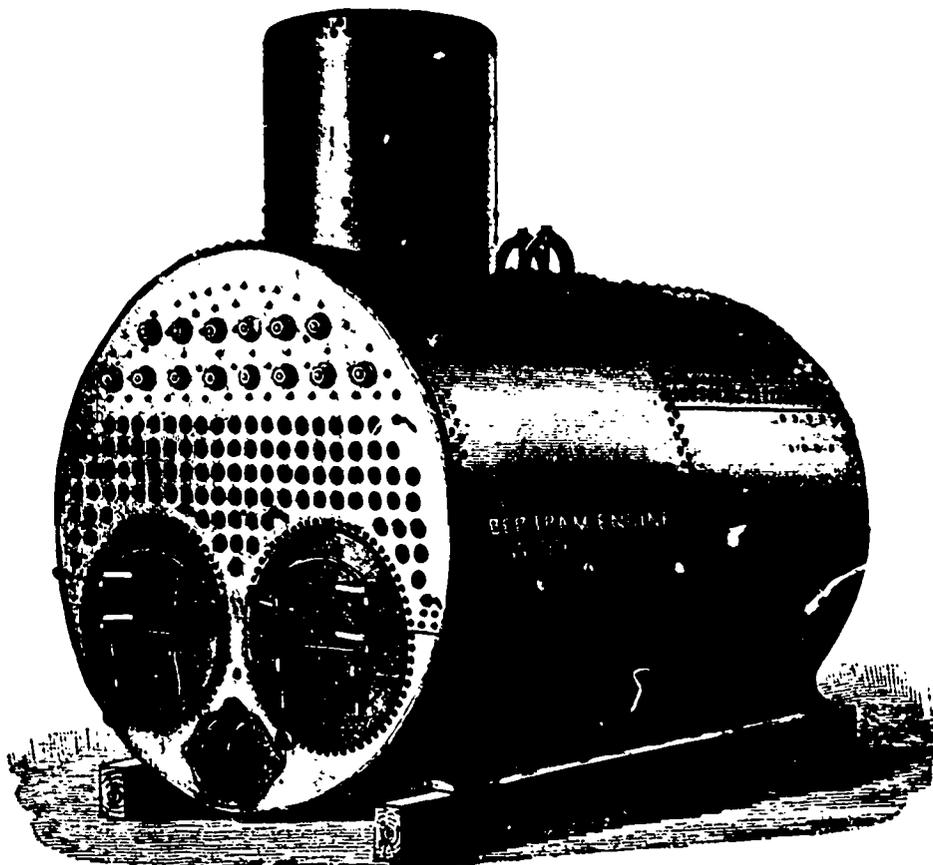
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overheated as to be unable to withstand the pressure upon them, and collapse of the furnace crowns not infrequently takes place. The question of anti-incrustators was then dealt with, and the lecturer expressed his opinion that if manufacturers were obliged to use a hard water, the most reasonable method they could adopt was to soften it on large scale before putting it into the boiler, as otherwise serious complications were likely to arise in the boiler itself.

Some of the most successful and remarkable engineering enterprises have been claimed to owe their existence to circumstances which, when considered in themselves, seem far too trivial to have produced such important results. Though opinions be divided as to the first transmission of power by electricity, for example, it has been strenuously maintained in some quarters that accident, pure and simple, was the cause of the great discovery, and an interesting story has been told for many years of the attending circumstances. This is to the effect that at the International Exhibition at Vienna in 1873, the Gramme Company exhibited two dynamo machines for plating purposes. One of these machines was in motion, and a workman who noticed that some cables were trailing on the ground, thinking that they belonged to the second machine, placed them in its terminals. To the surprise of everybody this second machine immediately began to turn, and it was then discovered that the first dynamo was driving the second. It would be strange indeed if there were not other versions of this story, and, accordingly, we find several somewhat

different accounts, from all of which, however, it would appear that the development of any measurable power in a machine taking its supply of electricity from a primary dynamo was something wholly unexpected and correspondingly startling. Closely analogous is the narrative of the origin of one of the most successful foundry blowers now in use, according to which the inventor was attempting to construct a water motor which persistently refused to go round when the water was turned on. In the determination to learn what was wrong a belt connection was made with a line shaft so that the motion of the machine might be studied. By the same means a reverse motion was given to it, and the way in which it threw the water, and, after the water had been exhausted, drove a current of air, suggested an entire change of purpose, and the machine was finished and put on the market as a blower instead of as a water motor, and thousands have been built since. The story, often told, with various modifications of detail, serves as an additional illustration of the fact that inventors frequently stumble upon success in entirely unexpected directions.

The danger of employing unqualified boiler inspectors was recently well exemplified in a small English town by a boiler explosion which did considerable damage to property in the immediate neighborhood of the scene of action. The boiler in question, says a writer in Cassier's Magazine, had gone the way that many boilers unfortunately do go after having served early the full period of their usefulness, from its last place of fairly safe operation

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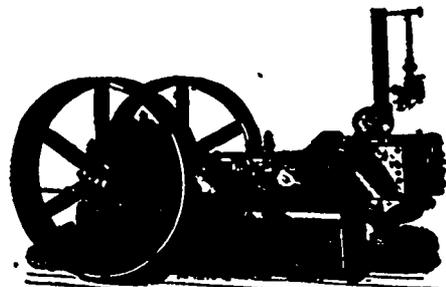
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to the paint shop of a second-hand dealer, from which it emerged spick and span, ready to be sold again to someone unacquainted with its history and eager for a bargain. Paint, we all know, has a wonderful rejuvenating power over boilers as well as some other things, and with the help of an unprincipled inspector's certificate, soon had this boiler again at work, with the result, before long, of a wrecked boiler house, damaged buildings adjoining, though happily no loss of life, and a bill for the owner for the cost of the usual investigation by the local authorities. The payment of the costs was exacted "as a warning to other steam users who rely upon unqualified, incompetent inspection, because it is cheap, and afterward plead ignorance as an excuse for their conduct." The episode pointedly directs attention once more to the subject of cheap boiler inspection and insurance, which off and on has been condemned for many years, though evidently not with sufficient vigor to have brought about its suppression. Cheap inspection and insurance rates, in fact, seem to possess an allurements to many boiler owners which is quite surprising, when even slight consideration will show that cheap service of any kind in connection with boilers is simply not worth having. It cannot be profitable, but certainly will prove dangerous. England, more than any other country, has suffered from a multiplicity of boiler inspection and insurance companies, and with growing competition among these, and failure on the part of steam users to properly appreciate the value of thorough and conscientious examination of their boilers, decrease in

price, and corresponding decrease in the reliability of the service rendered have become natural and unavoidable results. There is a price, as has often been argued, below which a guarantee of faithful inspection cannot possibly be extended without seriously affecting the financial stability of any insurance company. A close approximation to what this price is could probably be made in most cases without much difficulty, and any offer of insurance and inspection at a much lower rate should be regarded with suspicion. In the United States, if not elsewhere, the truth of this seems to have been thoroughly realized. Boiler inspection and insurance competition are there at a minimum. The work is practically all in the hands of one company, and for a long term of years has been carried on in a painstaking, thorough manner, which has demonstrated its merits beyond all question.

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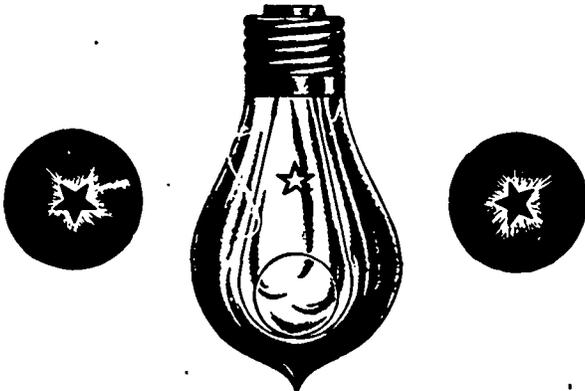
Other states as well as New York and North Carolina can now secure old war vessels, to be used by state naval reserve organizations for the purposes of drill and instruction. A bill just passed by congress gives the secretary of the navy power, upon written application from governors, to loan these vessels to states having a regularly organized naval militia. The bugbear of treaty relations with Great Britain regarding the maintenance of war vessels on the lakes will undoubtedly be raised if any of the lake states make application for the privilege conveyed by this act, but it would seem that a determined effort on the part of those interested here in a naval militia would result in overcoming the opposition. The lakes certainly afford great opportunity for the building up of a naval reserve.—Cleveland, O., Marine Review.

Better go slow in building up state naval reserves on the lakes. Treaties mean something, and that between Great Britain and the United States, which stipulates that neither power shall maintain armed vessels on the lakes, was made in the interest of peace, harmony and good will. It would not be in the interest of good government, or friendliness toward Canada to violate or abrogate the treaty. The treaty may be considered a bugbear by some, but these may be assured that no efforts that may be made on the part of those interested will ever overcome the opposition to having it violated. We are not of those who desire to see our lakes crowded with gunboats and warships under the British and American flags, but that is just what would occur if the treaty is violated or abrogated.

Some days ago it was announced in the Empire that the agent of a Belgian concern had received a contract

from the Dominion Government to supply 14,000 barrels of Belgian cement for use in the construction of the Soulanges Canal; and in a day or two thereafter the Empire published a letter from a correspondent protesting against this ignoring of the Canadian manufacturers of cement, and asking that paper to discuss the matter editorially. Of course, that correspondent will be an old and gray haired man before he ever sees any editorial article in the Empire protesting against anything that any officer of the Government may do, no matter how much it may hurt any Canadian manufacturer, unless an intimation is given by the Government of a change of policy in that respect. The fact is many of the Government offices at Ottawa are filled with imported dudes who entertain the opinion that the cheapest and most trashy stuff made abroad is better than the best that can be produced at home, and, therefore, when it is possible for them to have a voice in the matter, they are sure to decide in that way. The masters of these imported so-called experts, the heads of the Departments, are always quite ready to declare their allegiance to the N.P. and to regret that the matter had not been brought to their attention in time so that, all other things being equal, the preference should have been given to home industries. It is this persistent and systematic ignoring of our manufacturers that disgusts them with the way such things are managed, and that nauseates them with so-called organs of the Government—organs that can produce column after column of disgusting stuff emanating from convicted felons, but which can never find it convenient to give even editorial mention of the fact that Canadian

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manufacturers feel that they are suffering from injustice at the hands of the Government. The Empire can give columns to accounts of murderer MacWherrell's opinions of his jail associates, and reproduce his doggerel poetry, but never a word of criticism against a Government that sends thousands of dollars to Belgium for cement, when a better article, made by Canadian labor, can be had within a few miles of the place where it is to be used.

A Canadian contemporary quotes the statement of Rev. Dr. Marcourt, of Baltimore, who has been traveling in Germany, and who finds that women are employed in that country as laborers on railway works at pay of a little less than 25 cents a day. Our contemporary truthfully affirms that such sights cannot be seen in Canada, and adds it is because the "protective" tariff system exists in this country. Nonsense! Our conditions as a new country are not improved, but injured, by clogging the wheels of legitimate trade with unnecessary restrictions. Germany is even more a "protectionist" country than Canada is. But "protection" is powerless to aid either man or woman worker in Germany. And if Canada had no unsettled land to fall back on as a safety valve, and every man and woman who toils in the Dominion went to work each day in the year with a soldier on his or her back, it would speedily be found that our population would be even worse off than that of any old world land. Canada is better off than European countries, but it is because we have a new and comparatively undeveloped country, and every one who is not a fool will recognize that our relatively satisfactory condition is ours in spite of the class laws that our contemporary champions.—London Advertiser.

