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CANADIAN MANUFACTURER
 AND INDUSTRIAL WORLD
 DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

Vol. 26. TORONTO, FEBRUARY 2, 1894. No. 3.

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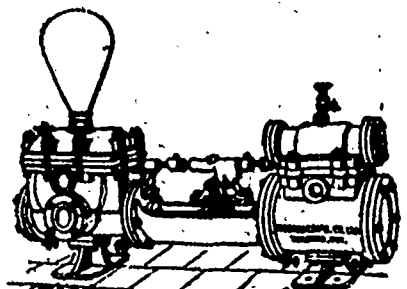
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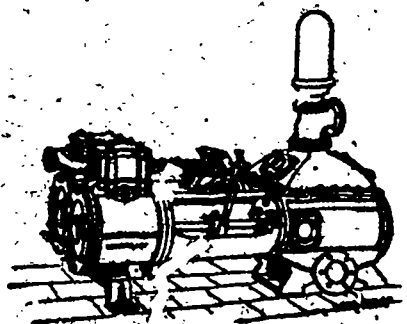
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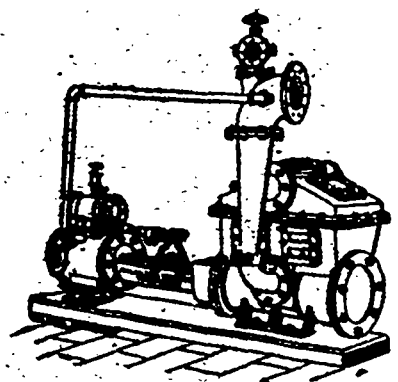


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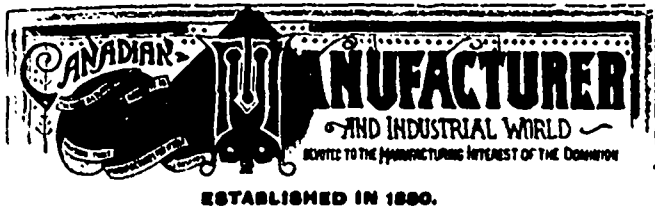
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PERSONAL.

As might be inferred from the announcement at the head of this column, there has been a re-organization of the personnel of the management of the Canadian Manufacturer Publishing Company, Limited, and of the CANADIAN MANUFACTURER. As is well known to old friends, Mr. Frederic Nicholls was the originator of this journal, having issued the initial number of it in January 1880, and he has been actively connected with it ever since. Under the re-organization just effected he is president of the company. Mr. J. J. Cassidey, who has now become vice-president, became editor of the CANADIAN MANUFACTURER early in 1887, and has continued as such ever since. Two years ago Mr. J. C. Gardner became business representative of the journal, and to his energetic business methods is due in great degree the gratifying prosperity that attends it. Under the new regime Mr. Gardner is managing director. Mr. G. F. Madden is secretary of the company.

The CANADIAN MANUFACTURER is no new adventurer upon the sea of trade journalism. Established nearly fifteen years ago, it is the only trade journal in Canada devoted exclusively to the interests of manufacturers; and as a reward for the persistency with which it has always advocated those interests it has, for a number of years, been the proclaimed and authorized organ of the Canadian Manufacturers' Association and of the several other associations allied thereto. The Canadian Manufacturers' Association is a body representative of that element which has done so much to make Canada what it is to-day—one of the happiest and most prosperous countries of the world.

In its new departure the CANADIAN MANUFACTURER starts out under most favorable circumstances, and will put forth greater efforts than ever to deserve the encouragement so liberally bestowed upon it.

MR. BOWELL'S SPEECH.

At the recent banquet of the Toronto Board of Trade, Hon. Mr. Bowell, Minister of Trade and Commerce, is reported to have said:

About five years ago one of your manufacturers in this city sent to Australia about five reaping and binding machines. His agent there tried to put them on the market. He was met with this question: "Where is Canada? What is Canada? Why, you are frozen up for six months in the year. You had better take these machines home." But he was an indefatigable Canadian—and you know what that means. He said: "No; I intend to sell these machines in this country, or I will give them away." He adopted the usual mode of going among the farmers. I need not tell you that he sold them. The next year twenty-five were sent over and, notwithstanding all the difficulties they had to face, in competition with the manufacturers from the United States, who were well known in that country, last year the same firm placed on the market of the Australian colonies no less than 3,622 machines for agricultural purposes. Among these were 875 self-binders, and over 1,000 reapers. That is the result of the enterprise of one firm in the City of Toronto within five years. If this can be done by a firm that has the courage and enterprise to enter foreign markets, what cannot be accomplished by others in other lines of industry in Canada.

It might naturally be supposed that when so high an officer of the Government makes an assertion, such as he is here credited with, the facts stated by him would be easily verified by the Dominion Trade and Navigation Returns, issued by the Government, and supposed to contain an intelligent synopsis of our foreign trade. Therefore, while seeking further light in the matter we were surprised at not being able to discover in the Returns any such facts as those to which Mr. Bowell alludes. We refer to the Trade and Navigation Returns for the fiscal year ending June 30, 1892, the last published by the Government.

We do not doubt, however, that the goods were sent to Australia, although not so indicated in the Returns; and it is more than probable that they were sent to the United States for shipment from there. If this is so that country received the credit of the shipments as imports from Canada, and also the credit of having exported them to Australia.

According to Mr. Bowell's own showing, there must be a very defective system of book-keeping in the Customs Department, of which he had the control for so many years, if no

proper records of such items of exports as the above are kept. The Trade and Navigation Returns for the year ending June 30, 1892, show exports of agricultural implements from the Dominion valued at \$403,957, of which the Province of Ontario contributed \$365,295. Of the exports from the Dominion, there went to Australia \$46,998; to New Zealand \$21,339; and to the United States \$5,605. Does Mr. Bowell mean that the large exports from the one firm, to which he was referring, were exports in addition to those given in the Returns? Or, do they form part of the sum of \$10,538,014 given on page 548 of these returns, being Statement No. 14, showing the value of goods exported to other countries in bond through the United States, during the fiscal year ending 30th June, 1892? Why is it that this statement does not show in detail the quantities and values of the goods exported in this way, and the countries to which exported, when it embraces such important items as the above exports of agricultural implements? Why is it that after allowing \$3,348,213 for short returns at inland ports on exports to United States during 1891-92, the amounts shown on pages 497 and 548 of the Returns fall so much short of the amounts shown in the United States Returns of General Imports and Imports in transit? Why is it that Statement No. 5 on pages 496 and 497 is allowed to show, without any explanation or qualification whatever, exports to the United States, exclusive of coin and bullion, \$37,178,909, when a few words of explanation would show that the total value of merchandise imported into the United States from Canada, and taken for consumption, was only \$29,452,540? The Returns are not only defective but incorrect and misleading to an extent that is anything but creditable to the Department in which they are prepared.

It is somewhat strange, in view of Mr. Bowell's statements, that neither the United States Returns of General Imports or Imports in transit from Canada, nor its Returns of Exports of Foreign Merchandise, show any such imports or exports of Canadian implements as Mr. Bowell states were made. During the eleven months ending November 30, 1893, the United States exported to British possessions in Australia agricultural implements valued at \$362,730, as compared with \$258,997 in the same period in 1892; but these are all reported as domestic merchandise; and its statement of exports of foreign merchandise does not show one dollar's worth for Canadian or any other foreign implements.

Why is it that the Trade and Navigation Returns for the year ending June 30, 1893, have not been distributed long before this. With tariff reform occupying the most prominent position of all political questions, it would naturally be expected that these Returns should have been distributed to members of Parliament and to the press at the earliest possible date, in order that the latest information relative to the commerce of the country might be laid before the people for study and discussion before Parliament assembles.

CANADA'S FOREIGN TRADE.

THE exports from Canada for the month of December amounted to \$9,898,334, including \$30,636 bullion and \$204,414 coin. Of this sum \$8,700,363 (in which is included the bullion) was the produce of Canada and \$1,188,971 (including the coin) was that of other countries. This brings up the total exports for the half year to \$77,604,390, of which

\$67,705,213 was the produce of Canada and \$9,899,177 was that of other countries. For the corresponding period of last year the total exports were \$74,256,707, of which \$67,205,223 was the produce of Canada and \$7,051,484 was that of other countries. This is an increase of \$3,347,683, of which \$499,990 is the produce of Canada and \$2,847,693 is in that of other countries. The imports for the same period this year were \$60,894,062, thus giving an excess of \$16,710,328 in exports over imports; or, if we confine the comparison to exports, the produce of Canada, the excess amounts to \$6,811,151. A comparison of the exports for the past six months with those of the same period of last year shows that in the produce of the mine there was an increase of \$204,670 in the total exports, but in the produce of Canada there was an increase of \$219,175, that of other countries being reduced by \$14,505. In the produce of the fisheries there is an expansion of \$2,079,748, of which \$1,953,300 was in the produce of Canada and \$126,448 in that of other countries. Forest products are marked by a falling-off of \$944,839; but while the produce of Canada exported amounted to \$17,423,113, the falling-off \$11,312, while in that of other countries, which amounted in all to \$81,037, the shrinkage was \$933,527. In animals and their produce the falling-off was only \$99,788. Canadian produce had a reduction of \$104,807 and that of other countries had an expansion of \$5,019. Taking into consideration the changes produced by the embargo upon cattle this small falling-off indicates a large increase in cheese and butter, which are included under this class. Agricultural products were increased by \$1,935,921, but in the produce of Canada there was a reduction of \$1,935,924, making the increase of the produce of other countries \$3,622,391. In manufactures there was a shrinkage of \$51,025, but in the produce of Canada there was an expansion of \$167,938, while in that of other countries there was a contraction of \$218,963. In miscellaneous articles there was a contraction of \$7,507; the produce of Canada, however, was reduced by \$31,947, while that of other countries was increased by \$24,440. The bullion exported was the produce of Canada; it amounted to \$164,774, compared with 170,664 at the end of December last year being a falling-off of \$5,890. The exports of coin, which was wholly the produce of other countries, showed an increase of \$236,390. The classes in which the exports of the produce of Canada for the past six months show an increase over those for the corresponding six months of 1892 are the mine, the fisheries and manufactures. The total amount of bullion and coin exported during the six months was \$1,019,598, which was an increase of \$168,500, but the imports were \$2,945,036, making an excess of \$1,925,438 in the imports of coin and bullion over the exports of those articles.

Animals and their produce furnish by far the largest proportion of the exports of Canadian produce, the forest coming next and agricultural products holding third place, with fisheries next, followed by manufactures.

During the month of December imported goods to the value of \$7,686,688 were entered for consumption in Canada. Of these \$4,256,425 were dutiable, \$3,398,341 were free, and \$31,922 were coin and bullion. This makes the total entries for the six months ending 31st December last \$60,894,062, compared with \$60,322,673 for the corresponding period of 1892, an increase of \$571,389. The entries of dutiable goods

for the six months were \$1,656,265 below those for the same time last year; those of free goods were \$1,636,336 above those of the six months of 1892, and in coin and bullion there was an increase of \$591,318. Taking the dutiable and free goods, not including coin and bullion, together the entries for the past six months are \$19,929 below those for the same period of 1892, the increase for the year, except as regards that sum, being in coin and bullion. The duty received during the month of December was \$1,387,695, which was equal to an average rate of 32.60 per cent. on the dutiable goods. The total amount of duty paid during the six months was \$10,198,560 compared with \$10,524,680 for the six months of 1892, being a decrease of \$326,120. The average rate of duty for the past six months was 31 per cent. on the value of the dutiable entries, compared with 30½ per cent. for the same period a year ago. In the dutiable articles entered in December bituminous coal heads the list to the value of \$597,302, the duty on which amounted to \$136,443 or 22.8 per cent. Iron and steel and their manufactures come next with a value of \$507,241, paying a duty of \$145,268 or 28.6 per cent. Next come woollens with a total value of 421,361, paying in duty \$125,528 or 29.8 per cent. Cottons come next to the value of \$296,749, the duty on which amounted to \$86,241 or 29 per cent. Dried fruits and nuts amounted to \$163,393, and paid in duty \$68,698 or 42 per cent. Breadstuffs, including grain of all kinds, flour, oatmeal and cornmeal rice, etc., amounted to 120,900, and paid in duty \$27,161 or 22.3 per cent. Green fruits amounted to \$101,052 and paid \$16,972 in duty or 16.8 per cent. Silks and manufactures of silks to the value of \$101,316 were entered and paid \$30,112 in duty or 29.7 per cent., while spirits of the value of \$97,507 paid in duty \$221,586 or 227.14 per cent. In the free list sugar leads with a value of \$863,495, followed by raw cotton to the value of \$352,249. Anthracite coal comes next with a value of \$358,025, followed by tea to the value of \$322,974. Settlers' effects show a value of \$155,765. Steel rails for railways figure at \$119,821, and hides and skins at \$133,143. The entries for the six months ending December 31st of the two years, 1892 and 1893, and the duty paid thereon, compare as follows:

1893.				
Dutiable.	Free Goods.	Coin & Bullion.	Total.	Duty.
\$2,815,718	\$23,103,308	\$2,945,000	\$28,864,026	\$10,198,560
1892.				
\$4,501,383	\$23,400,072	\$2,353,718	\$30,322,073	\$10,524,080

MR. CARNEGIE AND THE TARIFF.