The reason why women in Germany are employed as

laborers on railway work is because they face a life struggle for the poorest necessities of life, and because they can find no more favorable and agreeable employment. If the Canadian market was open to the admission, free of duty, of such merchandise as these women might be employed in the production of, no doubt their condition might be somewhat bettered, but it would be at the expense of Canadian workmen employed in producing similar merchandise. Every laborer in Canada, man, woman and child, has great reason to thank God that they live in a country where protection shuts out the competition of the pauper labor of Germany.

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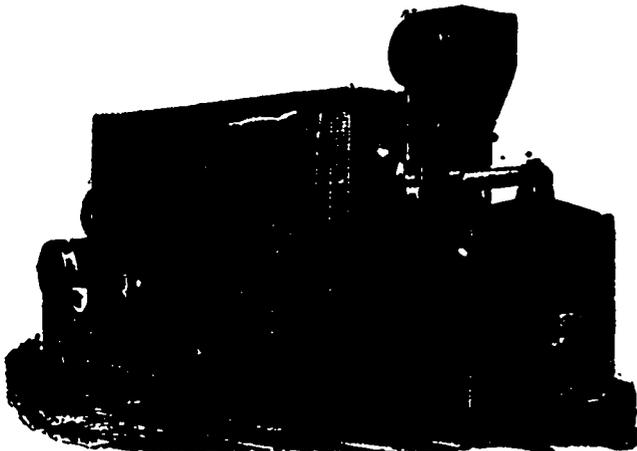
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Canadian manufacturers, and also of the Toronto Industrial Exhibition. Hear what it had to say about a certain Canadian industry :—

One of the most remarkable exhibits on the grounds is that of Central Prison binder twine, situated on the northern side of the passage running east and west through the Agricultural Implement Building. It consists of a huge pyramid of neatly wound balls of the twine which is manufactured at the Central Prison from manilla hemp imported direct from the Philippine islands, which are a cluster of about 600 dots of land in the Chinese sea, to which the hemp plant is indigenous.

Ald. Hallam explained to an Empire reporter that manilla is put to various uses, but chiefly to the manufacture of binder twine and cordage. The finer qualities of hemp are also made into such articles of dress as hats, neckties and shawls.

The display is surmounted by a banner bearing this inscription, "Central Prison Pure Manilla Binder Twine, exhibited by John Hallam, Toronto."

The display is artistically decorated by means of pictures, flags and foliage plants. On a pillar on either side of the pyramid of twine hangs a photograph of a fine looking ram bred in Scotland, and now owned by Ald. Hallam. The fleece of each of these sheep weighs 18 pounds, its wool being 22 inches long. The upper portion of the pillars and the ceiling over the exhibit which they support are hung with great strands of raw hemp, from which in various places drops the Union Jack and the Canadian flag. Round the base of the pyramid is arranged a series of foliage plants, most notable amongst which is a New Zealand flax plant, possessing sword-like leaves of variegated hues. In New Zealand to-day binder twine is being made from the fibre of this plant.

No one who visits the Agricultural Building could miss

seeing this exhibit of binder twine, while no one who comes to the Industrial at all should fail to see it. While of especial interest to farmers, it will, because of its artistic arrangement and decoration, prove attractive to citizens of city and country alike.

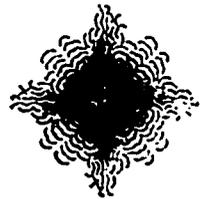
This exhibit was an insult to every manufacturer who made displays at the fair, and a disgrace to those who allowed it to be placed there. The Exhibition people made a bad blunder in allowing such an offensive object to be so prominently displayed before the eyes of the multitude of visitors who visited the grounds:

The School Property Committee has found it necessary to alter a tender for plastering because it is impossible to obtain "adamant" in Canada. The duty practically prohibits importation, and the one Canadian manufacturer has failed. This looks like a double triumph for the National Policy.—Toronto Globe.

It is pungently inaccurate to state that it is impossible to obtain adamant in Canada, and it is equally not so that the duty prohibits the importation. The Globe would desire one to believe that Canadians live in unplastered houses. It should make itself acquainted with facts.

The Statistical Year book, published by the Department of Agriculture under the direction of Mr. George Johnson, is a much more complete publication than formerly. There is a statistical summary of Dominion matters from Confederation to date, folded into the front of the volume, that is of great value as a matter of reference. The census returns have been made to yield a vast deal of

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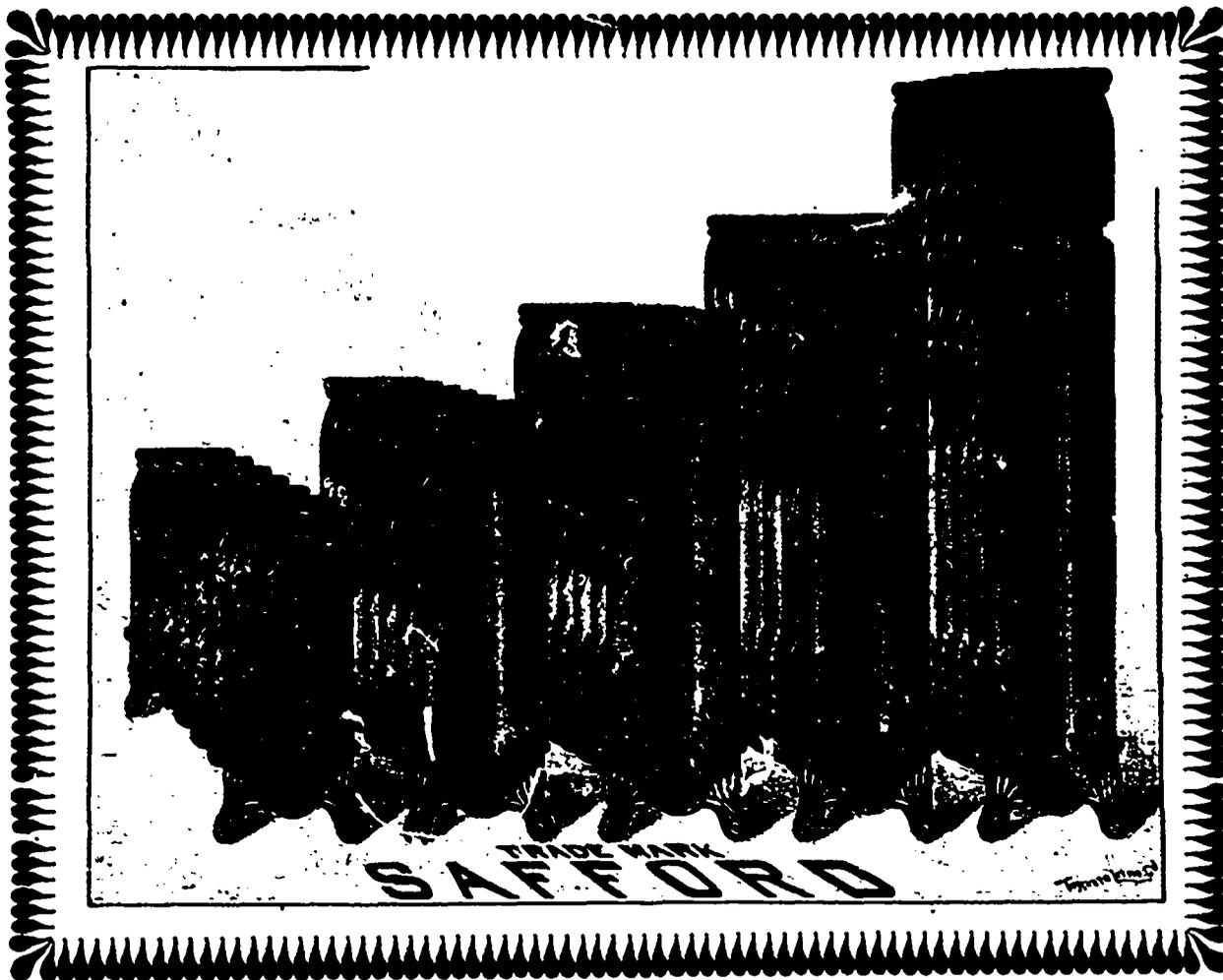
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interesting information and it has been put in convenient form for reference. The last pages contain a short report of the sessions of the Colonial Conference, and even a sketch of the Liberal Convention of June of last year, is given a place. The whole makes a very valuable handbook for the student of Canadian affairs, and Statistician Johnson is to be congratulated on the result.

We suggest to the Toronto Railway Company to attempt to work out the problem of telephones in their electric cars. No doubt the time is not far distant when telephonic communication can be had through instruments in street cars quite as well as from offices and residences. Try it.

An electrician of St. Louis is reported to have succeeded in so concentrating the electric light that it will be possible to illuminate the human brain. If this electric light concentrator can be utilized in a practical manner an effort will be at once made to obtain one to be used in the case of Mr. Laurier who should be enlightened upon some of the subjects of which he spoke at his recent reception in Brantford. He showed that Canadian prosperity cannot consist in closing Canadian workshops in favor of those of other countries.

The London Times is far astray in saying that during the Congressional tariff fight every move was considered from the standpoint of party advantage. The sugar Senators, coal Senators, wool Senators, lumber Senators and

all other Senators of their class considered every change with a view to securing monetary advantages at the expense of the community. They were like our own encouraged elements in Canada.—Toronto Globe.

The Globe is far astray in its conclusions in this matter. The American Senators were well within the bounds of their rights in holding out against a free trade House of Representatives who desired to slaughter American manufacturing industries.

In many western towns and as far east as Sudbury, Australian butter is used. A good, cheap Canadian article would quietly force this competitor into another field, but Canadian farmers have not yet awakened to the real importance of butter making.—The Empire.

Wheat and other grains, and hay and root crops would be infinitely more valuable to Canadian farmers, if converted into fat cattle, hogs and sheep, and into cheese and butter; than if sold as such in the overcrowded markets of the world. The hope for Canadian farmers lies in the diversity of their crops.

The Textile World of Boston, is adding a new feature which is unique in trade journalism. It is publishing not only a complete directory of all the textile mills, bleacheries, dyeing and finishing establishments in the United States, but also gives maps showing the

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location of mill towns. The maps are divided into five and ten mile squares, and the location designated by number and letter. October issue gives New England in full, and later issues at intervals will give the mills in other sections, thus completing the entire country during a year's subscription. In statistical and kindred information, as well as technical articles, the Textile World has a high reputation, so much so that in ex-President Harrison's last message to Congress the statistics concerning the growth of textile manufactures were taken from the Textile World and duly credited in the message. The price of the October number containing New England Directory is 50 cents. Guild & Lord, publishers, 620 Atlantic Ave., Boston, Mass.

The Electrical World of October 27 presents the earliest and most complete report of the recent meeting of the American Street Railway Association, and no expense or pains have seemingly been spared to make the issue particularly interesting and valuable to street railway men. In the belief that few business men can afford the time to read all the papers in full, both the papers and discussions have been carefully abstracted so as to give in the briefest possible space the gist of the subjects considered. A running report of the proceedings enable those not present at the meeting to know exactly what took place. The exhibits, which formed so important a feature are briefly described and all the important ones handsomely illustrated. The social features and the journey to and from Atlanta are also pleasantly treated.

When a woman is at her best, mentally and physically, is a question which receives adequate answer at the hands of such representative women as Mrs. Julia Ward Howe, Mary E. Wilkins, Mrs. Amelia E. Barr, Mrs. Burton Harrison, Octave Thanet, Gail Hamilton, Mary Mapes Dodge, and others in the November Ladies' Home Journal. Good fiction is a tonic, and the serial story, A Minister of the World, by Caroline Atwater Mason, for which William T. Smedley has prepared some charming illustrations, will prove one of the best. Mrs. A. D. T. Whitney contributes another interesting Friendly Letter to Girl Friends, and Mrs. Burton Kingsland writes of the social laws which govern the Introduction of a Girl to Society. The twelfth installment of Mr. William Dean Howells' My Literary Passions is full of interest and charm, and Mrs. Lyman Abbott, in Looking Toward a Wife, defines the wisest position for parents in the love affairs of their sons. Rose Hawthorne Lathrop contributes a poem, and Mary Chahoon a Thanksgiving story, The Sociable at Barnes' Corners. The Christmas anthem by Bruno Oscar Klein, which won the prize in the Journal's Musical Series, is given. Palmer Cox has his Brownies play football. The editor discusses the financial

problems that have beset the nation during the past year, applying their effects upon women in the home. Maria Parloa writes of Heat and Light in France, Mrs. Mallon of Graceful Dinner Gowns, Miss Hooper of Frocks for Girls of All Ages, Helen Jay of The Work of a Farmer's Wife, and Elizabeth Robinson Scovill of Thanksgiving for the Children. For this delightful issue Mr. Wenzil has designed an attractive cover, which does its part toward making this holiday number a particularly attractive one, and one which no woman can afford to be without. The Journal is published by The Curtis Publishing Company, of Philadelphia, for ten cents per number and one dollar per year.

The Popular Science Monthly for November makes a strong opening for a new volume. First comes a fully illustrated account of The Glaciers of Greenland, by Prof. Anglo Heilprin. The explorations of Peary, the mysterious loss of Verhoeff, and the recent unlucky trip of the Miranda have made Greenland a region of much present interest. There are two notable educational articles in the number. In Preparation for College by English High Schools, Mr. John F. Casey tells what boys who enter college without Greek are doing. Dr. C. Hanford Henderson contributes the first of two articles on Manual Training, in which he shows what a well-planned manual training course consists of. The Cobra and other Serpents are described, with illustrations, by Mr. G. R. O'Reilly, who has lived among snakes in various parts of the world, and is able to correct several popular errors concerning their habits. This number contains also the recent address of the Marquis of Salisbury upon assuming the presidency of the British Association for the Advancement of Science. There is an admirable little scientific temperance lecture by Dr. Justus Gaule, under the title Alcohol and Happiness. A description by The Swiss Watch Schools, is given by Theodore B. Willson. Redonda and its Phosphates are described by Fred W. Morse. W. T. Freeman calls attention to Some Analogies and Homologies in vegetable life. Something of the Chemistry of Cleaning is explained by Prof. Vivian Lewes. There is an account of the career of Philibert Commerson "the King's Naturalist," while the subject of the usual Sketch and Portrait is Sears C. Walker, astronomer of the United States Coast Survey in its early days. New York: D. Appleton & Company. Fifty cents a number, \$5 a year.

Outing for November, a special enlarged number, contains seasonable matter from the field of sport and recreation: excellent fiction, and many beautiful illustrations. The contents are as follows: The Emerald of Merida; by T. Philip Terry; Couleur de Rose, by Grace Ellery Channing; The Ainos of Northern Japan, by Henry T. Finck; A Woman in the Mackenzie Delta, by Elizabeth Taylor; Deer and

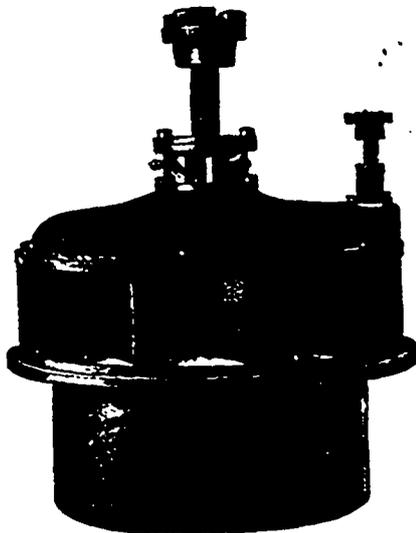
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Deer-Shooting, by Ed. W. Sandys; Goose-Shooting in the Dakotas, by F. B. Feltham; Aquatic Sports in Australia, by George E. Boxall; Lenz's World Tour Awheel; The Northwestern Forces of Canada, by Capt. Hy. J. Woodside; Pigeons and Pigeon-Netting, by Lieut. Wendell L. Simpson; Bicycling in Bermuda, by Percy C. Stuart; Football in '94, by Walter Camp, of Yale; Football in '94, by Lorin F. Deland, of Harvard; and the usual editorials, poems, records, etc.

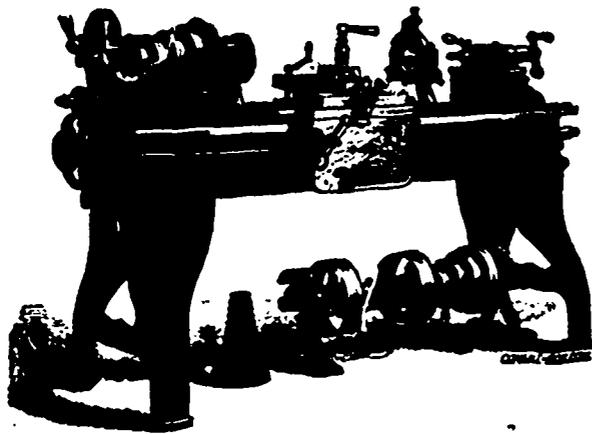
Scribner's Magazine for November has for its leading article Election Night in a Newspaper Office, written by Julian Ralph, one of the New York Sun's special correspondents and a newspaper man of wide experience. It is fully illustrated with drawings by B. West Cline-dinst. Col. H. G. Prout's second article on English Railroad Methods deals with their organization and management. He gives interesting facts respecting passenger and freight traffic, cost of construction, etc., in England and America. The illustrations are by A. B. Frost. Prof. N. S. Shaler's article on The Horse, tells in an untechnical and thoroughly interesting way of the development of this fine animal. The French painter Delort has made a series of striking pictures to accompany the text. The writers of True Pictures Among the Poor, Robert Howard Russell, William T. Elsing, Edward W. Townsend and Jas. Barnes, tell simply, and without any unnecessary coloring, of actual incidents that have come under their observation. Joel Chandler Harris's story of How Whalebone Caused a Wedding is full of the spirit of the old South, and the description of the famous Christmas fox-hunt is in this popular author's best vein. It is illustrated by R. F. Zogbaum. The King of Currumpaw, by Ernest E. Thompson, with illustrations by the author and from photographs, is the story of an enormous wolf whose depredations made him a terror for years among the ranchmen of New Mexico.

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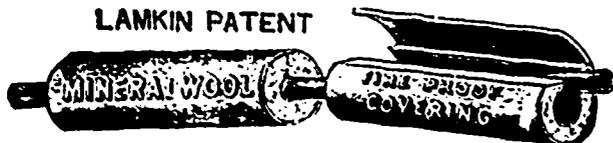
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George I. Putnam contributes one of his characteristic army post-articles, called The Third Relief. An article of peculiar interest to artists will be the description of The American Girls' Art Club in Paris, by Emily M. Aylward. It is illustrated by Miss Minna Brown, one of the students, and V. Perard. The frontispiece of the number is a reproduction of Louis Deschamps's great painting, Charity, another of Mr. Hammerton's selections, who contributes an entertaining biographical sketch of the artist.

A Fine Electrical Exhibit.

At the recent industrial exhibition at Halifax, N. S., Messrs. John Starr, Son & Co., of that city, made a very attractive electrical exhibit which was thought to be the most comprehensive in its line ever shown in Canada, and reflected much credit on that enterprising firm. The firm had their own dynamos (Lahmayer), run by a Robb engine. It was a 300 light machine and there were between 200 and 300 lights in the circuit on the Messrs. Starr's exhibit, the lamps being the famous Starr lamp. Directly in front of the exhibit was a show board with the name of the firm in letters formed with 56 lamps, and when lighted looked very pretty. Then there was an illuminated star with the word "Starr" in the centre. The exhibit embraced electric self-winding clocks, which never need to be wound by hand, and which do their own winding every half hour; and the "Unique" telephone, of which the firm make a specialty, and which are used for exchange, warehouse, private or other purposes; a portable desk telephone; a watchman's detector, which is claimed to be the only one made which the watchman cannot beat; an elaborate display of electric measuring and testing instruments; fan motors for large buildings or for ordinary shops or rooms; display of electric bells and electrical house fittings; electric light supplies and tools; curling tong motor, an article which should be popular with the ladies; portable electric lamps of neat design; case of telegraphic apparatus, etc. Box No. 43, of the city fire system, was in this exhibit and was connected with an indicator, which immediately tells the number of the alarm struck. In the centre of the exhibit was a pyramid turntable of colored lights, which looked very handsome. The electric switch board exhibited was a superior one. Each circuit is under separate control. The telephone switch board was of the firm's own manufacture. The principal point of note about it was that it was impossible for the shutters to fall unless a call was made. The one on exhibition was for 50 subscribers. Recently this firm supplied a board of the same kind, for 20 subscribers, to the Ontario Government, which is for use in the insane asylum at Mimico. They also supplied the telephones for the same. The belt used to run the machinery in this exhibit was

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made by the MacLaren Belting Co., of Montreal, of which firm Messrs. John Starr, Son & Co. are agents. The firm make a specialty of dynamo belts and have supplied some of the largest electric light companies in Canada.

Letters patent have been issued incorporating the Crown Pressed Brick Co., with capital stock of \$100,000 with headquarters at Ot-

The Griffin Mill.

The accompanying illustration is of the Griffin Mill manufactured by the Bradley Pulverizer Co., 92 State St., Boston, Mass.

The company describe the mill as follows:—

The reduction of rock and ores of all kinds to a fine powder has always been attended with difficulty, and it has been one of the serious problems of designers to provide satisfactory machinery for this purpose. Buhrstones have been used for the softer rocks, and the old-fashioned stamp mills for the harder, but both of these methods have been very expensive to maintain, and many mills have been invented in the endeavor to do better work at less cost.

The Griffin Mill is intended to replace both of these antiquated methods. It is the outcome of years of practical work and the expenditure of a large sum of money in costly experiments. It has been perfected by close attention to its actual reduction of all hard refractory materials.

This mill employs in its construction the principle of a rigid roll on a suspended shaft running against a ring or die. Heretofore in all

mills employing this principle the roll has been propelled by being pushed around by drivers, or carried on journals within the roll, and the friction and destruction of the pushing devices and journals have been great and involved loss of power and excessive wear and tear. In the Griffin Mill this difficulty is overcome by a rigid roll on a revolving shaft having freedom to swing outward against the die by use of a universal joint. The centrifugal force holds the roll in contact with the ring, or die, against which it runs. This device is a new mechanical movement which has not been employed heretofore in any kind of a machine. This invention obviates the use of multiple shafts and journals in pulverizing chambers with revolving rolls, thus greatly reducing the wear and tear and at the same time producing a larger product. The roll is fixed rigidly on a solid shaft suspended from a pulley above by means of a universal joint rotating with the pulley, the joint giving the shaft and roll freedom to swing outward when in operation, pressing against the ring or die. The roll is revolved within the die in the same direction that the shaft is driven, but when coming in contact with the die it travels around the die in the opposite direction from that in which the roll is revolving with the shaft, thus giving the mill two direct actions on the material to be ground.