SPEAKING of the action of the United States House of Representatives on the Wilson Tariff Bill, the Empire says:

The Democrats are making a strong fight for the measure, but so many interests are affected, and so much pressure is brought to bear, that there is little hope of the bill passing as drawn. It is believed, a belief borne out by a letter from Mr. Carnegie approving of the measure, that high protectionists will not oppose it strongly, but accept it as a compromise on a more advanced Democratic platform.

There is a no more over-rated man in semi-public life in any country than Mr. Andrew Carnegie. He poses as a prominent American manufacturer, and so he is; but long before he embarked his money in iron and steel works he had accumulated a fortune of many million dollars by speculating

in oil—in fact as a large stockholder in the Standard Oil Company. With this vast wealth as a nucleus he found no difficulty in increasing it by judicious investments in mining and manufacturing enterprises; and while he has undoubtedly contributed largely to some educational institutions in the United States, and has at times given generously to the needy, he has invested many of his millions in deer parks, hunting grounds and pleasure resorts in Great Britain, the country from which he came. In the United States Mr. Carnegie has heretofore posed as a strong protectionist; and he has frequently declared that it was only through that policy of the Government that he was enabled to make his iron and steel establishments as profitable and successful as they now are. But Mr. Carnegie does not preach protection when across the waters. Among the free traders in the Old Land he is as good a free trader as any of them; and therefore one need not expect to find much consistency in anything Mr. Carnegie may say upon political subjects. He spends much of his time abroad; and it was not surprising that on the eve of his departure from the United States for his British home he should have given expression to the views to which the Empire alludes. The only thing surprising is that the Empire should indulge in the suggestion that the protectionists of the United States indulge in any idea of 'accepting the Wilson Tariff Bill' as a compromise on any political platform.

Mr. Carnegie, before he sailed from the United States, announced that all of his iron and steel works would resume operations; and to enable them to do so he accepted orders for their products at prices far below what any of his competitors could afford to work. He could do this only by cheapening the cost of production; and the only cheapening he could effect was in the matter of wages to his employes. Mr. Carnegie is not the sort of a man to operate his plants at a loss to himself. He knows that want and hunger are strong incentives to laboring men to accept the half-loaf rather than to go without bread. He knew that when accepting orders he could make some money on them; and that he could keep his works in operation although all the similar works in the country remained closed, and their employes walked the streets in idleness. It was a money-making move for Mr. Carnegie; and it might prove to be a good thing for his workmen, but it was not a good thing for the other manufacturers, and it was establishing a scale of wages for workmen far below what had previously prevailed in that country. Mr. Carnegie took advantage of circumstances to create a situation fraught with evil to both employers and employes. He poses as a philanthropic employer who gives work to the idle; but what he has done means loss to other manufacturers and other workmen who will be bitter sufferers because of his interference with the ordinary course of trade.

Speaking of Mr. Carnegie's attitude in this matter, the Philadelphia Manufacturer says:

If the object of an American iron manufacturer is simply to produce iron—simply the physical process of changing the form of material from ore to metal—or if it is merely the multiplication of the profits of the process—the more bulk changed from one form to the other, the more profit—then, of course, Mr. Carnegie and all others engaged in his line of business may accept Mr. Wilson's revolutionary legislation, and enter upon iron-making on the English system. But if, on the other hand, the iron manufacture is a part of our social processes, having a direct bearing on the condition and the

character of the people, then it becomes a subject of larger scope and importance. It is in this aspect that the industrial occupations of the nation have always been regarded, and for this reason that they have been made the subject of encouraging legislation. It has long been the theory of the free trade people—the laissez faire school—that this was wrong, but the common sense of the American people ruled otherwise. If, now, we are to adopt, as Mr. Carnegie appears ready and willing to do, the English idea, we shall be entering upon a new era, under an entirely changed doctrine as to the condition of the people as affected by their occupations.

Practically, what Mr. Carnegie and his associates must then aim at is this: (1) the cheapening of their processes by changing ore into metal, and of fabricating the metal; (2) the lowering of wages—labor being the chief element of cost,—and as fast and as far as competition, domestic and foreign, compels; (3) indifference to the consequences of this upon the employed people, until they result, (as in Europe) in such poverty and suffering as compels charitable relief; and then (4) the bestowal of charity in large sums, as a means, not of improving conditions permanently, but of relieving the distress temporarily, as often as it reaches an acute stage.

It need hardly be argued how entirely un-American this is, or how vicious, considered from the American point of view. But one thing may be particularly noted; that if it be desired to increase the strain between those who have acquired property and those who have not, to pile fuel on the flame,—a great one in Europe, and serious enough here,—of social discontent, then this is a most admirable means to that end. The protective system in the United States has been, like the system of public education, conservative, peace-preserving and healthful; its abandonment would signify the triumph of the elements of social demoralization. So far from Free Trade being, as its visionary adherents are proud of saying, a peaceful system, it is, as history abundantly proves, narrow, rapacious, and cruel, and wherever the theories which it holds to have been extended over the world they have left behind them a train of oppression and bloodshed. Whether Mr. Carnegie, enamored of British methods, is ready to enter upon such a new era here, or whether he is not, the American people, we trust, have yet too much patriotic sense to do so. The Homestead affair of 1892 illustrates what they desire to avoid altogether

WHAT GREAT THING HATH PROTECTION WROUGHT?

A VERY interesting paper was read recently before the British Iron Trade Association by Mr. J. S. Jeans, entitled "The Chicago World's Fair of 1893, and its Lessons to the Iron Trade of Great Britain," which London Industries and Iron reprints in full. Some of the points and conclusions in the article are worthy of reproduction, indicating full recognition abroad of American achievements in developing iron and steel industries in the past fifteen years. Mr. Jeans points out that not only has Great Britain lost its supremacy as the iron manufacturer of the world, and as the first producer of steel, and as manufacturer of the products of rolling mills and forges dealing with malleable iron, and as a maker of pig iron, but, finally, as principal iron ore producing country of the world. Beginning with the relative production by the leading countries of the world in various forms in 1877, the year prior to the Paris exhibition, comparisons are made with a year ago, so that the measure of development is during the period between the world's fairs at Paris and Chicago.

A table is given showing the production of pig iron in the principal countries of the world in the years 1877 and 1892, which gives the totals as 13,559,000 tons in the former year,

and 25,979,000 tons in the latter; the increase of the world's production in that time being 12,420,000 tons, or 91.6 per cent.

Percentage of world's make contributed by United States.....	1877.	1892.
Percentage of world's make contributed by United Kingdom.....	15.3	35.2
Percentage of world's make contributed by Germany.....	48.0	25.1
Percentage of world's make contributed by Germany.....	11.0	18.1

The per cent. increase in the make of pig iron between 1877 and 1892 is given as follows:

	Per cent.
For the United States.....	343
For the United Kingdom.....	0.1
For Germany.....	107

The writer of the paper does not seek to contend the figures he produces are cheerful from the point of view of the British iron and steel manufacturer, inasmuch as they show that the British industry has practically stood still, while that of its two principal rivals has advanced literally by leaps and bounds. In the year preceding the Paris Exhibition of 1878, Great Britain produced almost one half of the total make of pig iron throughout the world. In the year preceding the Chicago World's Fair it produced only about one-fourth of the world's total production, and no other iron-producing country except Italy had fallen off within the interval. Seventeen years ago only about 8 per cent. of the total British output of pig iron was made from imported ores, while in 1892 more than twenty per cent. was obtained from ores of foreign origin. In the United States and in Germany, England's principal competitors in iron and steel, the movement has been in the opposite direction, both of the latter reducing their use of foreign ores in proportion to the total requirements and increasing in consumption of home ores. It is even stated that the dependence of Great Britain on foreign sources of supply to the extent of twenty per cent. of its total requirements for ores "implies a standing menace" to its iron industry.

Of late years the production of Bessemer steel in the principal metallurgical countries of the world has not kept pace with the progress made in the earlier history of the trade, and in some countries, including the United Kingdom, the "leaps and bounds" which were characteristic of the period that immediately followed the Paris Exhibition of 1878 have been "followed by absolute decadence, due mainly to the reduced demands of the world for railway purposes."

A table given shows the world's output of Bessemer steel in 1878 and to be 2,106,000 tons and in 1892 to be 9,825,000 tons, the percentage of the principal producing countries being:

	Per cent.	
	1877.	1892.
United States.....	25.0	42.0
United Kingdom.....	42.0	15.0
Germany.....	18.5	10.3

The per cent. increase in principal countries was as follows:

	Per cent.
United States.....	680
United Kingdom.....	97
Germany.....	387

From these figures it appears that while Great Britain produced more than one-third of the total make of Bessemer steel throughout the world in 1877, she produced less than one-sixth in the year 1892, while the make of the United States within the same interval increased from 25 to 42 per cent. of the world's output, and that of Germany from 18.5 to

19.3 per cent. As a matter of fact the British Bessemer steel industry for a number of years past "has been a declining manufacture," and the output of the metal there in 1892 was 30 per cent. smaller than it was only four years previously.

But in the manufacture of open-hearth steel Great Britain "retains the lead which she has always held, and not only so, but we still produce at least twice as much of this description as either the United States or any other country. It is not equally certain, however, that we are maintaining our relative supremacy, not because we are ourselves losing ground, but because other countries are creeping up more nearly to our standard. The United States have made progress somewhat slowly in this industry, but they are now moving at a much more rapid pace, so much so, indeed, that whereas they did not produce much over one-fourth of our make in 1888, they had advanced to about one-half of our total in the year 1892. It is the same with Germany, which is applying open-hearth steel more largely to many new branches of manufacture."

BEET SUGAR.

WHAT seemed to be an authentic statement was put out a few days ago to the effect that the world's production of sugar, including both cane and beet, now being marketed, is about a million tons in excess of the quantity marketed a year ago. Very much the largest part of this wonderful crop is made from beets grown in Germany, France and Austria.

It was not a great many years ago that beet sugar was a novelty, the world depending chiefly upon sugar made from cane grown in tropical and semi-tropical climates. At this time, however, although the areas planted to cane have been greatly increased, and the methods of manufacture greatly improved, vastly increasing the supply from that source, we find that the production of beet sugar is even greater than that of cane; and that the temperate climate of Europe is most admirably adapted to growing the sugar beet. We also know that there are other countries than those of Europe excellently well adapted to growing this crop; and that, under the stimulus imparted by the provisions of the McKinley tariff, the United States has made wonderful progress in this direction. In previous issues of this journal we have alluded to the large quantities of beet sugar made in different States of the Union, particularly in Nebraska and California; the profitableness of growing the crop being illustrated by the fact that in one instance the beets grown upon a Californian farm in one season were sold for more money than was paid for the farm the previous year. It has been proven that almost all sections of the more northerly States are well adapted to the cultivation of the sugar beet; and if the industry is not badly crippled or destroyed by the withdrawal of the inducements offered in the McKinley tariff, without doubt in a few years the United States will cease to be an importer of sugar.

Whatever favorable things may be said of the United States as a producer of beet sugar, as far as soil, climate and natural advantages go, may with equal propriety be said of Canada. It has been demonstrated beyond doubt that both Ontario and Quebec are well adapted to growing the sugar beet. In this province experimental areas planted to the beet have shown heavier crops per acre than in Germany and

France, and that the beet contained even greater saccharine matter; and the slow but steady growth of the industry in Quebec, and the existence of factories there for the manufacture of beet sugar, place the problem beyond the range of doubt.

These facts are well known; and because they are it is to be regretted that neither the Dominion nor the Ontario Governments have given active and proper encouragement to the farmers to engage in this enterprise. It is true the Dominion Government have made some half-hearted promises in the way of offering a bonus upon the production of beet sugar; but this offer is made for only a year at a time; while it is understood that the uncertainty as to whether the bonus is to be continued or not prevents farmers from engaging in the business with the vim necessary to ensure success, and is absolutely disheartening to those who might have contemplated erecting factories for the conversion of the beets into sugar.

To insure the success of the beet sugar industry in Canada it would be necessary for the Government to offer a bonus of about two cents per pound upon the sugar produced; to guarantee this bonus to hold good for a term of, say seven or ten years, and to admit duty free for a term of, say three or five years, all machinery necessary in the processes of manufacture of a kind not made in the country. If this were done capitalists would invest in factories, and farmers would grow the crops. Would it be a good thing for Canada to have such an industry? What Canada needs is more industries. This one would be a boon to the farmers in that it would diversify his crops and give him more remunerative occupation in many ways than in tilling the soil. A sugar factory would be a nucleus around which many other industries would cluster, and it would give employment to large numbers of people, all of whom would be consumers of farm products.

Consider the large quantities of sugar constantly being imported into Canada. The production of it gives employment to thousands of people in distant lands. If our requirements of sugar were produced at home the labor would be done by Canadians. As it is, all the labor bestowed upon all the sugar consumed in Canada is performed by less than a thousand men, although the consumers pay the sugar refiners perhaps a million dollars per year more than what they ought to get for the service they render.

Canada could be made a great sugar producing country, and our Government should endeavor to make it such. It can be done by offering a bonus to be extended over a proper term of years, and the admission, duty free, for a proper term of years of such technical machinery as may be essential in the business.

EDITORIAL NOTES.

THE Montreal Herald calls attention to the fact that neither of the two controllers, Messrs. Wallace and Wood, or licitor General Curran were invited to the Toronto Board of Trade banquet. No doubt the committee of the Board charged with issuing the invitations to august personages, found it necessary to draw the line somewhere, and so they drew it at controllers and solicitors-general. They had a plethora of Governors-General, Lieutenant-Governors, Generals of Militia and beardless young Dukes and Earls, and even a representative of the wild and boundless west, and it would not do that these aristocrats should be forced to gobble free lunch at the same counter with controllers and solicitors. In view of the distinguished guests who honored the banquet with their presence, it is rather surprising that the invitation committee had the temerity to invite themselves or any of the other members of the Board.

WHEN Mr. Joseph Tait, M.P.P., starts out to sing the benefits of co-operation it may be taken for granted that the situation is critical. Only co-operation of the most cohesive kind will save Mr. Tait from the political guillotine if the people get a fair chance at him on election day.—The Empire.

If Mr. Tait starts out to sing the benefits of co-operation, if his voice is pitched to the right key, and his warbling is in the direction of profit-sharing, such as is practised by many manufacturing concerns both in Canada and the United States, and which prevails so extensively in France and other European countries, he will gain the support of thousands of Canadian workmen who will not be influenced by the sneers of The Empire. Profit-sharing when it comes, as come it must, sooner or later, will solve a phase of the labor problem that will otherwise be a constant source of anxiety to both employer and employee.

SOMETIMES the tariff hits the importers in a way they don't anticipate. The Montreal importers of woolens complain to the Government that they are suffering from the large importations of German felts. This felt so closely resembles meltons as to render it difficult to distinguish between them, and as there is considerable difference in the duties imposed upon them, the importers desire that the duty on felt shall be made the same as that on melton. In the meantime it is said that the orders that the importers are placing for the next season's felts have been made subject to any change that may be made in the tariff. Which shows that the foreign producer will have to pay the Canadian duty whatever it may be.

THE Toronto Court of Revision held a session a few days ago for the purpose of hearing the applicants who claim deductions on their assessments for real estate on account of the houses erected thereon being vacant. The court allowed all the claims presented when properly authenticated; and it also decided to allow rebates of taxes upon vacant apartments in office buildings. It is a cruel and unjust law to punish a man for putting up expensive buildings upon his real estate. The tax should be upon the land. If the landlord holds his houses at prices for rent beyond the reach of the average tenant, why, if the present system is to be observed, should he be exempt from paying taxes? The present system is unjust and unfair.

MR. STEAD in his "Review of Reviews," calculated that, during the first fifty years of his life, Albert Edward, Prince of Wales, had been prayed for 880,000,000 times in English churches, exclusive of the number of times he had been prayed for by private individuals. The burden of the prayers was that His Royal Highness be "endowed with His (that is Jehovah's) Holy Spirit, and enriched with heavenly grace." And, after this immense parson-power praying for him for over fifty years, Albert Edward is just—the Prince of Wales, better than some and worse than others of us poor wretches who are accounted hardly worth praying for. If 880,000,000 prayers at enormous expense and concentrated on one point produce no effect, it is surely time to set about utilizing the incalculable volts or horse-power of hitherto misdirected praying energy.—Wade's Fibre and Fabric.

The inefficacy of prayers offered up for H.R.H. reminds us of those offered up by the free traders for the appearance of the millennium when a Canadian will love a Hottentot or South Sea Islander quite as much as a brother Canadian, and

love Zululand quite as much as Canada. Praying for the appearance of that day is not at all likely to hasten it. The spirit of protection to home interests is too deeply rooted in the breast of civilized man to be uprooted by the prayers of the wicked free traders.

WHILE the citizens of the United States are interested in the discussion of a proposed law, the object of which is to curtail our home manufacturers, the statements made by a prominent iron producer in Canada may not be without interest. At a meeting of the Quebec Mining Association, held in Montreal, a few days since, Mr. G. G. Drummond, President of the Canada Iron Furnace Company, read a paper on the Canadian iron industry. He showed what virtual protection had done for that industry and stated that under the encouragement afforded by the Dominion Government it has shown an increase in the last two years of 100 per cent., and that Canadian pig iron had made a place for itself in the home market and was gradually displacing the product of British and American furnaces. He stated that the iron industry of Canada is now in a critical stage, and any reduction in the current protective duties, which some were asking of the government, would, if acceded to, surely prevent further progress if it did not entirely annihilate the industry, by exposing it to the hostile competition of foreign producers. In arguing that the interest of the agricultural population would be best served by the encouragement of the iron industry, he stated that all but one of the Canadian blast furnaces were located in rural districts. The coke furnaces of Nova Scotia drew a large proportion of their employes at their mines and furnaces from the farming class. In many instances farmers took work in the mines. The charcoal iron furnace especially was the farmers' industry. In the case of the Canada Iron Furnace Company, at Radnor Forges, out of a staff of 850 men employed at the present time, 700 at least were farmers or habitants who worked for the company during the winter months, and in their slack seasons. The same was the case at other points. Thus, while the American representatives in Congress are hotly urging the passage of a bill which will give foreign competitors a much better chance in our markets, our Canadian neighbors are showing the necessity of strengthening their protective lines, and proving what the Government bounty has done for the Canadian manufacturers. It may be considered a certainty that the Canadians will continue their present system, and not only hold their own markets but most effectually invade those of the United States, if the policy of our present administration is fully carried out.—American Manufacturer.

OUR esteemed contemporary, the Toronto World, maintains a large staff of editors so as to enable it to speak by the book as it were, upon any subject that might be advanced. One of these gentlemen is the editor of the "Old Directories" department; and a few days ago he undertook to tell what becomes of all the old city directories. Among other uses to which they are put he tells us that "a great number of them are sold as old paper and are manufactured into cloth." This will be news to the textile world. Our contemporary should now get out a directory of the mills in Canada manufacturing cloth of old city directories.

THE one great thought of English production has long been to cheapen cost, and to make labor,—the one great item in all manufacturing industry, of course,—bear the brunt of the process. Mr. Carnegie evidently accepts this idea now. He knows very well that wages in this country have been maintained at the American level, simply because they have had the shield of protection covering them from foreign competition; and he knows that with this removed, or so far removed that it will no longer serve its protective purpose, there is but one of the results possible here—idleness or lower wages. He does not resist the Wilson bill, but prepares himself for its operation. He therefore means to contend with England at English wage rates.—The Manufacturer.

At a recent meeting of the council of the Toronto Board of Trade, the following resolution was adopted:—

That inasmuch as it would largely encourage the development of the iron manufacturing industries of this Province; and whereas it has come to the knowledge of this council that there is about to be established in Hamilton smelting works which must be largely dependent upon free coke for its success, this council would strongly recommend that the Dominion Government admit free of duty all coke required for manufacturing purposes; and they would further recommend that whatever machinery is required for the establishment and development of smelting works which cannot be produced in this country should be admitted free of duty.

The Board may be rather off color in the matter of refusing to invite certain ministers of the Dominion Government to their banquet because certain lords and earls had accepted invitations to be present, but it is as sound as a nut in recommending the Government to admit free all coke required for manufacturing purposes. We can never have a successful iron smelting industry without cheap fuel.

ACCORDING to the figures given by the N. Y. Journal of Commerce, the American Sugar Trust is making an annual profit of \$28,532,000 upon an actual value of \$20,000,000 of properties controlled by it, and in conclusion says: "This is equivalent to a forced assessment of 44 cents from every man, woman and child in the country, and which is 10 cents more than the per capita of interest on the entire national debt."

A DEPUTATION of rolling mill proprietors waited upon the Government a few days ago, and stated, according to the press despatches, that they were entirely satisfied with the tariff and hoped that no reductions would be made therein affecting their industry. The spokesman of the delegation stated that the reasons for increasing the tariff several years ago still exist. Mr. Foster might have quieted the anxieties of these gentlemen by telling them that there would be no material reductions in the duties on the primal forms of iron, but that there would be a decided advance in the duty on their raw material, scrap iron. When Sir Charles Tupper imposed a duty of only \$2 per ton on wrought scrap iron it was with the belief, or hope, that a blast furnace industry would soon be built up, and that the rolling mills would put in puddling plants and manufacture all their bar iron from native materials. He was mistaken in this, however, for the rolling mills will never be producers of puddled iron, nor manufacturers of first-class refined iron while they can

obtain all the wrought scrap they require upon which the duty is only \$2 per ton. If the information is correct that the rolling mill men requested the ministers not to reduce the duty upon their raw material—wrought scrap—they only befogged the question. The duty upon wrought scrap should be quite equivalent to that upon muck iron—\$9 per ton.

THE projectors of the Hamilton blast furnace were in Ottawa a few days ago asking the Government to put coke on the free list, and also to remit the duty upon such machinery as they might desire to import, to be used in the construction and operations of their works. Coke is absolutely essential in making iron at this furnace, and as the article is not made in this part of Canada, it should be the policy of the Government to allow it to come in duty free. In fact there are many manufacturing industries in Canada where coke fuel is essential; and these industries are quite seriously handicapped by this extra cost of fuel. No doubt the Government require the revenue now derived from the duty on coke; but it would be better to raise it in some other manner. As to the remission of duty on machinery, that should not be allowed if such machinery is made in Canada. If it cannot be made here, then it would be well to remit the duty. This is the law as regards mining machinery.

A FEW days ago the Globe's Ottawa correspondent, alluding to the fact that some of the promoters of the blast furnace now being built at Hamilton were in Ottawa asking the Government to allow them to import coke fuel duty free for use in the furnace, and for the remission of duty upon the machinery, recalls the attitude of the Hamilton Spectator on that subject. He tells us that in 1884 that journal declared itself as follows:—

It is utter madness to hope that any ordinary blast furnace can be made to pay in Ontario, when the freight alone on the material used will exceed the price at which manufactured iron can be imported from abroad.

It is rather mean to call up unpleasant reminiscences in this way. The Spectator finds itself in a fix at this time, in this matter. Before the scheme to build a blast furnace in Hamilton was agitated, because this journal advocated an increase of duty on wrought scrap iron with a view to the encouragement of the blast furnace industry, because there were rolling mills in Hamilton which consumed scrap iron, and wanted to obtain it very cheap, and which do not puddle their iron, although they are prepared to do so, had some unkind things to say regarding us, and attributing our advocacy of a high duty on scrap to a desire to injure Hamilton. Of course that was very silly; but then some people cannot help being silly at times—sometimes very often. But now Hamilton is to have a blast furnace as well as rolling mills; and the Spectator observes a wonderfully profound silence in the matter. If the duty on scrap is increased the Hamilton rolling mill people won't like it; and if the duty is not raised the Hamilton blast furnace people won't be able to sell all their pig iron. The situation reminds us of the predicament the poet found himself in, when he was in the presence of his two sweethearts when he sang:

How happy could I be with either,
Were t' other dear charmer away.

IN a paper contributed to *The Tradesman Annual*, of Chattanooga, just published, General J. D. Imboden, of Virginia, gives the following interesting information concerning Nova Scotia coal:—"I chanced to be one of the judges of award at the Columbian Exposition last summer in the department of Mines and Mining, and it fell to my lot to examine and report upon the coals of Nova Scotia. I was furnished with official analyses and data by Professor Selwyn, the accomplished geologist and mineralogist of the Dominion, to aid me in my inspection of samples of their various coals. My reports were made to and approved by the full board of forty-two judges, and will some day be published. I violate no confidence in stating now that these coals received high awards for excellence. Not so high, it is true, as some of the coals of Virginia, West Virginia, Kentucky, and Alabama, but their quality will make them most dangerous competitors of our best coals for all purposes, all along our coast, as far south as Norfolk."

THE Legal & Commercial Exchange, Toronto, have sent us a copy of their January edition of their Reference Book, which, like all that have preceded it, most effectually covers the ground for which it was intended. It claims to give the name and business of every concern in Canada, with commercial rating and other important information: and from what we have observed of it, the claim is excellently well founded. Many valuable improvements are noticeable in the arrangements of the book, and some features not previously observed. It is printed on excellent, strong paper, with clear, new type, and well bound, the size rendering it very convenient to be carried in the pocket or satchel of the commercial traveller. This is a work of which Canadians should be justly proud. It is, we believe, the only reference-book of distinctively Canadian origin. It is the result of Canadian capital, Canadian business enterprise, and Canadian labor. In fact, every feature of it, from its inception to its delivery to those for whom it is intended, is Canadian. The Legal & Commercial Exchange maintains general offices in Toronto, Montreal and Hamilton, and reliable correspondents all over Canada, United States and Europe; and is prepared to give full, fresh and reliable reports very promptly to subscribers; in addition to which it publishes a daily notification sheet *The Exchange*, which is invaluable to business men.