There is a pressure by centrifugal force of 6,000 pounds brought to bear on the material being pulverized between the roll and die, the united actions being very effective in their combination.

The Griffin Mill thus produces a very fine uniform product, every particle of which is perfectly fractured instead of being smoothly ground, as in buhrstone and other mills.

tawa, to manufacture brick, terra cotta, fire clay goods, tiles, drains, pipes, etc.

There are no fewer than thirty thousand operatives in Belfast, Ireland, engaged on flax in fibre, and five out of six of them are women. They live for the most part cheaply, tea and bread forming a large share of their diet. The report of the British Inspector of Factories says they are not careful enough as to diet and dress, for they object to wearing flannel—Free trade prevails in Ireland.

The perfect granulation of products ground by this mill makes the mill especially suitable for reducing ores of all kinds, as the product leaves the mill in the best possible condition for either amalgamation or concentration.

The illustration shows a perspective view of the mill for dry pulverizing, and clearly shows its construction; the roll, shaft, and universal joint being in full line and the other parts in light lines.

The material to be ground is put into the automatic feeder, which delivers it into the pulverizing chamber, where the rapidly revolving roll with plows attached to the under side keeps the material in constant motion between the roll and die and, as the whole mass of material is being stirred, the fine portion rises to the top and passes out through the screens.

On the shaft above the roll are fans, which draw in air through the conical housing and assist in forcing out the finished product. By this method no dust can escape except through the screens. After

going through the screens the pulverized material passes through an opening into the receptacle underneath, from whence it can be conveyed wherever desired.

This makes the Griffin Mill especially valuable for reducing gold bearing ores; many authorities now advocating and stating that "herein lies the secret of high assays before working, and small returns after."

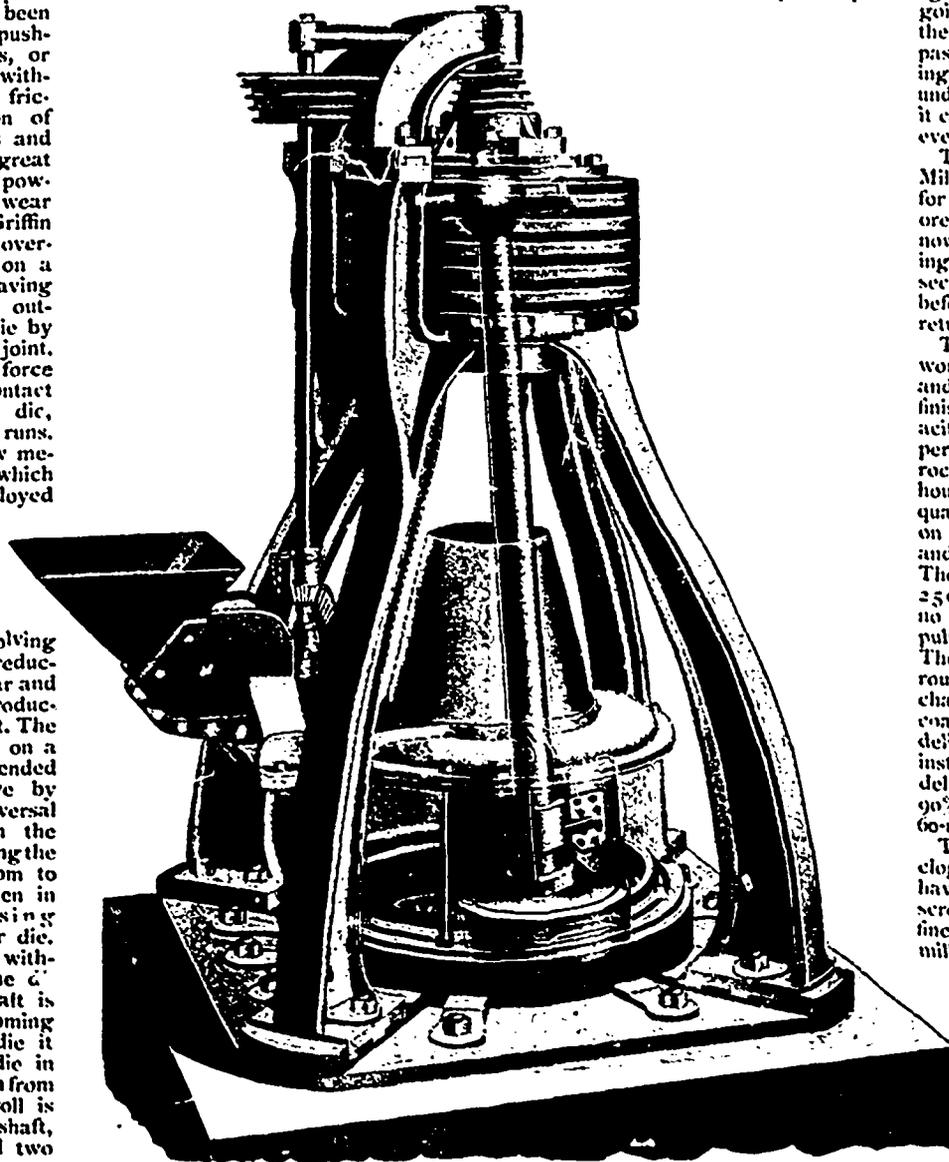
The Griffin Mill will work either wet or dry, and always delivers a finished product. Its capacity is from 3 to 4 tons per hour on phosphate rock; 1½ to 2½ tons per hour on portland cement quartz or ores, depending on hardness of material and fineness of product. The mill grinds from 30 to 250 mesh, and has no exposed journals in pulverizing chamber. The screen which surrounds the pulverizing chamber is of much coarser mesh than the delivered product; for instance, a 16-mesh screen delivers a product, over 90% of which will pass a 60-mesh screen.

There is, therefore, no clogging by reason of having to use fine mesh screens in order to secure fine products, as in other mills.

In the wet pulverizing mill the fans are omitted. Water is introduced with the feed, and the product is carried out through the screens into the surrounding trough, which

delivers it to amalgamators, concentrators, or other saving apparatus.

The Griffin Mill is a splendid example of mechanical ingenuity, which, wrought out by skilled mechanics from the best of materials, results in a strictly first-class mill of enormous capacity and great strength.

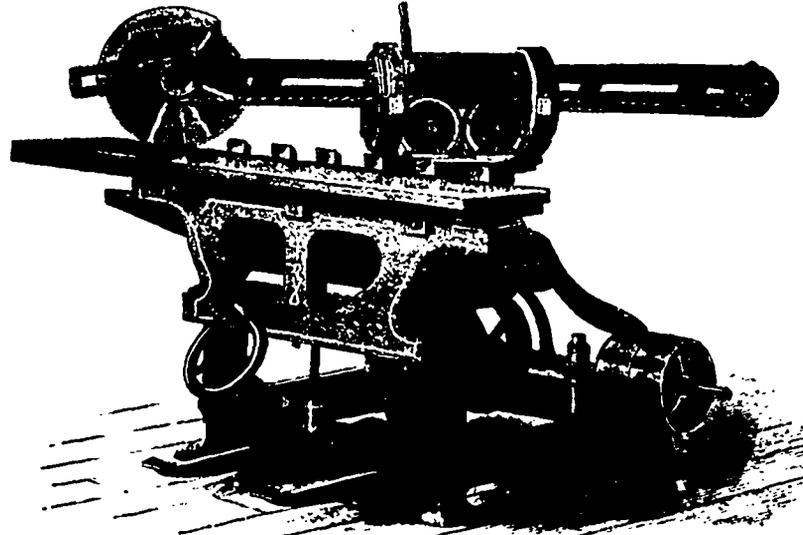


THE GRIFFIN MILL ARRANGED FOR DRY PULVERIZING.

The Phillips Mitreing Saw and Dado Machine.

The accompanying illustration is of the newly invented Phillips Mitreing Saw and Dado Machine, manufactured by J. H. Banes & Co., 117 Queen St. West, Toronto.

In introducing this machine, the inventor and the manufacturer express the opinion that it will be of the utmost benefit to those who require such wood working machinery, and it certainly embodies two very desirable requisites in such a machine, speed and excellence of work. It is peculiarly adapted to fine work, such as the housing of stair strings, dado shelving, window frames, doors, etc. The circular saw itself can be quickly adjusted to any angle, and can cut perpendicularly, and at any angle right or left, at any degree, and by its adaptation of cutting from above, it produces the finest possible work, doing away entirely with the rough, ragged edges so often seen where the work has not been done upon a machine of this character.



THE PHILLIPS PATENT MITREING SAW AND DADO MACHINE.

It is fully regulated and protected by the regular stops, and a marker in connection therewith indicates the degree of the angle at which the saw is being used. The table can be used stationary or moveable according to the work in hand. It is quickly and easily made to perform all sorts and kinds of mitre cuts, including the finest and most intricate work, and its clear cut and distinguished work in all kinds of cabinet, sash, door and box making, has gained for it the most favorable comment from all who have seen it in operation. To employers of labor it is especially commended. The cost is comparatively small, and the necessity of a machine that can be relied upon to produce quickly first-class work, and the great time saved in labor must be apparent to all.

Further information may be obtained regarding this machine from Mr. J. H. BANES, Queen Street West, Toronto.

Conneaut-Port Dover Car Ferries.

The new Conneaut-Port Dover car ferries, to be built by a company organized by Col. Dick, president of the Pittsburgh, Shenango & Lake Erie Railway Company, will, if constructed according to plans prepared by Frank E. Kirby of the Detroit Dry Dock Company, be among the largest in the world. The boat designed by Mr. Kirby is 350 feet over all, 37 feet beam, 20 feet deep, moulded, and 27 feet deep from the upper deck to the bottom of the hold, and will be of steel up to the top of her rail, with wooden upperworks. She

will carry—on her main deck—thirty of the regular 30 or 34-foot cars, and they will be loaded at the stern and on deck will be completely housed in. At the bow she will be closed in and at that point will have the same appearance as the regulation steamer. Ample accommodations for the officers and crew will be provided on the upper deck.

The boat will be driven by twin triple expansion engines, which, combined, will develop 2,000 horse power. The cylinders will be 181, 30 and 50 by 36 inches stroke. Steam will be furnished by four cylindrical boilers and the Howden hot draft system will be applied.

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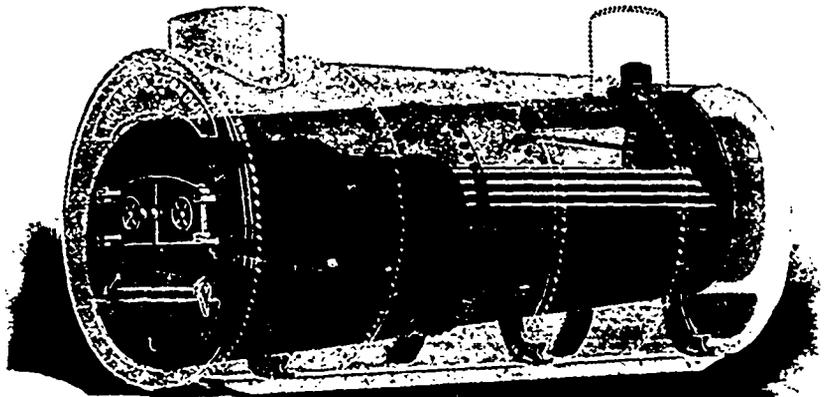
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--- ECONOMY. ---

Robb Engineering Co., Ltd., Amherst, N. S.