AN important seizure of kid gloves by the Customs authorities was made in Montreal on January 16. For some time past the large wholesale houses who did extensive business in this article have found their trade decreasing most astonishingly, which circumstance could not be accounted for except for the reason that they were being systematically undersold. A few days ago Messrs. Perrin, Frere & Co, who have a large manufactory at Grenoble, in France, and branches at Paris, London, Melbourne, Sydney and New York, opened up an agency in Montreal, and their business grew in an unprecedented way until they had absorbed the bulk of the kid glove trade. Recently it came to the knowledge of the Customs authorities that this firm was invoicing its goods to their Canadian branch at a very great undervaluation. It is said that the invoice price was fully one-third lower than what the goods are sold for at the factory in France, and in fact less than the actual cost of production. This it is claimed gave the

Canadian agency of this firm an immense advantage over the wholesale firms dealing in these lines. The seizure made has been released by Messrs. Perrin, Frere & Co. depositing the value of the goods with the customs authorities pending the completion of the investigation. This incident is a very strong argument against the ad valorem system of tariff duties. As is usually the case, the honest man suffers and the dishonest one prospers. Undervaluation goes hand in hand with ad valorem duties. An honest importer will invoice his merchandise at real value—the dishonest one will, as in the above instance, invoice it far below its value, and not only thereby cheat, wrong and defraud the customs, but disorganize trade and ruin the business of honest competitors.

THE Toronto Railway Company at their recent annual meeting was shown, by the report of the president, to be in a most prosperous condition. The company took over the Toronto street railway system on June 18th, 1892, at which time no portion of the system was operated by electricity; but before the end of that year thirty miles of the street track were equipped with electric motor cars. Much delay was occasioned by misunderstandings with the city authorities as to their respective rights and duties, but notwithstanding these, before the close of 1893, the conversions to electric power covered thirty-five miles of track, making sixty-five miles of roadway now fully reconstructed, and leaving but seventeen miles of the old system to be changed. All the routes in the city are now operated by electrical power except in three comparatively unimportant streets. The change from horse power to electricity necessitated the substitution of steel rails weighing seventy-two pounds per yard and the entire reconstruction of the tracks and their foundations; and these substructures compare favorably with those of any similar roads in America. The power house of the company, than which none could be better or more efficient, was first put in operation on May 10, 1893; and in view of the rapidly increasing traffic, the power house is now being increased to double its present capacity. The company possess commodious and fully equipped machine shops, car works, motor shops, repair shops, carpenter shops, blacksmith shops, etc., sufficient for all the purposes of their business and to manufacture all the motor and trailer cars they require as well as to do all their repairs. The system is now supplied with 100 motor cars, at present sufficient for all their traffic, and all the trailers necessary. The result of the quick and effective service supplied has been, as might have been expected, a large increase in the number of passengers carried, and in the revenue derived therefrom. This is shown in the fact that in 1892 the passengers carried were 19,122,022, against 21,215,010 in 1893, an increase of 2,092,988. The increase in the earnings of the company on their passenger traffic in 1893 over the previous year was from \$829,098 gross to \$900,232; or from \$229,765 net to \$362,635. The gross earnings of 1893 show an increase of 9.7 per cent over 1892; and the net earnings 57.8 per cent during the same time. The proceeds have been and are being applied to the construction and equipment of the system. By the end of this year the change of system will have been completed, and considerable new road built. The company have acquired the Toronto and Mimico Electric Railway, and are operating the same from the eastern terminus thereof, near the western end of the King and Queen street routes, along the Lake shore to Mimico, a distance of about seven miles.

MR. T. J. WATTERS, acting Commissioner of Customs, has been appointed chairman of the Board of Customs. Mr. Watters is one of the most efficient officers in the public service, and the new position conferred upon him is proof that he is appreciated.

THE Niagara furnace at Tonawanda, N.Y., is making the record of 200 to 230 tons per day, foundry iron, on the third year of the blast.—Iron Trade Review.

Think of it; an iron blast furnace producing more than 60,000 tons of pig iron per year within sight of the Canadian shore, but on the other side of the international boundary, but never a ton of pig iron ever made in Ontario. Hundreds of such furnaces in full operation in the United States, producing all qualities of iron, and every ton they produce in good demand at remunerative prices. Too bad that the industry in Canada should be so fearfully handicapped by the ridiculous and incongruous duty of only \$2 per ton on wrought scrap iron.

In a business letter from Messrs. Wm. J. Matheson & Co., New York, the following very kind words are said regarding the CANADIAN MANUFACTURER:—"We admire the spirit of enterprise which prompts your business methods. We take this occasion to express our appreciation of the merits of your journal as an advertising medium, and of the assistance you have been to us since we commenced advertising with you." An inspection of the pages of the CANADIAN MANUFACTURER discloses the fact that a large number of American manufacturers make liberal use of our columns to make their business known to our Canadian readers. Some of these advertisers have had their business cards in our pages ever since our first venture upon the sea of Canadian trade journalism in January, 1880.

ACTING Commissioner of Customs T. J. Watters has ruled (January 11, 1894), that water or air beds, cushions and pillows, made waterproof by india rubber, and used chiefly in cases of illness, are properly dutiable at the rate of 25 per cent. ad valorem under the terms of item 253 of the tariff. The Acting Commissioner has announced (January 15, 1894) that it appears from facts which have been brought to the attention of the Customs Department that sufficient care is not exercised at the various ports in appraising goods passed free of duty under item 707 of the tariff as Settlers' Effects, some officers apparently considering it of little consequence what value is stated in the entries. Collectors of Customs are specially instructed that in the future settlers' effects must be carefully valued in order that the entries passed at Customs may disclose as nearly as possible the proper value of such goods.

THE United States coal men who aired their views in yesterday's Empire are loud in their conviction that Congress' free coal policy will vastly benefit Canada. Our American neighbors are too prone to believe that Canadian commerce rises and falls by the American market. We believe the notion that Canada needs the American market for coal as earnestly as the Americans need our material is utterly fallacious. Congress is legislating in the American interest, not in ours. The exact value to us of the United States demand is a ques-

tion for Nova Scotia, mainly, to appraise. What do our friends down by the sea say?—The Empire.

The Empire very pronouncedly proclaims that the idea that Canada needs the United States market for coal as earnestly as that country needs Canadian coal is "utterly fallacious." Let us see. According to the last Trade and Navigation Returns, for the fiscal year ending June 30, 1892, Canada's imports of bituminous coal from the United States amounted to 1,638,975 tons valued at \$4,132,964, or about \$2.52 per ton. During the same year our exports of Canadian bituminous coal to the United States amounted to 772,441 tons valued at \$2,790,693, or about \$3.75 per ton. This shows that we imported 866,534 tons more coal from the United States than what we sold there, the cash balance against us being \$1,342,271, besides the duty paid on our imports, \$940,189. This statement has no reference to coke, coal dust or anthracite coal. It is a queer idea, too, for the Empire to advance that the exact value to Canada of reciprocity in bituminous coal is a question for Nova Scotia to appraise. Nearly all the American coal imported into Canada is consumed in Ontario. Surely the school boy editor continues on deck in the Empire office.

The methods of an actress are always interesting, and they are particularly so when an actress of such renown as Adelaide Ristori consents to tell them as she does in the February Ladies' Home Journal. The "Aberdeen Waltzes," by Mrs. Frances J. Moore, to which was awarded the first prize in "The Journal's Musical Series" of last year and for the best waltzes, are given in the full piano score and are as melodious as they are "danceable." The concluding paper of Mrs. Frances Hodgson Burnett's series of "How Fauntleroy Really Occurred" will be read with mingled pleasure and regret. The quaint "Pomona" continues her European travels and writes in her characteristic manner with Frank Stockton's assistance. This valentine month is celebrated by a description of "A Dainty Valentine Dinner," by Mrs. Burton Kingsland, and the "Social Side of Life" is represented by suggestions for feasts and modest home entertainments. Palmer Cox gives a page of his inimitable "Brownies" as they shoot the Lachine Rapids and otherwise enjoy themselves in Canada. Mrs. Mallon's pages, "Black Costumes of To-day" and "The Art of Dressing for Business," are charmingly illustrated. A particularly valuable article is that by Elizabeth Robinson Scovil on "Care in Infectious Diseases." Altogether this midwinter number, with its daintily illustrated cover and its attractive table of contents, is worth many times its price. Published by The Curtis Publishing Company of Philadelphia for ten cents per number and one dollar per year.

The February number of Godey's Magazine appears in a new and most attractive cover, and with many innovations and improvements in the inside of the Magazine. In every respect this number is the most attractive ever issued by the Godey Publishing Company. It has a choice and varied contents, the opening article, "How to Make Money in Wall Street," being from the pen of Henry Clews. There are the opening chapters of a novel, "This Man and This Woman," by Margaret Lee, with illustrations by Paul Nimmo Moran; a short story, "The World's Gain," by Henry Milford Steele; "Superstitions of the English Miner," by S. P. Colman; "Feline," short story, by Lucy C. Lillie; "The Valley of Rome," by Prof. A. L. Rawson; "The Royalty of Hawaii," by Herbert Stanley Renton; "American Women in Mexico," by Marie Robinson Wright; "A Tragedy Pro-Tem," short story, by James Clarence Harvey; "A Begging Letter," a farce, by Anna Robeson Brown, with short sketches, numerous illustrations, and poems by Louise Chandler Moulton and others. Florence Hull conducts the Home Department, Stella G. Florence's name appears as fashion editor, and there is a new department for Our Boys which ought to attract universal attention. Rickard

Our readers who remember Grip in its palmy days will, we are sure, be glad to hear that with the first week of the new year that famous comic paper was revived under the editorship of the originator, Mr. J. W. Bengough, the well-known cartoonist, with whom is associated Mr. J. J. Bell, as business manager. Grip comes

forth in a new typographical outfit, and the new proprietors promise that it will be better than ever before in the artistic and literary departments, while it will strive to deal out even-handed justice in its comments on public questions. The publishers (Phoenix Publishing Co., Toronto) wish to hear from all Grip's old friends and thousands of new ones. Subscription as heretofore, \$2. Single copies, 5 cents.

Good Housekeeping for January began the eighteenth volume of this admirable magazine, which is in fact, as its publishers claim, "conducted in the interests of the higher life of the household." H. Annette Poole's serial, "A Noble Girlhood," is ended, and among the other leading articles are, "Market Curiosities," by Maria Parloa; "Tablecloths and Napkins," by Margaret Fayerweather; "Eyes and Eyesight"; "To Dress Well and Economically," by Helena Rowe; "Games and Gaming," by Milton Bradley; "Faith Bradford's Violin," a poem admirably adapted for public recitation, by Dorothy E. Nelson; "What to Do With My Lady's House," by Mrs. Oliver Bell Bunce; "For Little Ben," a short story, by Harriet A. Chute; "Economy in Dress," by Clara B. Miller, and a multitude of shorter articles, with a rich assortment of original verse—verse which is poetry. Clark W. Bryan Company, publishers, Springfield, Mass.; \$2 per year.

It would be difficult to find amongst the monthly periodicals a magazine at all rivalling in interest to Canadians that successful national review, *The Canadian Magazine*. It is, while broadly cosmopolitan in subject-matter, thoroughly national in aim and in attention to every part of the Dominion. Every province, from the Atlantic to the Pacific, is represented among the contributions, and throughout a high literary merit marks the articles, many of which are highly entertaining and all interesting. The January number is, like its predecessors, full of variety. "Howe and his Times," by Attorney-General Longley, gives many amusing incidents about Nova Scotia's public men of a generation ago. Chancellor Rand, of McMaster University, publishes for the first time one of the most extraordinary psychological experiences on record. Minnie Jean Nisbet has a charming illustrated article on "Longfellow's Wayside Inn." E. Dowsley's "Plea for Ireland" charmingly describes Irish scenery and people, and gives beautiful illustrations of some of the Irish valleys. E. B. Biggar's "Two Lost Kingdoms," illustrated, tells of Cetowayo and the Prince Imperial. A well written and illustrated article is J. J. Bell's "In Canada's National Park." *The Canadian Magazine*, which should be in every cultured home in the Dominion, is published by the Ontario Publishing Co., Ltd., \$2.50 per annum.

"Steam Boiler Tests as a Means for Determining the Calorific Value of Fuels," by D. W. Robb, Amherst, N.S., published by the Canadian Manufacturer Publishing Co., Ltd., Toronto, is a valuable paper upon a subject of the utmost interest to all steam users. Mr. Robb, who is the senior of the Robb Engineering Company, Amherst, is a gentleman who has given much study to the subject of steam engineering, and is well fitted to write on this matter. His paper was originally read before the Nova Scotia Institute of Science at the 1890-91 session, and was then extensively published by that Society. Having gone out of publication the paper was reproduced in the *CANADIAN MANUFACTURER* of a recent date, and the renewed interest in it demanded that it should be again brought out in convenient form, as now shown in the pamphlet here alluded to. Those who may be interested in this subject will no doubt be supplied with copies upon application to Mr. Robb.

As the magneto telephone of the American Bell Telephone Company—the instrument commonly known as the "receiver"—becomes public property at the beginning of February by the running out of the patent, the interest as to the immediate future of the telephone industry is widespread. Not only do people want to know how soon they will get cheaper telephones, but manufacturers who wish to supply the market are anxious to know how far they can go legitimately and honestly. There has been a great deal of misinformation published on the subject, and much of it has been of a mischievous tenor. The telephonic art is far from being wholly open, as some would suggest. The American Bell Telephone Co. is strongly entrenched within patents that rise one behind the other like concentric fortifications, and it has not spent its existence in a supine and lazy enjoyment of fat profits to be reaped for only a season. But the lapse of the fundamental patents renders some things possible, in some fields that the company has neglected or chosen to disclaim. To meet the demands for the real facts, *The Electrical Engineer*, 303 Broadway, New York, began on Jan. 17, a series of articles that have been very carefully prepared, covering the whole ground of telephonic patents and telephonic apparatus. Where deemed important and pertinent, the language of the patent claims bearing on the situation is quoted in these articles.

A varied and attractive table of contents is offered by *The Popular Science Monthly* for February. Dr. Andrew D. White, contributes the first of a new group of his Warfare of Science papers under the special title of *The Visible Universe*. The recent death of Prof. Tyndall gives occasion for an account of "Tyndall and his American Visit," containing some interesting letters, which is furnished by Miss E. A. Youmans. There is also an estimate of the man and his work in the Editor's Table. Under the title "Notes from a Marine Biological Laboratory," Prof. William S. Wundt describes the laboratory of the Johns Hopkins University in Jamaica, with views of its surroundings. In another illustrated article James E. Humphrey tells "Where Bananas grow," showing by the pictures how the fruit is gathered and shipped. In another Dr. Sidney J. Hickson describes the "Physical Conditions of the Deep Sea." From still another, entitled "The Wandering Jew at the Salpetriere," we learn that this mythical character really exists, not as an individual but as a class. Several portraits of these unfortunate wanderers are given. Mrs. Ellen B. Dietrick discloses the real condition of "The Circassian Slave in Turkish harems," which is not so bad as many outsiders have imagined. John Monteth describes "The Psychology of a Dog," Miss Blanche Macdonell puts on record some "Superstitions of the French Canadians," Prof. Joseph Prestwich sets forth "The Position of Geology" at the present time, and the list closes with a "Sketch of David Starr Jordan," President of Stanford University, by Prof. M. B. Anderson, accompanied by a portrait. New York: D. Appleton & Company. Fifty cents a number, \$5 a year.

Outing for February is an excellent number throughout. Its contents are "Invisible Chains," a complete story by Louise D. Mitchell; "The Home of the Hulero," or Cooching in Honduras, by E. W. Perry; "The Price of a Name," a story by B. H. Harrison; "Hunting in Polar Regions," by J. M. Mills, M.D.; "In the Land of Josephine," by Walter L. Beasley; "Jamaica for Cyclists," by Alan Eric; "Lenz's World's Tour 2-Wheel"; "Alaskan Boats," by Lieut. J. C. Cantwell; "A Day's Sport in the Caroline Islands," by S. H. Watts; "A Path Through the Woods," by Jas. Buckham; "In Another World Than Ours," by Grace E. Channing; "Trawling with Gloucester Fishermen," by John Z. Rogers; "A Sportsman's Taxidermy," by L. H. Smith; "A Championship Hockey Match in Canada," by Charles Gordon Rogers; "National Guard of Pennsylvania," by Capt. C. A. Book, and the usual editorials, poems, records, etc.

When the metal bathtub resolutely declines to be polished into brilliancy, and assumes a dingy, uncared-for aspect, it is time to apply the paint brush. Of course not even the most skilled household artist can succeed in producing a rival to the porcelain tub in which fortune's favorites take their daily dip, but a very attractive substitute may be obtained. The tub must first be scoured and thoroughly dried. Then a coat of ordinary white paint should be applied and allowed to grow quite dry. After that three or four coats of white enamel should be applied, each one becoming quite dry before the next is added. The tub will be both daintier in appearance and more easily kept clean than the tin or zinc ones.

The efficiency of a new method of cleansing and preserving steam boilers against pitting and general corrosion, was recently demonstrated on board the steamship *Tenasserim*, Glasgow, by the Electric Anti-Corrosion Company, of Carliff. This process consists of fixing electrodes into the boilers and sending periodical currents of electricity through them under definite conditions, automatically adjusted and controlled. When the current is passing from the anodes suspended in the boiler to the shell, hydrogen is liberated on the shell and tubes and oxygen on the anodes; then, by means of the depolarizing apparatus, the action is changed, and most of this hydrogen and oxygen recombine, the result being that during the first period the hydrogen performs two distinct functions—first, by its volume it mechanically disintegrates the scale formed on the shell and the tubes, and, secondly, some of the hydrogen combining chemically with the oxygen of the oxide of iron on the shell and tubes reduces this oxide to metallic iron, thus preserving the boiler from oxidation without wearing away the metal.—Invention, London.

DIAMINE CUTCH.

Messrs. Wm. J. Matheson & Co., New York and Montreal, have sent us a circular regarding this article as follows:

Diamine Cutch (patented), is the first of a new range of valuable colors the discovery of which considerably enlarges our series of Diamine Colors. The principal use this color is destined to fill is expressed by its name.

The process of manufacturing this color and the methods of its application in dyeing are patented to us in the United States and all other industrial countries.

Diamine Cutch dyes unmoorlanted cotton in the first instance a violet shade which by a simple treatment is converted into a brown. Two methods are applicable to effect this:

(a) The dyeing is diazotised in the usual way and then passed through a weak soda solution.

(b) The dyeing is diazotised and then developed with Fast Blue Developer A.D. or Developer No. 4.

The process of working, as well as the properties of the dyeings obtained are described hereafter and the accompanying dyeings show a few of the brown shades obtainable with Diamine Cutch.

The advantages of Diamine Cutch, as compared with such brown colors as dye in a single bath, are the superior fastness to washing and light and the property not to bleed at all or in the case of some developers only so little, that the dyed goods may be used without objection for weaving along with white.

Compared with Cutch the following may be said:

The cotton fibre is not injured in any way in its softness and spinning capacity by being dyed with Diamine Cutch and therefore is superior in quality to cotton dyed with Cutch.

Diamine Cutch penetrates the hardest twisted yarns and most closely woven cotton and linen fabrics, while hitherto such material could not be dyed through with Cutch.

The dyeings done with Diamine Cutch are faster to bleaching than Cutch dyeings.

Another advantage, though it only applies to a few trades, is, that Diamine Cutch may be discharged.

Diamine Cutch should in consequence of its properties play an important part in the dyeing of loose cotton, cotton sliver, cops, yarns and piece-goods and also in linen dyeing.

Diamine Cutch costs for light shades about as much as Cutch, while practical work has demonstrated that for deep shades it is not much dearer.

DYEING RECIPES.

1. 3 lbs. Diamine Cutch, patented, diazotised and passed through a tepid soda bath.
2. 5 lbs. Diamine Cutch, patented, diazotised and passed through a tepid soda bath.
3. 5 lbs. Diamine Cutch, patented, diazotised and developed with Fast Blue Developer A.D.
1 lb. Diamine Black B.O.
4. 7 lbs. Diamine Cutch, patented, diazotised and developed with Fast Blue Developer A.D.
1 lb. Diamine Black B.O.
5. 4½ lbs. Diamine Cutch, patented, diazotised and developed with Developer No. 2, then soaped.
6. 5 lbs. Diamine Cutch, patented.
¼ per cent. Diamine Fast Yellow A., pat. appl. for, diazotised and passed through a tepid soda bath.
7. 4½ lbs. Diamine Cutch, patented.
1½ per cent. Diamine Brown V., patented, diazotised and passed through a tepid soda bath.
8. 3½ lbs. Diamine Cutch, patented,
2½ per cent. Diamine Black R.O., patented, diazotised and passed through a tepid soda bath.

METHOD OF DYEING, DIAZOTISING AND DEVELOPING 100 LBS OF COTTON.

1st. Bath, (Dyeing): Dye at the boil for one hour with the addition of 30 lbs. common salt, then rinse. The baths do not exhaust and are therefore to be preserved.

2nd Bath, (Diazotising): Pass through a cold bath for 15 minutes, containing 3 per cent. Nitrite, previously dissolved in warm water, and 10 per cent. Muriatic Acid, 33° Tw.

For the numbers 3, 4 and 5 rinse in water weakly acidulated with muriatic acid, then enter at once the developing bath.

For the numbers 1, 2, 6, 7 and 8 after diazotising pass through a tepid bath of 86 to 104° F., containing 1½ to 2 per cent. of calculated soda per 100 gallons water, and then wash.

3rd Bath, (Developing): Pass No. 3 and 4 through a bath, for 15 minutes, containing 1½ lbs. Fast Blue Developer A.D., dissolved in 14 ozs. muriatic acid, afterwards diluted with 4 gallons of boiling water. Then wash.

For No. 5 pass through a bath containing 1½ gallons of a solution of 19 parts Developer No. 2, dissolved in water with 24 parts Soda Lye of 75° Tw. Then soap well.

REMARKS.

The dyeings diazotised and then treated with Soda show an excellent fastness to acid and milling almost equalling in that respect those done with Cutch, while their fastness to light is nearly as good. Dyeings developed with Fast Blue Developer A.D. and Developer No. 4, however, are equally as fast to light as Cutch

dyeings. The dyeings developed with Developer No. 4 must be well soaped after developing to avoid a tendency to bleed.

Diamine Cutch can be shaded in the same bath with all our diazotisable Diamine Colors such as Diamine Black, pat., R.O., B. O., B.H., Diamine Blue Black E., pat., Diamine Brown V., pat., Cotton Brown A. and N., Diamine Orange, Diamine Fast Yellow A., Primuline; they can also be topped with basic dyes after developing.

Diamine Cutch does not quite exhaust in the dye bath, which may be preserved. When this is not possible, use concentrated baths, which condense further during dyeing by boiling incessantly.

Diamine Cutch can be dyed, diazotised and developed in wooden or copper vessels. For those interested in the dyeing of loose cotton we have a special sample card.

FAST MODE SHADES.

For some time Mr. Alex. P. Mende, 14 Water St., N.Y., has been engaged in manufacturing a class of dyestuffs which are known under the name of "Fast Mode" dyes, and quite extensively used in Europe for dyeing piece-goods as well as yarns; and though they can not be classed among the "cheap" dyestuffs, they are in some manufacturing districts of Germany almost exclusively used for the production of a countless variety of mode shades, the most of which are fast to washing and many fast to acids.

Mr. Albert Stein, a practical dyer, writes that he can hardly imagine a dye works where many fast dyes are produced at reasonably remunerative prices, without the use of fast mode dyestuffs as self-colors, or in combination with other dyes.

The yarns or piece-goods either dyed or topped with the new dyestuffs are uncommonly mild, and even very dark colors, such as dark browns and olives, which are topped or toned with any of the Fast Mode dyes, acquire thereby a peculiar mildness and brilliancy which is scarcely obtained by other processes.

They are named to express as nearly as possible the shades obtained with them; moreover, they do not rub off or bleed in washing. Mr. Stein considers these colors indispensable for the production of fast, light and bright mode shades, and predicts for them a large trade when more durable cotton and linen goods with fast colors shall again come in favor.

Mixed fibres dye also with them at a very great saving in cost of dyeing.

The new products present the important advantage that they can be dyed in one bath. It is known how much time is often required to dye a bright, light mode shade to match, especially when the dyer must depend upon his own judgment and his eye in proportioning the various components of the color, and when two or more baths are required for the purpose.

The use of Fast Mode dyestuffs involves a considerable saving in time, labor, steam and fuel.

The number of Fast Mode dyes is already pretty large, and is constantly increasing; but it is not necessary for a dyer to have them all on hand, since they readily combine with each other and can be toned in the same bath also with anilines, always producing perfectly matched shades.

These mode dyes can be classed in two groups, viz.: Direct Dyeing ones, and such as require a tannin mordant. The former class includes: Gold, New Gold, Blonde, Tea-Green, Leather Yellow, Serpentine, Chocolate, Cinnamon-Brown, Golden-Brown, Fawn, Havana, Iron-Gray, Slate, Dust and Silver-Gray, Fast Olive, etc.

A tannin mordant is required for: Plum, Currant, Pigeon-Blue, Copper-Red, Steel-Blue, Pure-Blue, Violet, Leaf-Green, Vat-Blue B and G, Fast-Red, Germania-Red, etc., the Tannin (nutgalls or sumac) being fixed as usual by a bath of antimony salt, or for brilliant shades, stannic chlorid. The latter class of dyestuffs also dye cotton without tannin, but the colors are in that case less fast and less full. Fast Red, for instance, when dyed with a small quantity of dyestuff and alum gives a handsome Rose, equal in fastness to Safflower Rose, by entering the dye-bath cold, adding the dyestuff gradually and heating only when the shade is nearly obtained; heating, however, gives the color a bluer tone. Full shades of Fast Red and Vat Blue always require a tannin bath; and dark modes a bottom of sumac or nutgalls and iron.