Light will be furnished by 350 16-candle power electric lights, and she will have a 6,000 candle power search light. An improvement will be a water tank built crosswise into the hull, to be partly filled with water, the counteracting motion of which will steady the boat in a heavy sea. These tanks are used in modern warships, with a view to giving them a steady deck when in battle in a seaway. She will in no way resemble any car ferry now in existence, but with her two smokestacks, set fore and aft amidships, will look more like an ocean-going steamship.

As noted elsewhere, bids on two boats of this type are now being received in the company's office at New York. They are intended to carry freight and passenger cars between Conneaut, O., and Port Dover, Ont., in connection with the Pittsburgh, Shenango & Lake Erie road at the former port and the Grand Trunk at Port Dover. The run each way will be about 50 miles, and the difficulty from ice will, of course, not be so great as that encountered by boats in the Straits of Mackinaw or on Lake Michigan.—Cleveland, O., Marine Review.

CAPTAINS OF INDUSTRY.

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

The Thompson Electric Co., Waterford, of which Mr. John W. Thompson is general manager, informs us that they have purchased the manufacturing plant, including real estate, machinery, tools, and stock, also all the patents, franchises, and rights formerly owned by the Reliance Company of that place. The new company have their works now in full operation and continue the manufacture of all kinds of light and power apparatus. They are adding many improvements to the apparatus the Reliance Company made and redesignating it to make it as modern as any on the market.

A scheme to connect Aylmer and Hull, seven miles, by electric railway, was laid before the Aylmer Town Council, by a private company with a capital of a quarter million dollars, and represented by Mr. T. Viau, contractor of Hull and promoter of the Hull Company. Montreal and Quebec capitalists are backing Mr. Viau. They propose to build a line connecting Aylmer with Hull, which practically

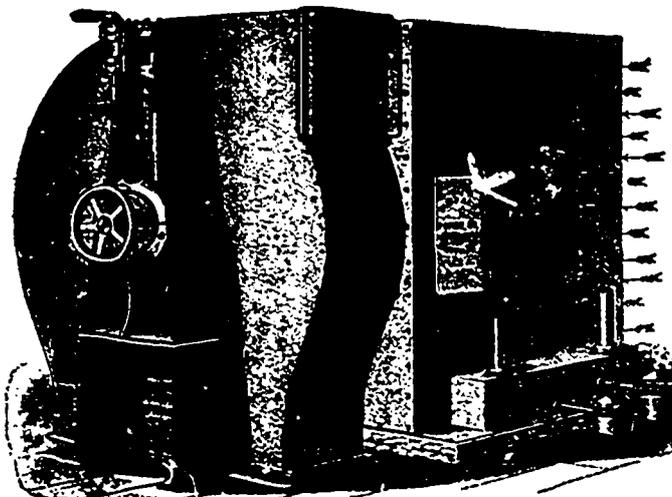
means connection with Ottawa as well, and give Aylmer an electric light system upon the conditions that the ratepayers of that town bonus the company \$10,000 and grant them 35 years' exemption from taxes. The Council have struck a special committee to confer with the agents of the company.

Messrs. John Starr, Son & Co., Halifax, N.S., manufacturers of the Unique telephones, have sent us a pamphlet describing them and in which they refer to them as being the simplest, cheapest, most efficient and reliable electric telephones extant for either long or short distances. These telephones have been on the Canadian market for several years, and in every case have given perfect satisfaction. They have been improved from time to time, both in style and finish, as well as in work, until the present styles, illustrated in their catalogue, were produced, which they say are as near perfection as it is possible to make them. The principal advantage in the Unique lies in the transmitter, which they say is the only one made that can never get out of adjustment or rust up, and is not affected by sudden changes of temperature, jarring etc. It has no screw or spring adjustment to work loose; the adjustment is all done at the factory, and every instrument is thoroughly tested before being sent out, and unless wrongfully used, should never need any attention beyond replenishing the battery about once a year at a cost of a few cents. Another advantage is that the same transmitter is used for either long or short distances without change of adjustment, as is necessary in other makes. These are all very strong points in its favor, as the transmitter is the vital part of a telephone, and with one that does not require attention a great saving is made in its maintenance, to say nothing of the convenience and lack of annoyance which the vast majority of telephone users will readily understand.

The Unique transmitter is composed of specially prepared carbon plates and balls, placed in a manner peculiarly sensitive in the conveyance of sound. A mouth-piece is used in order that the sound of the voice may be concentrated, and so be brought more forcibly on the diaphragm.

The Unique telephones are carefully made by experienced workmen and handsomely gotten up. Every instrument is thoroughly tested and inspected before leaving the factory. Special silk-covered wire is used throughout in all the coils, which are carefully wound to a standard resistance, and measured before being used. Particular attention is paid to the switches, which are very strong and have splendid make and break connections, and good rubbing contacts which keep same always bright and clean, thus ensuring good connections. All connections are soldered with special salts, and every detail of their manufacture is most carefully worked out. All

Buffalo Lumber Dry Kilns



The Largest Drier in America is equipped with a "BUFFALO" Hot Blast Apparatus.

THE OWNERS ARE ENTHUSIASTIC

All Users of Buffalo Kilns write letters similar to this one
 "The Kiln answers every purpose to perfection: the Dry Rooms are run with exhaust steam at mere nothing in the way of cost, compared with the old way. Your arrangement is very simple and easily managed, besides being a money saver in operation. We are able, with the Kiln you sent us, to dry soft woods in three days, and hard woods in five days. That's good enough for anyone."—SMITH BROS., Sayre, Penn.

Send for Catalogue.

BUFFALO FORGE CO., Buffalo, N. Y., U.S.A.

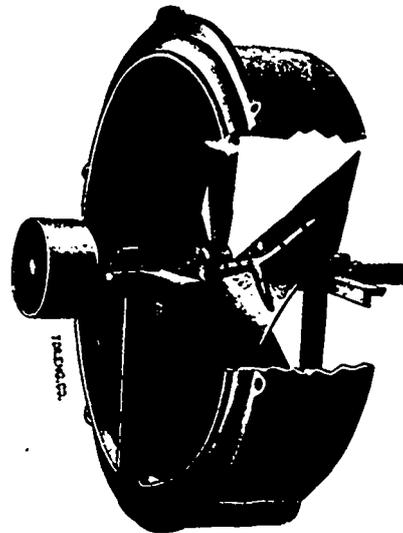
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McEachren's Improved Fan

PATENTED 1893

For Ventilating, Heating, Drying, Etc.



Specially adapted to
HEAVY WORK

Will handle more air at a GIVEN PRESSURE with a GIVEN POWER than any other Fan in the market.

For particulars address

J. D. McEACHREN - - - GALT, Ont.

Rockwood, March 16th, 1893.

Mr. J. D. McEachren, Galt.

Dear Sir,—In reference to the Drying and Ventilating Fans that you put in last fall they are working well, keeping the rooms dry and comfortable. The wool dries with cold water coil; is drying 500 to 600 lbs. of wool per day WITHOUT HYDRO EXTRACTOR, on 6 x 12 feet of netting. If the room was larger we are sure that the capacity would be much increased. The Fan in end of dye house keeps the steam well drawn off, and the alterations on cloth drier have enabled us to dry more than double the goods than we could formerly. We would make special note of the small amount of power required.

Yours truly, HARRIS & Co.

our switches are automatic and do not require any mechanical re-set. Their magneto bells are all fitted with an improved automatic cut-out so that in calling up it is not necessary to press in the handle, which is often forgotten, thus causing confusion; this is a great advantage over the old form.

The receivers have a highly polished hard rubber shell, and are all fitted with compound magnets of specially imported and tempered steel, with nickel tip to prevent rusting, and are strong and loud. The receiver cords are the best made, with patent tips and attachments to relieve the strain from connections. The woodwork is of the best seasoned cherry, finished in the natural wood and polished, not stained. All the trimmings are nickel plated, which with the light, polished cherry, make a very handsome finish. Every part is made for constant use, and guaranteed to be as represented.

The Unique telephones will work satisfactorily in connection with the Bell and other makes, so that telephone managers and others requiring more instruments will not need to do away with their present telephones to avail themselves of the many advantages of using the Unique, but can connect them right in together.

The different styles illustrated and described in the catalogue show that they are adapted to about every purpose to which such instruments may be put. In connection with these telephones this company manufacture every necessary appliance requisite in their use, such as switch boards, line wires, batteries, brackets, guard arm pins, glass insulators, porcelain insulators, rubber tubing, tape, etc.

The testimonials included in the pamphlet are very numerous and show the very high estimation in which these Unique telephones are held by those using them. Some of these testimonials are given for a number of years' use, during all of which time the telephones have given perfect satisfaction without requiring any attention whatever. This is a record of which the concern have good reason for being very proud. Included in the names of those who have given these testimonials, we mention the Union Telephone Co., Arichat, Cape Breton; The Antigonish Telephone Co., Antigonish, N.S.; G. J. Hamilton & Sons, Pictou, N. S.; J. H. Morrow, Brighton, Ont.; John E. Hardman, Oldham, N.S., manager of the Standard Gold Co.; the Oldham Gold Co. and the Napier Mining Co., Rhodes Curry & Co., Amherst, N.S.; Lowe & Farrell, Electric Supply Co., Hamilton, Ont.; Gordon and Keith, furniture manufacturers, Halifax, N. S.; A. H. Merkeley, proprietor steam saw mill, Morrisburg, Ont.; Acadia Coal Co., Stellarton, N.S.; Robb Engineering Co., Amherst, N.S.; The Canada Atlantic Steamship Co., Halifax, N. S.; Pickford & Black, steamship agents, Halifax, N.S.; E. D. Tilson, flour mills, Tilsonburg, Ont.

The Kingston Carriage Co., Kingston, Ont., expect to have their new factory in that city in operation in a very few days under the management of Mr. W.E. Walton, Gananoque.

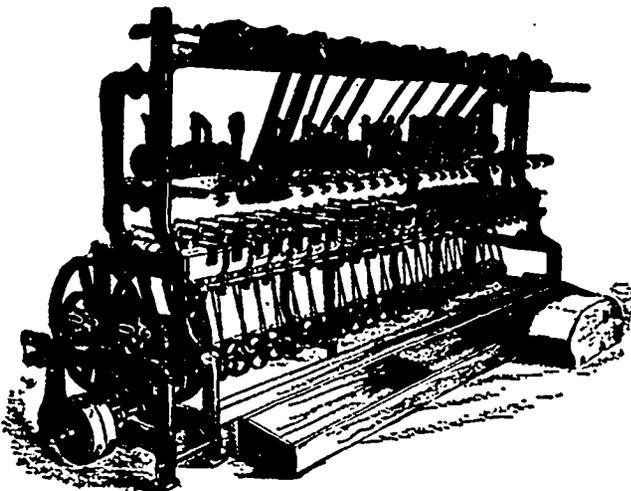
The Thompson Electric Co., Waterford, Ont., have just closed a contract with the Light, Heat and Power Co., of Newmarket, Ont., for a 700 light alternator, and station fixtures, together with a 600-light capacity in transmission and about 400 lamps installed. This plant is to be in operation by Nov. 24.

Surveying has been begun between Hamilton, Ont., and Grand River with the object in view of building a canal between the two points, and utilizing the water of Grand River for power purposes. A rough estimate of the fall at Hamilton places it at about 300 feet. A.C.E. Pew, Royal Hotel, Hamilton, is one of the promoters.

Messrs. Darling Bros., Montreal, since our last notice regarding them, have made the following shipments of their special machinery: A 200 h.p. Webster Vacuum Feed Water Heater to Toronto Carpet Mfg. Co., to enable them to use their exhaust steam for heating their building; to Granite Mills, St. Hyacinthe, Que., one improved power elevator; Hoey Bros. Packing Co., Sherbrooke, Que., one improved hand power elevator; Academy of the Sacred Heart, Montreal, one hand power elevator; Matthew Moody & Sons, Montreal, one 7-inch Webster oil extractor for removing oil from their exhaust steam; Ottawa University, Ottawa, one Morse valve reseating outfit; the Dorchester Penitentiary, Dorchester, N.B., one Morse valve reseating outfit; Bell Organ and Piano Co., Guelph, Ont., one Morse reseating outfit; Messrs. J.Y. Shantz & Son, Berlin, Ont., one Morse valve reseating outfit.

A few weeks since the St. Louis School Board determined to make an investigation of the claims made by the manufacturers of the Buffalo Fan System of Heating and Ventilation. To this end, telegrams of enquiry were sent to the School Boards in Denver, Salt Lake City and Colorado Springs. The following are the responses as transmitted by the Western Union Telegraph Co.:—From Colorado Springs, Colo., July 31st, 1894:—"Buffalo fans in High School here give perfect satisfaction and could not be more perfect in their work. We recommend them whenever absolute perfection in ventilation and heat is required." From Salt Lake City School Board, Salt Lake City, Utah, 8-1-94:—"Buffalo Forge Co.'s heating and ventilating plants most satisfactory; in use of fuel most economical system we have adopted, four schools and one hospital working perfectly Buffalo System." From Denver, Aug 1st, 1894:—"Buffalo Fan System in Denver Schools entirely satisfactory; most excellent in efficiency and economy; air always pure."

MEDAL AWARDED AT WORLD'S FAIR



Patent Bobbin Winding Machine, for Worsted or Cotton Yarns

Pat. Nov. 22nd, 1887. With variable motion. Pat. Aug. 5th, 1883.

The Only Successful Skein Winder

Variable Motion, patented Aug. 16th, 1891, and Sept. 5th, 1893.

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Machines, Reels, Etc.

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A.W. LEITCH, 16 Hughson St. South, HAMILTON, ONT

The Thousand Islands Carriage Co., Gananoque, Ont., expect to have their new factory completed and in operation on Nov. 7, giving employment to a staff of 60 workmen.

The Wentworth Gypsum company are keeping up to the times in the introduction of labor saving appliances in carrying on their extensive quarries at Wentworth. They have recently purchased from the Canadian General Electric Co., of Toronto, two electric drills and the necessary dynamos for working them. One drill is for soft plaster and is rotary; with it and one man to tend it a hole can be bored at the rate of two feet in less than a minute. With the motor it weighs 150 pounds and is very convenient and simple. The other is a percussion drill for hard plaster and is an improvement on the steam drill previously used. The company are also to erect two cable lifts each 1,000 feet long and capable of supporting six tons. These will carry the plaster from the different places where it is quarried to the cars which will greatly facilitate the work. The length of the cables will convey to any, who have not visited them a comprehensive idea of the extent of the quarries worked by the company.—Windsor Tribune.

People in this vicinity had almost begun to think the electric railway, for which Mr. P. R. Randall obtained a franchise of the streets of the town, had dropped out of sight. But it is not so. Mr. Randall has been quietly but hard at work, and now the railway is a positive fact. In an interview this morning Mr. Randall said that right of way had been secured on Port Hope streets and Rice Lake gravel road. The Peterborough Electric Railway Co. have agreed to extend their railway below the locks at that place to connect with steamboats that run between there and Bewdley, the terminus of the branch from town. With a strong company managing the scheme work of laying the track will be started as soon as possible in the spring. The proposed road will run from the corner of Ridout and Bramley Sts. in Englishtown through the town to Mill St. and from thence out Mill and Ontario to the gravel road and on to Rice lake. Trips are to be made every two hours and the steam-boats will make four round trips a day between Peterborough and Bewdley. Connections can also be made with boats going down the lake. If satisfactory arrangements can be made, a branch will be extended to Cobourg.—Port Hope Guide.

The Quebec City and District Railway Co., are applying for incorporation to construct and operate electric tramways in the city of Quebec and adjoining counties.

The Montmorenci Cotton Company, at Montmorenci Falls, Que., has commenced the construction of a four storey building in stone and brick, 95 by 51 feet, for the reception of its raw material.

The Industrial Economizer Company, 14 Water Street, New York, of which Mr. A. P. Mende is manager, is sending out a circular to manufacturers which explains itself as follows:

You cannot afford to run so many thousand dollars annually into the river instead of turning them into hard cash. You are bound to economize in your industries, because competition among yourselves, and that from abroad, is growing stronger and "only the fittest can survive."

You may smile at our statement, but we can prove it. Our apparatus takes but little space; it is a comparatively small investment and repays itself in the first year. What better investment do you want?

We know that numerous processes in that direction have been brought before you, but we know also that they were too expensive and troublesome, and that it would cost more to work them than the stuff you reclaim is worth.

Quite different with our apparatus: It works automatically—in a small space—rapidly, thoroughly, cheaply—so much so that, for instance in wool scouring, the by product (fertilizer) pays for the reclaiming and gives you the grease for nothing.

We are now about contracting with a party who has a shrinkage of 70 per cent. to 80 per cent. in the scouring of wool; that means, he is running 35 per cent. fine saleable grease and 45 per cent. fertilizer into the river.

The average shrinkage in wool scouring is 60 per cent. Now, if you scour 50,000 lbs. weekly, equal to two and one-half million lbs. annually, then you waste 625,000 lbs. of grease saleable at about 2 cts. per lb. or annually \$12,500.00. Further, 800,000 lbs. of best fertilizer at \$10 per ton, \$4,000.00; in all \$16,500.00.

Remember, the value of the fertilizer pays for the working of the apparatus, while the value of the grease is clear profit in your pocket.



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... WITHOUT BATTERIES ...



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MONTREAL ELECTRIC CO., Agents for Province of Quebec
 302 ST. JAMES STREET

John Starr, Son & Co., Ltd. — Halifax, N.S.
 Agents for the Maritime Provinces.

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THE MOST PERFECT

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IN THE MARKET.

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MANUFACTURERS : 383 Washington St., Boston, Mass.
FINE WATCHES & CLOCKS : 41 Maiden Lane, New York, N.Y.
 : 34 Washington St., Chicago, Ill.

SAMUEL LITTLE, Pres. RUFUS B. CARR, Gen. Mgr.
 ARTHUR M. LITTLE, Treas.

The Southampton Mfg. Co., with head quarters at Southampton, Ont., is being organized with a capital stock of \$25,000 for the manufacture and sale of lumber, lath, shingles, etc.

The Tavistock Milling Co. will apply for incorporation with a capital stock of \$20,000 to carry on the business of merchant milling, etc., also the manufacture and sale of flour, feed, etc.

A cargo of one million feet of long lumber for Australia, and one of 263,000 feet, with a lot of laths, pickets and spars recently left St. John, N. B., also very large shipments to Great Britain.

The Maritime Auer Light Co., with head quarters at Fairville, N. B., is being organized with a capital stock of \$40,000 to control the Auer incandescent light so called, in that part of the country.

Letters patent have been issued incorporating the Seaforth Electric Light, Heat and Power Co., with a capital stock of \$25,000, with head quarters at Seaforth, Ont., to manufacture electricity for commercial purposes.

Speaking of the new blast furnace in Hamilton, Ont., the Spectator says:—The first car load of machinery for the smelting works has arrived from Philadelphia. J. J. Morehouse is expected in a day or two and the work of erecting the plant will be commenced.

Letters patent have been issued incorporating William McKenzie, of Toronto, Ont., James Ross, of Montreal, Que., Henry A. Everett, of Cleveland, O., Samuel Hughes, M.P., of Lindsay, Ont., and others, as the Hughes Ventilating Car Co., with a capital stock of \$500,000. The new company have acquired the inventions recently patented to Mr. Hughes, for methods of ventilating cars and they will manufacture such cars both for travel and for the transportation of fruit, live stock, etc.

The Toronto Feather and Down Co., of Toronto, have been incorporated with a capital stock of \$20,000 to manufacture beds, bedding, mattresses, feathers, down, etc.

The Ontario Wind Engine and Pump Co. have been incorporated with a capital stock of \$40,000 with head quarters at Toronto, Ont., to manufacture and deal in windmills, pumps, etc.

The Mattawa Electric Light and Power Co., have been incorporated with a capital stock of \$10,000, with head quarters at Mattawa, Ont., to manufacture electricity for commercial purposes.

The George Matthews Co., with head quarters at Peterborough, Ont., has been incorporated with a capital stock of \$200,000 to carry on the business of manufacturers and dealers in meats, etc.

The Hamilton Boat Propeller Co., Hamilton, Ont., have been granted letters of incorporation with a capital stock of \$40,000, under which they will manufacture a patent appliance for propelling boats.

The Hull Electric Co., Hull, Que., are applying for incorporation with a capital stock of \$25,000, with power to construct works for producing electricity for commercial purposes in the County of Ottawa, in the City of Hull, Town of Aylmer, and other places. This concern is being organized to carry out the concessions made to Mr. Theophile Viau, of Hull, heretofore alluded to in these pages.

We understand that W. H. Storey & Son, glove manufacturers, of Acton, Ontario, have recently established an agency in Australia for the sale of their goods, and are preparing to establish a business in Japan. It would seem in this respect that our Canadian friends are exceedingly enterprising in thus taking the initiation toward building up a business in a field heretofore supplied by the French, English and German glove manufacturers.—American Glover.

Wm. J. Matheson & Co. Limited

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Suspender Buckles

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Wire Shapes OF All Kinds.

We have put in a complete plant of AUTOMATIC MACHINERY for making above articles. . . .

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409 Board of Trade Building.

Toronto Office.
33 Melinda Street

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The Galt & Preston Street Railway Co., Galt, Ont., will apply to increase the capital stock of their company to \$1,000,000 for the purpose of extending their line from Preston to Waterloo, etc.

The Kingston Vehicle Co., Kingston, Ont., is being incorporated with a capital stock of \$70,000 for the manufacture of carriages, wagons, sleighs, bicycles, etc., and the component parts of coffins, caskets, pianos, organs, etc. Mr. John Hewton, Kingston, is one of the incorporators.

And now comes along an official notice of the Penberthy Injector Co. receiving an award at the World's Columbian Exposition for their injectors. The award is couched in the following language: "They are efficient and reliable, simple in design and construction, thoroughly automatic under varying conditions, showing great lifting power through hot or cold suction pipe, and are easily operated and capable of working under a broad range of possibilities." It must be highly congratulatory for the manufacturers of this well known specialty to receive so unqualified an endorsement of their injectors.

The Ottawa Saw Works Company, Ottawa, Ont., have issued a circular in which they say: We have decided to locate our business as saw manufacturers and dealers in saw mill supplies, in Ottawa, and are now fitting out our works with the latest improved machinery for the manufacture and repairing of saws of all descriptions—circulars, shingle, re-saws, edgers, butting, lath, concave, groovers, mill, gang, drag, cross-cut, band, inserted tooth saw bits and shanks, etc. Our saws are all fully warranted and made from the highest grades of special silver and cast steel; our tempering plant is of special design and the outcome of many years' study and experience, there being no guesswork, the system enabling us to supply saws with a uniform temper and toughness.

Mr. Feny, superintendent of our works, has made saws a life study, and has served some twenty years in the leading American saw manufactories; also, a number of years studying the working of saws in mills. He will have under him, in charge of each department, experienced men, carefully selected, and every saw will be thoroughly tested before leaving the works. Mill-owners know the loss entailed by delay in having their orders filled; our system will be so complete that each order will be put in hand the moment received, and prompt delivery assured.