Mr. Mende has further improved on the fastness and brightness of these Dyes, and has overcome the obstacle of higher cost by manufacturing them in the United States, and by selling at lowest possible prices; in fact, much below the European prices.

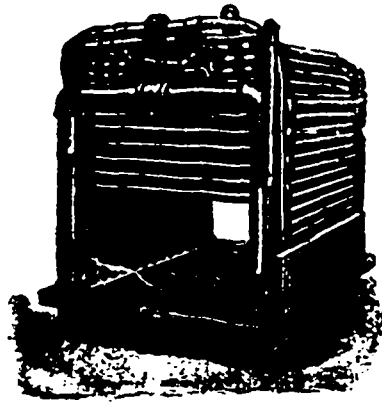
Mr. Mende also manufactures Direct Dyeing Blacks of the same class and suitable for all cotton, all wool and for mixed fibres; the latest attainment is that these Mode Colors and Blacks can also be applied for direct printing with or without steaming.

THE ROBERTS PATENT SAFETY WATER TUBE BOILER.

The accompanying illustration is of the Roberts patent safety water tube boiler, manufactured in Canada only by the Bertram Engine Works Company, Toronto.

Mr. E. E. Roberts, the inventor of this boiler, has this to say concerning it:

About the year 1878, I purchased a cottage on the banks of the Shrewsbury River, at Red Bank, N.J., and, as I had been many years at sea as an engineer in the navy, and was a lover of aquatic sports, I built a steam launch for my own use and that of my friends. There was no difficulty in designing the boat or the engines, but when it came to the question of boiler I found great difficulty in getting anything to suit me. In my first launch I placed an up-



right tubular boiler, but not being satisfied, I sold the boat and built another, in which I placed a horizontal boiler, and then sold that boat and built a third, with a coil boiler; but they were all equally unsatisfactory, being either too heavy or of too great weight, or short-lived, and to these defects might be added that the first two types required too long a time to get up steam, and required constant cleaning of tubes and washing out sediment, which soiled the boat and compelled a great deal of disagreeable

work. Being in business in New York, I required something which would get up steam almost instantly, when I arrived at home and wished to use the launch, and also, which would not require constant cleaning and general care and attention. My studies on the subject resulted in my producing a boiler on the same general principle which is embodied in the boiler I at present manufacture; and, although it was very crudely built, of such material as I could find in the open market, it was so successful that I used the boiler and boat for two years, with great satisfaction and then sold the latter to Mr. A. E. Clark, of Chicago, who has used it for the past eleven years without, as I understand, any repairs to the boiler, except renewed grate bars and other fixtures. My business being that of a consulting and contracting engineer, I paid no particular attention to the boiler as a business, and had not any attention of manufacturing them for sale; but parties who saw the first one I built, insisted upon having them, and in the course of time, orders increased to such an extent that I was obliged to give up my regular business and confine myself strictly to the manufacture of these boilers. It then became necessary for me to make arrangements for the manufacture of special material and to re-design the boilers so as to obtain the same power with decreased weight and less space; and the result has been that I have, at the time this edition is issued (November, 1893), sold some six hundred boilers, ranging in size from those used on small launches to those used in large ocean-going steam vessels. I have erected adequate works designed especially for the manufacture of this boiler, and have invented many special tools for use in its construction, and made arrangements with the leading pipe and tube manufacturers and steel foundries to supply me with the best material that can be manufactured.

The result has been that I practically have no competition. Every boiler that I sell brings me one or more orders, and the United States Steamboat Inspectors approve them for use under 200 to 250 pounds of steam, without many of the restrictions enforced in regard to other types. Although used for many other purposes besides steam yachts and other steam vessels, they are particularly adapted for the latter, on account of their comparatively small weight and the small space they occupy compared with the power they develop. These two features are not of much consequence for factory purposes, although all the other good qualities are, of course, appreciated.

The main advantages of the Roberts boiler are:—Absolute safety from disastrous explosion; great economy in fuel; rapid and thorough natural circulation of water; rapid production of steam after lighting fire; steady and ample production of steam; steady water line; low centre of gravity; adaptability for use with any fuel; no cleaning of water-space or removal of hand-hole plates, etc.; perfect combustion of fuel and low temperature of smoke-stack; the high pressure which can be safely carried, and which is necessary in connection with multiple expansion engines; no foam-

ing or priming; automatic separation of sediment; special adaptation for use with muddy water; small space occupied; light weight, great elasticity, allowing for expansion and contraction; easy accessibility of all parts for repairs, regardless of their position in the boiler.

The above claims are made by those using the boiler, and I do not consider it necessary to add to them personally. "The proof of the pudding is in the eating," and that my theoretical designs are substantiated practically, can be proved to your satisfaction, if you will send for pamphlets of testimonial letters, which are too numerous for publication except in a separate circular.

I do not rate these boilers by "horse power," and hope no more of my correspondents will ask me to quote a price for a boiler of a specified "horse-power." A boiler gives no power, whatever, except through the engine, and the amount of steam generated by a given boiler can be used so as to develop 40-horse power or 100-horse power, depending entirely upon the economy with which the steam is used in the engine. When I speak of the power of a given boiler, let it be understood as an estimate based upon a development of one-horse power for every twenty pounds of water evaporated per hour, which is, approximately, the measure of economy of a well-designed and well-constructed compound condensing engine.

HAULING GARBAGE BY MOTORS.

President McKenzie, of the Toronto Railway Company, has made the following proposition to the Toronto city authorities, regarding the hauling of city garbage by electric motors:

"The Toronto Railway Company are prepared to enter into an agreement with the city to haul the material moved by the scavenger department of the city, and other excavations from cellars, street repairs or grading to Ashbridge's bay, or to any other point or points within the city limits by our electric motors. We will furnish motor car or electric locomotive, motorman, trolleyman for each train to haul your garbage cars from point of loading to point of unloading for the price of \$1.50 per garbage car per round trip, a car not to contain more than ten tons.

"The railway company will put in the necessary switches at the loading points, provided there is not more than one established in each ward, nor more than six in all, and that the loading point is not more than 200 feet from our present lines. In case points are established more than 200 feet from the present lines the city to bear the additional cost of tracks, and in case any new points are established at any time the city will have to bear the expense of any such change. The company will also put in the necessary switch turning off their line to unloading point, but the city to pay the cost of any additional tracks that may be required to reach dumping ground.

"The city to construct and own all garbage cars necessary to do the work, and to be loaded and unloaded by the city, and no expense to be occasioned to the company beyond the hauling of the garbage cars from point of loading to dumping ground.

"It is also to be distinctly understood that no percentage on above prices, or mileage on above tracks, is to be paid the city by the company. The agreement to be for ten years, with option of renewal."

It was decided to forward the offer to the City Engineer with instructions to prepare a statement showing the present cost of the removal of garbage and the cost of the plant and the appliances necessary to remove garbage under the proposed system.

Captain H. C. Spence, formerly superintendent of the Fall River Machine Company, of Fall River, Mass., who went last Spring to be superintendent of the Metallic Drawing Roll Company's Works at Indian Orchard, Mass., has made a decided success of his new undertaking. The business of the Metallic Drawing Roll Company has reached such proportions, and Mr. Spence's services have proved so satisfactory that he was recently promoted to the position of general manager, having previously been also elected director of the corporation, in which he holds a very considerable interest as a stockholder. Mr. Spence's career is a good example of what can be accomplished by a mechanic who is determined to be a master of his business. The Metallic Roll is now recognized as the greatest improvement in cotton spinning since Arkwright's time, and is coming into very general use. The rolls are manufactured with marvellous accuracy, and the manufacturers claim that they possess all the advantages and none of the disadvantages of the leather-covered roll in use for the past century and a half, while also possessing many points of superiority. These Metallic Rolls have been adopted on all processes up to spinning and will doubtless be put on spinning frames at an early day.

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 clearly, giving correct name and address of person or firm alluded to, and nature of business.

The Granby Rubber Co's works at Granby, Que., have so many orders in hand that they are compelled to work night and day.

Fire in the Yarmouth Woolen Mills, Yarmouth, N.S., on Jan. 17, did damage to the extent of \$500.

W. H. McNeil's agricultural implement factory at New Glasgow, N.S.; was destroyed by fire Jan. 17, loss about \$6,000.

A gentleman named McCracken, from Dublin, Ireland, will establish a woolen factory at Mission, B.C.

The Montreal Electric Street Railway Company have bought up the privileges of the Standard Light and Power Co., in Ste. Cumeronde and St. Henri.

The Thamesville Gas and Oil Company, Thamesville, Ont., while boring for the purpose, a few days ago struck a very rich vein of natural gas at a depth of 125 feet.

W. M. Hodge, Cornwall, Ont., manufacturer of woolen goods and yarns, is running full time as usual; one set of cards and six looms are operated. James Culbertson is superintendent.

Additional machinery being placed in the Merchants Cotton Mills, at Montreal, includes some 300 looms and necessary carding and spinning machinery. When these are in operation there will be 1,200 looms.

The Parisian Laundry Machinery Company is being incorporated at Toronto, with a capital stock of \$25,000, to manufacture machinery and appliances for use in laundries. Gabriel Chiera, August Vier and W. G. Chater are to be the first directors.

The Canada Cotton Co., Cornwall, Ont., operates 32,000 spindles and 870 looms. This company have lately built a fine brick and stone wheel house, and put in a steel punt stock and three improved water wheels of 1,575 horse power.

Messrs. Charles A. Beals, James Stokes and George Hartley, of Vancouver, B.C., have incorporated the Pacific Brick Co., with a capital of \$20,000. They will carry on business as dealers in brick, tile and terra cotta.

The match factory and woollenware works of Messrs. G. & C. Flewelling at Hampton, N.B., is being equipped with an electric lighting plant, which will also supply lighting for municipal and domestic purposes.

The survey and location of the extension of the Drummond County Railroad, from St. Leonard to Chaudiere, Que., has been completed. The new extension is forty-five miles in length, the first twenty-five of which passes through a dense forest country. The bridging of the streams will not be a serious matter.

The Alpha Oil Works at Sarnia, Ont., which have been idle for some time are to be started up again, for the purpose of refining oil by an entirely new process. Mr S. D. Madden is to be manager. A thousand barrels are to be made as a sample, and should the new process prove successful the works will be taken over by a strong company of American capitalists.

Recent orders accepted and being filled by the Waterous Engine Works Co., Brantford, Ont., include: Four complete circular saw mills, from thirty to seventy-five h. p. each; four single sets of saw irons, ten chopping mills, three under running mills, one Prescott direct acting steam feed and three Allis hand mills, with their attendant machinery; one Veneer machine, two shingle machines, one pulp wood outfit, and a number of export orders.

The Stormont Cotton Mill, Cornwall, Ont., has lately completed the addition to the mill. The dimensions are 90 x 160 feet and four stories high, with new boiler house. New machinery has been added consisting of five boilers, making eleven in all, three dryers, one Davidson ventilating fan, five Klauer & Weldon dyeing machines, two Platt Bros. cotton openers, four intermediates, four finishers and a double Corliss engine of 1,000 horse power. The machinery throughout the entire plant is being reorganized.

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14 to 34 King & Queen Sts., Montreal

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STEAM ENGINES, STEAM BOILERS,

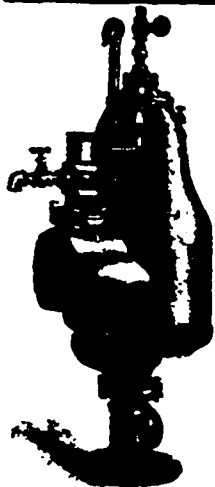
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Safety Elevators and Hoists for Warehouses, etc.

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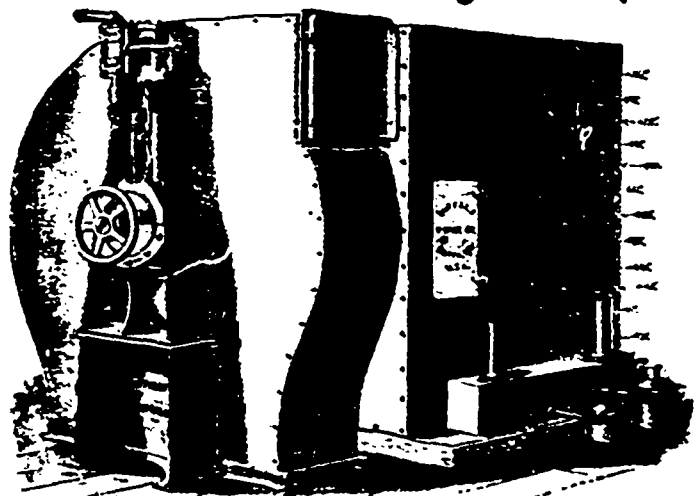
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MUDDY OR GRITTY LIQUIDS
HANDLED WITHOUT WEAR.