Mr. Bingham, business manager, has been for a number of years interested in saw manufacturing in Canada, and has had a wide experience, in a business way, with the Canadian saw trade.

The American schooner Sadie has arrived at New Westminster, B. C., to load lumber at Brunette mills for San Francisco. This is the first cargo of lumber shipped from British Columbia to American coast points, but changes in the tariff have caused lumbermen to make an experiment at shipment. It is claimed that British Columbia mills can compete with Puget Sound points.

CANADIAN PATENTS.

The following patents have been issued from the Canadian Patent Office, from August 1 to August 9, 1894, inclusive.

Information regarding any of these patents may be had on application as follows:—

Fetherstonhaugh & Co.,	Bank of Commerce Building,	Toronto.
Ridout & Maybee,	103 Bay street,	Toronto.
A. Harvey,	Central Chambers,	Ottawa.
J. A. Grenier,	Imperial Building,	Montreal.

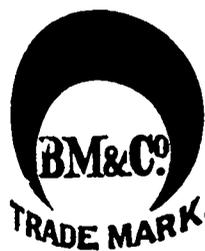
Copies of American patents corresponding to Canadian patents can be procured from either of these attorneys for the sum of twenty-five cents each.

- 46,682 Apparatus for recovering alkali, The Blackman Patent Pulp Co., New York, N. Y., August 1.
- 46,683 Safety switch, Edward Best and John D. Lebel, London, Ont., August 1.
- 46,684 Device for preventing railway cars from leaving the rails, Charles W. McBryer and Henry B. Schilling, St. Louis, Mo., August 1.
- 46,685 Truss for bridges, George T. Hawes, Owensborough, Ky., August 1.
- 46,686 Electric locomotive, Alexander Philipsborn and Max Schiemann, Berlin, Germany, August 1.
- 46,687 Electric motor and dynamo, Herman K. Thiel, Alpena, Mich., August 1.
- 46,688 Foundation for lighthouses and other heavy structures, George Blanchard, Brooklyn, N. Y., August 1.
- 46,689 Sock, The Granite Mills of St. Hyacinthe, St. Hyacinthe, Que., August 1.

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Sulphuric, Nitric and Muriatic Acids, Commercial and Chemically Pure. Mixed Acids for Explosives, Liquid Ammonia, Glauber Salts. Copperas, Muriate Tin, Tin Crystals, Acetic Acid, Nitrate Iron, Bisulphite Soda, Acid Phosphate for Baking Powders and General Chemicals. Fertilizers, Etc.

LONDON, ONTARIO.

- 46,690 Machines for moving invalids, George Payne, Orillia, and Walter P. Thompson, Coldwater, Ont., August 1.
- 46,691 Method of extracting metals from ores, Dr. Carl Hopfner, Giessen, Germany, August 1.
- 46,692 Apparatus for generating and supplying electricity, Joseph L. Ketcher, New York, N. Y., August 1.
- 46,693 Electric cigar lighter, Charles B. Struble, Minneapolis, Minn., August 1.
- 46,694 Apparatus for applying and removing storage batteries, William E. Worthen, New York, N. Y., August 1.
- 46,695 Arch Bridge, Alexander S. Walbridge, Mystic, Que., August 1.
- 46,696 Harp, The C. F. Zimmerman Co., Dolgeville, N. Y., August 1.
- 46,697 Fare register, The San Francisco Register Co., San Francisco, Cal., August 1.
- 46,698 Hammer, William A. Wiley and James F. Harvey, Rochester, Minn., August 1.
- 46,699 Book safe, Michael B. O'Neill and John D. McKenzie, Picton, N. S., August 1.
- 46,700 Electrical propulsion of cars, William J. Still and Randolph MacDonald, Toronto, Ont., August 2.
- 46,701 Electric railway system, The Magnetic Electric Co., Boston, Mass., August 2.
- 46,702 Hand lasting tool, Isaie Frechette, Montreal, and Jean B. Lalime, St. Hyacinthe, Que., August 1.
- 46,703 Rock drill, George W. Pickett and Samuel Lesem, Denver, Col., August 2.
- 46,704 Stopper for milk-bottles, Ella D. Crumbie, Orange, N. J., August 2.
- 46,705 Washing machine, Alfred Swanson, et al., Buffalo, N. Y., August 2.
- 46,706 Car coupler, Corneilus Halpin, Tarrytown, N. Y., August 2.
- 46,707 Churn dasher, John W. Ricker, Chelsea, Mass., and George A. Horn, Newark, N. J., August 2.
- 46,708 Locomotive oiler, James H. Turner, Pewee Valley, and Jacob M. McKnight, Louisville, Ky., August 2.
- 46,709 Railway gate, Aime Barre and Edward Currier, Fall River, Mass., August 2.
- 46,710 Can making machine, Robert D. Hume, Gold Beach, Ore., August 2.
- 46,711 Combined air trap and valve for water closets, Charles Kelley, Toronto, Ont., August 2.
- 46,712 Under-ground conduit system for electric railways, Herluf A. F. Peterson, Milwaukee, Wis., August 2.
- 46,713 Multiplex telephone, The Bell Telephone Company of Canada, Montreal, Que., August 2.
- 46,714 Mechanical drier, etc., Franklin D. Cummer, Cleveland, O., August 2.
- 46,715 Jaws and clevis for plows, The Verity Plow Co., Brantford, Ont., August 2.
- 46,716 Egg case, Joseph H. Bowley, Marengo, Ill., August 3.
- 46,717 Filter, Frederick Bommaris, New Orleans, La., August 3.
- 46,718 Box making machine, Calvin B. Southard, St. Albans, Me., August 3.
- 46,719 Machine for making looped fabric, Edward Murby, St. Louis, Mo., August 3.
- 46,720 Cigar-holder, Frederick D. Van Wickel, Corona, N.Y., Aug. 3.
- 46,721 Rock blasting, Abraham Schwarz, Leipsic, Plagwitz, Saxony, Germany, Aug. 3.
- 46,722 Method of manufacturing fibres from wood, Alexander Mitscherlich, Friburg, Grand Duchy of Baden, Germany, Aug. 3.
- 46,723 Electrical tool, William P. Carstarphen, jr., Denver, Col., Aug. 3.
- 46,724 Saltbin, Thomas Craney, Bay City, Mich., Aug. 3.
- 46,725 Automatic electric speed regulator for dynamos, Henry D. Symmes, St. Catharines, Ont., Aug. 3.
- 46,726 Splint cutter, Frederic S. Baumeister, Rockwood, Mich., Aug. 3.
- 46,727 Apparatus for pasteurizing and racking beer, Adelbert O. Muller and Andreas Giesen, Fremont, Neb., Aug. 3.
- 46,728 Targets and indicators therefor, Charles Schifferdecker, Fort Assiniboine, Mn. 3.
- 46,729 Rock-drill, Joseph H. Smith, Plymouth, O., Aug. 3.
- 46,730 Compositions for vaporizing in treatment of diseases, William B. Mason, Leeds, Yorkshre, Eng., Aug. 3.

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- 46,731 Process for producing black fuel, Alfred Norreys, London, Eng., Aug. 4.
- 46,732 Production of alloys by electro-decomposition, Charles R. Fletcher, Boston, Mass., Aug. 4.
- 46,733 Sifting apparatus, Wilhelm Bunge, Lubeck, Germany, Aug. 4.
- 46,734 Producing nitric acid and metals from nitrates, James D. Darling, Philadelphia, Pa., Aug. 4.
- 46,735 Electric meter, Oscar Frolich, Berlin, Germany, Aug. 4.
- 46,736 Electro-locomotive, Alexander Philipsborn, Berlin, Germany, Aug. 4.
- 46,737 Electro-motor car, Alexander Philipsborn, Berlin, Germany, Aug. 4.
- 46,738 Process and apparatus for the manufacture of sodium bicarbonate, Thomas Craney, Bay City, Mich., Aug. 4.
- 46,739 Pastry tin, August Eiche, Lincoln, Neb., Aug. 4.
- 46,740 Electric-motive device, Romaine Callender, Brantford, Ont., Aug. 4.
- 46,741 Incinerator, Jean F. Chazotte and Joseph Chazotte, Montreal, Que., Aug. 4.
- 46,742 Steam trap, Richard J. Flynn, Boston, Mass., Aug. 4.
- 46,743 Incinerator, Adolphus Davis, Montreal, Que., Aug. 4.
- 46,744 Stone-carving machine, Antonio Zanardo, New York, N. Y., Aug. 4.
- 46,745 Transfer ticket, William Johnston and Thomas Heenan, Toronto, Ont., Aug. 4.
- 46,746 Foot power, James T. Barnard and Samuel Briggs, Hamilton, Ont., and Samuel C. Rogers, Buffalo, N. Y., Aug. 6.
- 46,747 Electric railway trolley, Adolf Worner, Budapest, Austria Hungary, Aug. 6.
- 46,748 Kiln, Franklin D. Cummer, Cleveland, O., Aug. 6.
- 46,749 Car lighting apparatus, William Biddle and Patrick Kennedy, Brooklyn, N. Y., Aug. 6.
- 46,750 Dress and corset stay, Julius Zanowitz, New York, N. Y., Aug. 6.
- 46,751 Electrolytic apparatus, Thomas Craney, Bay City, Mich., Aug. 6.
- 46,752 Steam engine, John H. Eickershoff, Cincinnati, O., Aug. 6.

- 46,753 Cable street railway, Fred Hoch, Wauwatosa, Wis., Aug. 6.
- 46,754 Nut lock, Julius C. Brown, Santa Barbara, Cal., Aug. 6.
- 46,755 Negative and screen holder, James Scouler, San Francisco, Cal., Aug. 6.
- 46,756 Electrical governor for water-wheel, Carl S. English, Lowell, Mass., Aug. 6.
- 46,757 Pail, David Macdonald and William T. Tassie, Toronto, Ont., Aug. 6.
- 46,758 Siding gauge, Thomas L. Wint, Kalb, and Samuel J. T. Young, Camden, S. C., Aug. 6.
- 46,759 Nursing bottle, William M. Decker, Kingston, N. Y., and Elihu Bunker, New Bedford, Mass., Aug. 6.
- 46,760 Printing telegraph, The Fowden Printing Telegraph Co., Trenton, N. Y., Aug. 6.
- 46,761 Drenching bottle, Peter Schaefer and Charles R. Davis, St. Peter, Minn., Aug. 7.
- 46,762 Buffing pad, The Globe Buffer Co., Boston, Mass., Aug. 7.
- 46,763 Corset, George Airey, St. Leonardo-on-Sea, Sussex, Eng., Aug. 7.
- 46,764 Method of and apparatus for treating ores, Henry H. Eames, Detroit, Mich., Aug. 7.
- 46,765 Method of and apparatus for treating ores, Henry H. Eames, Detroit, Mich., Aug. 7.
- 46,766 Process of treating nettle fibre, Rudolf Spoenlin, Zurich, Switzerland, Aug. 7.
- 46,767 Machine for the manufacture of limz pencils, etc., Adoniram J. Bird, Rockland, Me., Aug. 7.
- 46,768 Method of and apparatus for electrical transmission, Michael T. Pupin, New York, N. Y., Aug. 7.
- 46,769 Hair structure, Hildebert Dorenwend, Toronto, Ont., Aug. 7.
- 46,770 Treatment of sewerage and apparatus therefor, William D. Scott-Moncrieff, Westminster, London, Eng., Aug. 7.
- 46,771 Creamer, Allan Cass, Cassburn, Ont., and Nathaniel Boyd, Carberry, Man, Aug. 7.
- 46,772 Manufacture of food, William Clark, Montreal Que., Aug. 7.
- 46,773 Railway rail joint, George A. Hoffman and Max Friedloender, Berlin, Germany, Aug. 7.
- 46,774 Telephonic transmission, The Bell Telephone Company, of Canada, Montreal, Que., Aug. 7.