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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, Pa.

Send for Catalogue

BUFFALO FORCE CO., BUFFALO, N.Y., U.S.A.

Messrs. Gummell & Son are placing new engines and mules in their woolen mill at Perth, Ont.

A new brick building, to be used for a bleachery, has lately been built at the Hochelaga cotton mill, Montreal.

Mr. D. Day, of Dumfries, Scotland, is establishing works at Vancouver, B.C., for dyeing silks, laces, carpets, rugs, etc.

The beet root sugar factory at Berthier, Quebec, is preparing for a big season this year. M. Lefebvre & Co., the vinegar manufacturers, who own the factory, have contracted with the farmers for over 3,000 acres of sugar beets.

The Toronto Sewer Pipe and Paving Brick Company are applying for incorporation with a capital stock of \$100,000 to manufacture sewer pipe, brick, etc. at Mimico, near the western limits of Toronto. Henry Barber, William Pears, D. F. Horner and Jas. Pearson are to be the first directors.

Letters patent have been granted to the Hutt & Phillips Mfg. Co., of Toronto, with a capital stock of \$100,000, to manufacture machinery for making paper pails, buckets, boxes, baskets, etc., and to manufacture such articles. Messrs. J. W. Hutt, A. J. Phillips and Geo. Bengough are interested.

The Reinhardt Brewing Company, Toronto, are erecting an addition to their brewery at a cost of about \$25,000, which will enable them to increase their storage capacity 100,000 gallons. Included in the improvements are twenty puncheons of 5,000 gallons capacity each. These are ten feet deep and eight and a half feet in diameter.

The writer has made a practical test and has got excellent results from a recipe for aniline black on wool, patented in England by Mr. A. P. Mende of New York, and the process is certainly novel. For every 100 pounds of material four pounds of chromic acid and three pounds of hydrochloric acid are used, in just sufficient water to work easily. This is kept at from 20 to 30 C. and the goods are worked for about a quarter of an hour. They are then squeezed free of liquor and passed through a bath made with one pound of aniline salt and a sufficient quantity of ferric chloride. This bath is used cold and when it is thought the fibre has taken enough color it is steamed in an ager at 80° C. until a black is obtained. It should be a first rate color and will stand all the usual tests. The inventor claims that this method involves a new principle

and asserts that it is equally applicable to mixed wool and cotton fabrics.—Textile World.

The British Columbia Iron Works Co., New Westminster, B.C., have secured the right to construct a patent solder wiping machine, for use in the canneries, the patentees being Messrs. Letson & Burpee, of New Westminster. It is estimated that this machine saves \$30 a day on an average, as by its use a good deal of labor can be dispensed with.

The Dominion Blanket & Fibre Co., Montreal, with works at Beauharnois, P.Q., have nearly completed their building at the latter place. The new mill is of brick, 163 x 82 feet, four stories high and basement, with ell part for finishing and dye house, 152 x 50 feet and two stories high; also picker house 50 x 70 feet. The capacity is twelve sets of cards and eighty looms. A portion of the machinery has been started up and the balance will be placed in operation as soon as possible. The goods manufactured are carriage robes, horse blankets, plushes, chamouis, etc.

In the near future the trolley system of locomotion will be in operation in two sections of the Rocky mountain division of the railway. Contracts have already been let for the construction of the motors. The power will be developed from water-falls in the neighborhood and the necessary machinery for this purpose has also been contracted for. The trolley is especially adapted for steep grades such as characterize the sections of the C. P. R. on which it is to be adopted. Steam locomotives will be entirely abolished on these parts of the line.

W. S. Johnston & Co., Toronto, recently bound a book for the Dominion Government that was unique in its way and a test of the firm's skill as bookbinders. When closed the book was 6½ inches thick and measured but 12x18½ inches. When open flat one could put his arm under the back of the book. It was bound in half calf with cloth sides, canvas cover, Russia bands and corners. The book comprises 1,934 pages, has 1,094 index cuttings and 572 leather tabs with 2,750 letterings in ink to match the tabs. It is a general index of the Department of Marine and Fisheries and weighs 50 lbs. This, we believe, is the thickest and heaviest book ever turned out of Toronto with so small a page. The work upon it is first-class in every respect and highly creditable to its maker.—The Imprint.

The Cant Bros. Co. of Galt, Ltd.

MANUFACTURERS OF

Wood-Working Machinery

PRINCIPAL GOLD MEDAL, TORONTO EXHIBITION, 1883

"The **Automatic Hollow Square Chisel Morticer** for making mortices in HARD wood. "Is just the machine for our work. It cleans the Mortice out perfectly, and will do it quicker than any other kind of Morticer. We believe the principle of the machine is the only correct one for this kind of work."—*Bain Bros. Wagon Mfg. Co., Brantford.*

"We would state that the **Hollow Square Chisel Morticer** works very well indeed, since changing the gear. We think it is a decided improvement. It works much better in our work than it ever did."—*Peterson & Corbin, Street Car Builders, St. Catharines.*

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Write for Catalogue and Prices

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ASBESTOS DISC BRASS Globe Valves

These Valves are provided with Vulcanized Asbestos Discs, composed of the fibre of Asbestos, which cannot be cracked or broken. The Disc is practically indestructible, being composed of a fireproof material, to which is added the waterproof vulcanizing material.

The Discs are furnished all complete and ready for use and may be put into one of these valves by simply unscrewing the bonnet of the valve, slipping off the old disc, replacing it by a new one, and screwing on the bonnet again, requiring only a few moments' time for the entire operation.

The Stuffing Boxes are all packed before they leave the factory with VULCANIZED ASBESTOS PACKING, which is very durable, and cannot be blown or washed out. Only first quality new metal is used.

We invite inspection and trial by all interested in this line of goods. All goods are warranted to give satisfaction.

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*Ingot Copper and Tin
Zinc and Brass Spelter
Antimony and Babbet Metal*

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164 FENCHURCH ST., LONDON, E.C.

SHIPPING OFFICE
1 RUMFORD PLACE, LIVERPOOL

Messrs. George White & Son, London, Ont., have placed a new steam boiler in the power house of the Tilbury Electric Light Co.

Messrs. Banbury & McGee have been awarded the contract for building a brick and stone court house at Wolsley, Assn.

Messrs. R. Beach and E. McCabe of Peterborough, Ont., have engaged in the manufacture of drums for the Salvation Army, and for any who may desire first-class musical instruments of this description.

Messrs. T. W. Ness & Co., Montreal, are supplying the electric light wiring and fixtures to St. Andrew's church, Carleton Place, Ont., and a fire alarm system to the town of East Toronto. The fire alarm plant with which they equipped the town of Dundas, Ont., is giving excellent satisfaction.

Messrs. Dickinson & Sness have completed their contract of the erection of the gas compressor house for the Erie Gas Co. The pumps are now working, and the sound of the gas being forced through the pipes can be heard for a long distance.—Welland, Ont., Telegraph.

The Erie Co.'s gas well on Mr. Abram Bearss' farm is a dry hole, and it is said a match can be burnt over it without any illumination. The Erie Co. has drilled three unsuccessful wells in succession, and it is reported that they will not drill on Mrs. Moserfelder's farm, where a derrick has been erected.—Welland, Ont. Telegraph.

A strange story comes from Vancouver, B.C., in respect to an invention which can locate the presence of minerals. It resembles a box with a tin fog horn sticking out of one side. A test of the machine was made recently when several curious citizens wrapped \$30 in silver in a handkerchief, and, leaving the manipulator of the machine in town, went to the outskirts and hid the wealth. Says those present: "The tin horn indicator was pointed north towards the park, and at four, as it was getting dark, the inventor and his machine were 600 yards from where the money was buried. Fearing that they would not be able to see if they waited much longer, the committee in charge took the inventor within 200 yards of the spot. The pointer of the machine was slowly moved in a circle when the operator suddenly stopped, while a faint rattling sound was heard inside the machine. As its inventor remarked: "When you hear that rattling sound it is the sign that I am in a direct line

with the treasure." He then insulated himself with a rubber suit, and advanced cautiously, the machine continuing to rattle until a certain spot had been reached, when it ceased. He walked backward carefully until the demonstration inside the box recommenced, when the pointer was poked to the ground, and the treasure dug up. "This is not a fancy picture," says the weekly Colonist, "It is a recital of facts." Several men of accredited shrewdness believe in the machine, while Capt. Van Bremner is interesting himself in having it perfected, so as to make the 100th attempt to locate the pirate's booty of the treasure island of the Pacific. Capital is being raised to promote the trip to Cocos Island, with fair success.

The Montreal Cotton Co., Valleyfield, Que., are running full time as usual; 1,600 looms and 80,000 spindles are operated. Work is progressing as rapidly as possible on their new bleach house and weave shed, and it is expected they will be completed by the middle of summer. The dimensions of the new building are, bleach house, 370x70 feet, and three stories high; weave building, 220x70 feet and three stories; 960 looms and the necessary carding and spinning machinery are to be added. A large portion of the machinery has arrived and is now being placed in position. The bleachery has a capacity of 120 tons per week and is fitted up with the latest improved machinery and all modern appliances, as is, in fact the entire plant. The goods pass by a system of pulleys from the weave room to the singeing room, dye house, bleachery, drying room, finishing room and then on to the packing room. The entire machinery is run by water power, thirteen turbine water wheels being used. The mills are lighted by electricity, 16,000 capacity lights. Mr. Simpson is superintendent.

The Toronto Steel-Clad Bath and Metal Company, Toronto, have sent us a circular in which they announce as follows:—"In order to meet the demand for an unceasing sanitary bath for jobs at moderate cost, we have succeeded in producing a steel-clad bath, at a figure that we think will ensure its being placed in every house or building where this class of bath is required, and where otherwise the old style boxed-bath would have been used. The bath is on exactly the same principle as all our steel-clads, the reduced price not being brought about by any inferiority of material or workmanship, but by reason of increased facilities and the fact that the No. 2 steel-clad will be made in less variety of styles.

**Second-Hand Engines and Boilers
for Sale by the**

GOLDIE & McCULLOCH CO., Limited

GALT, ONT.

- 100 h.p. Wheelock Engine
- 90 h.p. Wheelock Engine
- 80 h.p. Wheelock Engine
- 70 h.p. Wheelock Engine
- 40 h.p. Wheelock Engine
- 75 h.p. Slide Valve Engine
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- 50 h.p. Slide Valve Engine
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- 15 h.p. Slide Valve Engine
- 10 h.p. Slide Valve Engine
- 100 h.p. Return Tubular Boiler
- 90 h.p. Return Tubular Boiler
- 80 h.p. Return Tubular Boiler
- 70 h.p. Return Tubular Boiler
- 55 h.p. Return Tubular Boiler
- 30 h.p. Return Tubular Boiler
- 18 h.p. Return Tubular Boiler

The above Engines and Boilers have been replaced by Wheelock Engines and new boilers of greater power, and will be rebuilt and sold at very reasonable figures.

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THE GOLDIE & McCULLOCH CO., Ltd., - Galt, Ont.

DENNIS'
Tubular Steel Barrows

COAL
DIRT
FOUNDRY
ROLLING MILL
and PIG IRON

BARROWS

FOR HARD WEAR, STRENGTH AND DURABILITY THEY ARE
SIMPLY UNEQUALLED.

Though "Extra Strong" they are not heavy to handle.

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DENNIS WIRE AND IRON WORKS, LONDON, ONT.

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Solid Emery

AND

**Corundum
Wheels**

To Run Wet or Dry Special Shapes

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**PERFECTION
SAW CUMMERS**

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SEND FOR PRICE LIST



The new Wesley Methodist college, about being built at Winnipeg, Man., will cost about \$80,000.

The Goldie & McCulloch Co., Galt, Ont., have recently shipped a complete milling outfit to M. Kribs, Hespeler, Ont., and a battery of three boilers to Messrs. Cann & Son, Newmarket, Ont.

The Cant Bros. Co., Galt, Ont., have recently shipped a revolving bed planer, a combined rip and cross-cut saw and moulder to Quebec.

Mr. J. B. Ronald, Brussels, Ont., has sent us a very handsome hanger for office use, upon which is described the improved chemical fire extinguisher manufactured by him. The machine, we are told, combines all the patents of the Babcock-Holloway Champion Fire King, and also the chemicals of the Mahon-Lingren machine; and it is capable of being put in action in three seconds. A long list is given of the different towns and cities in Canada using the Ronald fire steamers and fire appliances.

An English paper, published in the interest of the paper manufacturing industry, says: "Despite what may be said to the contrary, wood pulp as a paper-making fibre has met with phenomenal success in Great Britain." It is not long ago that English paper maker wouldn't have wood pulp at any price. But when an Englishman is once convinced, he is convinced, and for all time. Look out now for the investment of English capital in the manufacture of pulp in Canada. "The Paper Mill."