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- 46,775 Combined car and air brake coupling, Samuel J. Galloway, Santian, and Nimrod P. Payne, Albany, Ore., Aug. 7.
 46,776 Trunk strap fastener, Peter Mundry, Henry Pontier, and John Mundry, Delta, Col., Aug. 8.
 46,777 Moulding sand papering machine, Charles L. Ruehs, Chicago, Ill., Aug. 8.
 46,778 Harp, The C. F. Zimmerman Co., Dolgeville, N. Y., Aug. 8.
 46,779 Grinding machine, Elijah B. Benham and Howard E. Barlow, Providence, and Henry Howard, Phenix, R. I., Aug. 8.
 46,780 Telegraphy, The Western Union Telegraph Co., New York, N. Y., Aug. 8.
 46,781 Fireproofing composition, Max Backert, New York, N. Y., Aug. 8.
 46,782 Vise, Julius W. Flowers and Bernhard H. Barwick, Newport, Ore., Aug. 8.
 46,783 System of electric conversion, The Canadian General Electric Co., Toronto, Ont., Aug. 8.
 46,784 Mechanism for converting electrical currents and method of applying the same, George D. Burton, Boston, Mass., Aug. 8.
 46,785 System of electric distribution, The Canadian General Electric Co., Toronto, Ont., Aug. 8.
 46,786 Plug for establishing electrical connection, The Bell Telephone of Canada, Montreal, Que., Aug. 8.
 46,787 Toy, Edward Denis, Green Bay, Wis., Aug. 8.
 46,788 Indexed file, Francis W. Briggs, Auburn, Me., Aug. 8.
 46,789 Street hydrant, Hugh Thompson, Thornton, Studley Park Road, Colony of Victoria, Aug. 8.
 46,790 Merry-go-round, James Armitage, et al., North Tonawanda, N. Y., Aug. 8.
 46,791 Automatic electric signalling device, Edward A. Hermann, St. Louis, Mo., Aug. 9.

UNITED STATES PATENTS.

GRANTED TO CANADIAN INVENTORS.

The following patents were issued from the United States Patent Office, on September 18 and 25, October 9 and 16, 1894, and reported

specially for the CANADIAN MANUFACTURER by Glascock & Co., patent attorneys, Washington, D. C. Printed copies of these patents can be obtained from them for 25 cents each.

William T. Borbridge, T. Fraser, and W. Prenter, Ottawa, Ont., air brake coupling.
 Gilbert Gagnon, Nanaimo, B. C., cable grip for logging and other purposes.
 James W. Provan, Oshawa, Ont., hay carrier track.
 John W. Coyne, Ridgetown, Ont., and J. A. Shannon, Dutton, Ont., churn.
 Cyrus S. Dean, Fort Erie, Ont., boiler flue cleaner.
 John Ross, Halifax, N. S., animal trap.
 James Tomlinson, Granby, Que., apparatus for dispensing liquors.
 William L. Doran, Niagara Falls, Ont., suspender buckle.
 Louise E. Dubois, Toronto, Ont., life saving guard for cars.
 Oliver W. Ketchum, Toronto, Ont., pulley.
 Isaac Mills and J. Youngson, Hamilton, Ont., automatic fire escape.
 Oren Olmstead, Sutton, Que., car coupling.
 William W. Owens, Peterborough, Ont., nut lock.
 Charles Shleacow, Lethbridge, fly trap.
 William A. Wilford, Todmorden, Ont., brick kiln.
 Joseph A. Gosselin, Drummondville, Que., curd cutting machine.
 Elias Meck, Freeport, Ont., milk cooling house.
 Henry C. Michell, Toronto, Ont., non-conducting material and forming same.
 Charles W. Roche, Halifax, N. S., brush.
 Houghton W. Wilson, Kingston, Ont., stovepipe damper.
 Francis X. Gaudrie, Port Hope, Ont., labelling machine.
 William J. Horton, Halifax, N. S., fire ladder apparatus.
 Frank S. Mead, Montreal, Que., gas engine.
 Joshua Norton, Jr., Chatham, Ont., sulfite digester.
 John F. Ryan, Toronto, Ont., life guard for street cars.
 Thomas Seaton, Sr., Toronto, Ont., pipe bender.
 Elswood Smart, Brockville, Ont., cow milking machine.
 William J. Neelin, Port Arthur, Ont., design fence post.

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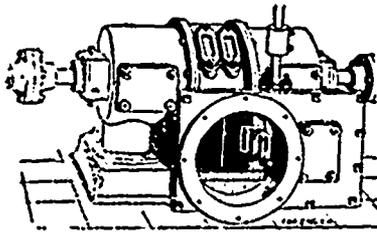
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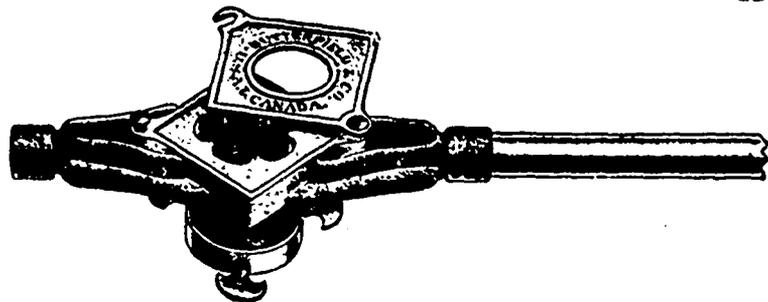
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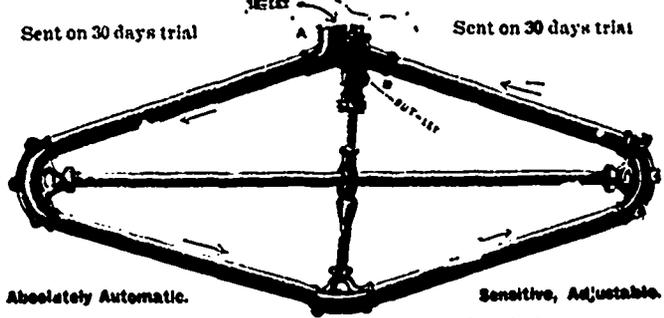
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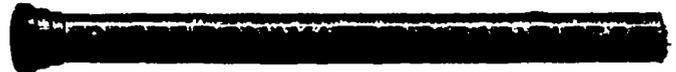
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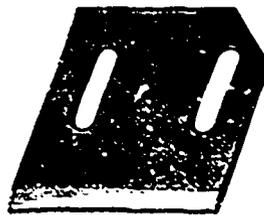
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1 3/8	1 3/8	5.01	"	3	2 7/8	22.59	"
1 1/2	1 1/2	5.94	"	3 1/4	3 1/8	26.60	"
1 3/4	1 3/4	7.46	"	3 1/2	3 1/8	30.94	"
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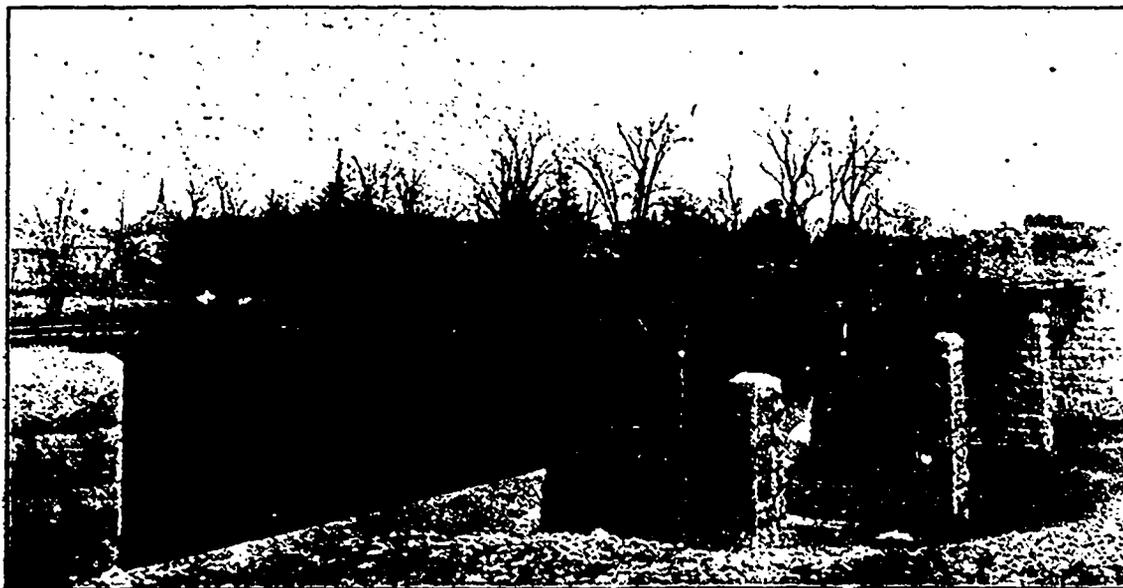
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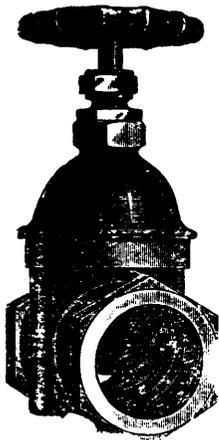


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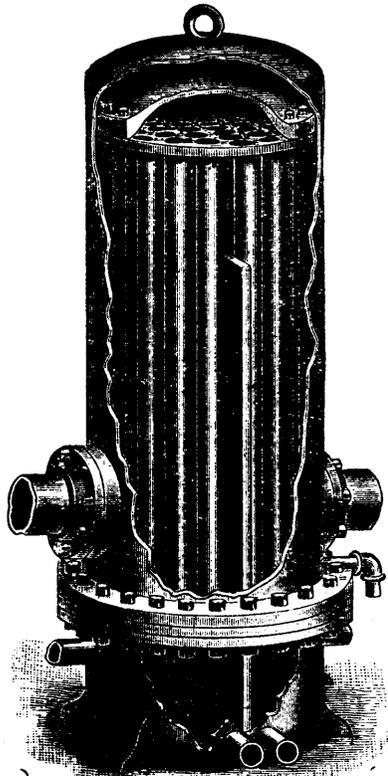
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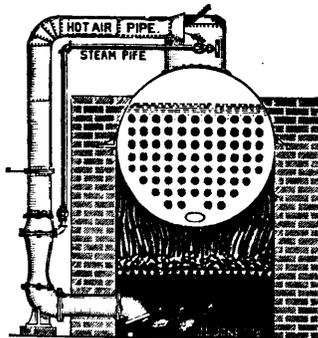


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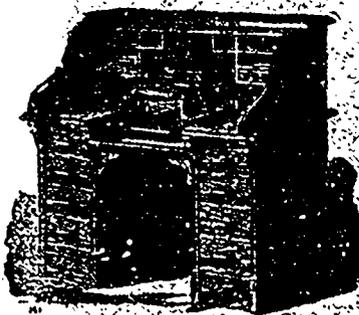
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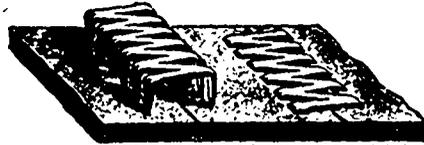
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