The B. Greening Wire Co., Hamilton, Ont., have sent us their 1894 office calendar, heretofore alluded to in these pages. It combines all the good points of their 1893 calendar, and is decidedly improved by being printed in four colors, instead of three, as was the last. The blank spaces are all filled with illustrations of the principal lines of manufacture of the company, such as wire cloth of all grades, from the heaviest mining cloth to the light window screen cloth; wire ropes of all kinds, such as are used for mining purposes, transmission of power, etc.; perforated sheet metal for different purposes; bank railing foundry supplies; flower stands, etc. On the back of the calendar is given a number of interesting tables for reference. The company were induced to issue their calendar this year by the many complimentary remarks made to them regarding their previous effort. The calendar is large, it being easily possible to distinguish the dates at quite a distance.

It is got up in exceedingly good taste, and contains views of both their East side and West side works.

Probably the most important addition to Toronto's fleet of yachts, the coming season will be Mr. George H. Gooderham's 35-footer. G. F. Watson, of Glasgow, the famed designer of the Valkyrie and many other English and Scotch racers, has the design in hand. The design will be soon completed and the frames are expected to arrive in March. The building will be done here as was the case with the Zelma and Vedette. The advent of the new boat should add greatly to the interest of next season's racing. Mr. Gooderham has asked for a racer, not a cruiser and the summer of '94 should see some great contests between the Watson cutter and the Eyle lugger Vedette. The plans will probably be ready in February. The dimensions call for a deep, powerful boat of cutter type. There are two Watson boats already in Toronto, the Vreda, Commodore Boswell's flagship, and the Aileen, Capt. G. Miles' cruiser. The Vreda, of course, with the last few years' revolutions in yacht designing, is of an older vintage, but still possessing good speed.

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CARBON POINTS for all Systems of Arc Lights,

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And all kinds of PORCELAIN for ELECTRICAL and
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All goods guaranteed equal in quality to the best
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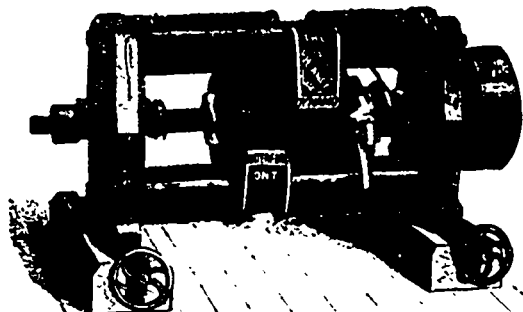
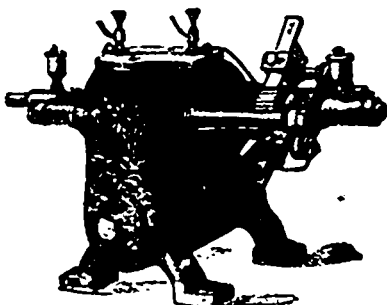
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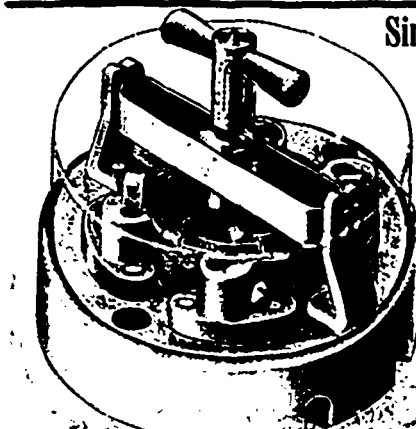
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Single and Double Pole
SWITCHES

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LAMP SOCKETS.

All of Superior
Workmanship and
Design.

Manufactured
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**PERKINS' ELECTRIC
SWITCH MFG CO.**

Hartford, - Conn

For Sale by the Canadian General Electric Co., Toronto.

Messrs. Cowan & Co., have recently shipped a buzz planer and shaper to Levis, Que.; a revolving bed planer and scroll saw to Mile End, Que.; a planer stand saw and a planer matcher to Ottawa, and a car load of plate to the Brockville Asylum.

The city council of Winnipeg, Man., are asking authority to issue debentures to the extent of \$100,000 to build a dam at St. Andrews Rapids on the Red River, a short distance from that city, for the purpose of obtaining cheap power and to improve navigation.

Mr. W. R. Hitchcock is negotiating with the city council of Cornwall, Ont., for a franchise to operate an electric street railway for both passengers and freight. Mr. Hitchcock proposes to form a company to utilize the power that will be developed on the completion of the dams at Sheik's Island, which form part of the Cornwall canal enlargement, and which is now in course of construction. The franchise asked for will no doubt be granted.

The Toronto Radiator Manufacturing Company, Toronto, have sent us a most convenient office calendar for 1894, a most attractive feature of which is a representation of a beautiful Safford radiator, manufactured by the company, around which are assembled people from all quarters of the earth, John Bull being a central figure, admiring the beauty and effectiveness of this most excellent heating apparatus. A legend informs the reader that the Toronto Radiator Manufacturing Company are the largest manufacturers of radiators under the British flag, and that branch houses for the sale of their products are maintained at Montreal, City of Quebec, St. John, N.B., Hamilton, Ont., Winnipeg, Man. and Victoria, B.C.

The Dodge Wood Split Pulley Co., of Toronto, inform us that they have just made another shipment of massive split pulleys of special design to one of Canada's largest cotton mills. Modern mills with big power plants require large pulleys, consequently high rim speed is a necessity, and their proprietors are fast learning the wisdom of using wood rims, chiefly because of their great safety. We seldom or never hear of the bursting of a wood rim, but quite frequently of the deadly "fly wheel" accident. The Dodge Company have exceptionally good facilities for turning out large pulleys, split or solid, made with iron centres mechanically correct in design and workmanship. Many such pulleys are in use

in Canada, operating as high as 600 h. p. The company are prepared to turn out special pulleys of any design or size on short notice.

The Calvin Company's towing and wrecking steamer, Reginald, built at Kingston, Ont. was launched a few days ago. She is 108 feet keel, 118 feet over all and 21 feet four inches beam. Her engines are of the compound inverted type, with cylinders 17 and 34 inches and a common stroke of 26 inches. Her cranks are set at right angles. The boiler, built by John Ingles & Son, Toronto, is of the Scotch type, 11 feet 7 inches in diameter and 12 feet long, with 182 tubes, 3 1/2 inches diameter and 9 feet long. There are three furnaces, and the working pressure of the boiler is 140 pounds to the square inch. The engines are being built by the Calvin Co. in their shop at Garden Island, and are expected to develop about 800 horse power. An independent air pump and condenser and other modern appliances are features of the machinery. The boat will also be fitted with steam windlass and capstan, for raising anchors, hauling in tow lines, handling steam pumps and other wrecking appliances.

Mr. Hedley J. Donahoe of Chicago, who is interested in establishing steel, wagon and nickel smelting works at Hamilton, Ont., met the finance committee of the city council of that city, although Mr. Donahoe was not prepared to submit a definite proposition it was learned that in order to get the nickel smelting works the city would have to purchase the Williams and Freeman properties, which contain ten acres. From \$250,000 to \$300,000 would be invested in this enterprise, and about 400 men would be employed. It was the intention to establish the steel smelting works at Toronto, providing aid was granted. In the event of a satisfactory arrangement not being made with the Toronto people, Mr. Donahoe said that the company might also ask Hamilton to foster the steel industry. Mr. Donahoe said that the steel wagon works would be established at the McKechnie property even if the city did not aid the smelting works. A branch factory would also be established at West Toronto Junction where he had the refusal of a satisfactory site. He stated, in reply to questions, that the Canadian company would be separate from the McCallum steel wagon works, a Canadian having purchased his partner's interest for this country. The company had been formed, but the organization had not been completed, and the charter had not been obtained.

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They Cost Less and Use Less Current

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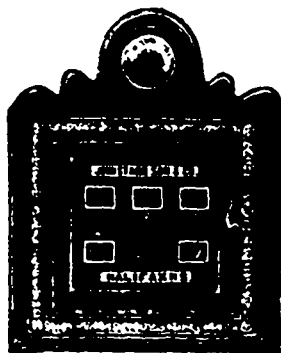
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2, 4 and 6 Duke St. - HALIFAX, N.S.

The Dodge Wood Split Pulley Company, of Toronto, put in over five thousand h. p. of their patent system of rope drive during the year 1893, using iron grooved pulleys, patent "Firmus" transmission rope, and patent slack device. Who says the rope drive has not come to stay?

Mr. H. J. Donahoe, projector of the steel waggon works and nickel smelting works at Hamilton, Ont., has completed the purchase of the McKechnie property, and that city arranged to get possession at once. The steel waggon works, he says, will start up within a month, even if the city does not decide to assist in the establishment of nickel smelting works.

The Kerr Engine Company, Walkerville, Ont., inform us that they have recently closed several contracts for machinery which will keep them fully employed until July next. One of these contracts is for a compound duplex pumping and condensing engine of 3,000,000 gallons capacity for Hiram Walker & Sons, Walkerville. The Weber valve department of the Kerr works is running to its fullest extent, and the company are receiving a number of enquiries for work. Altogether the prospects are very good for this year.

Messrs. John Starr, Son & Company, Halifax, N.S., manufacturers of electric light, telephone, telegraph and general electrical apparatus and supplies, inform us that they have recently equipped the large warehouse of Messrs. Stairs, Son & Morrow, that city, with their "Unique" warehouse telephone, and also the extensive bakery of Messrs. G. J. Hamilton & Sons, at Pictou, N.S., with

similar equipment. They have also equipped the large bakery of Messrs. Moir, Son & Company, Halifax, with a 13-Station Eco Magneto watchman's register, for which Messrs. Starr are agents for the Maritime Provinces. They have also furnished all the electric light fittings and fixtures for G. M. Smith's & Company's large retail dry goods store in Halifax, which is one of the largest and handsomest establishments of the kind in the Maritime Provinces.

The Barney Ventilating Fan Co., Boston, Mass., who manufacture fans for nothing but hard work, who make a specialty of compound scoop bladed fans, and who are experts in the use of air-moving machinery, have favored us with their 1894 office calendar which embodies what is claimed to be a life-like portrait of Queen Liliuokalani, of the Hawaiian Islands. The picture is quite attractive, and ought to be in great demand by all who admire pictures of that sort. The Queen is represented as a sleeping beauty, and yea, verily she appears to be enjoying her siesta very much, only she seems to have disregarded the suggestion of William Cullen Bryant in his *Thanatopsis* to wrap the drapery of her couch about her when lying down to her pleasant dreams. The Barney Company are evidently great admirers of royalty, of the Hawaiian style of beauty, although the American people are so desirous of seeing a republican form of government set up there; and we gently hint to them the idea of providing Queen Lil with an operating specimen of their air moving and cooling machinery for her private use.

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WITHOUT BATTERIES

Write for Descriptive Circular to

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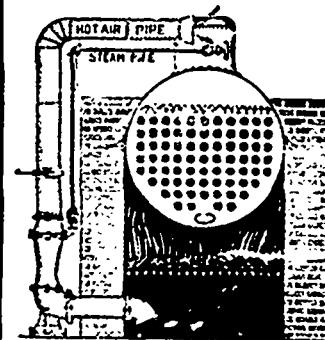
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STEAM AND AIR INJECTORS, EXHAUSTERS, Etc.



For burning hard and soft coal, screenings, run mine and lump coal under Steam Boilers, exhausting air and vapors from buildings, ventilating ships, mines, etc.

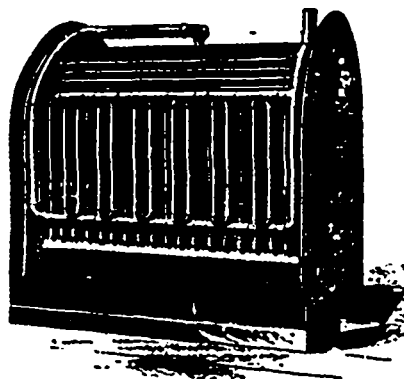
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YACHTS, LAUNCHES AND OTHER STEAMERS

The most efficient and reliable Water Tube Boiler in the market. Has entirely new features and improvements

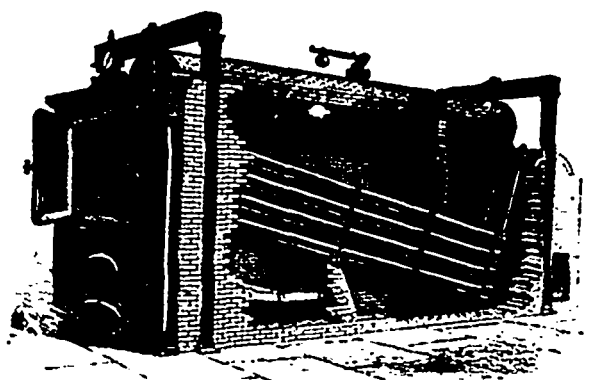
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WATER TUBE STEAM BOILERS

Now being manufactured in Canada

Agents for the Dominion

A. HOLDEN & CO.

Waddell Building - 30 St. John St., MONTREAL

Send for book "STEAM" free on application.

Messrs. Smith & O'Neill will start a saw mill at Pembroke, N.S. Mr. G. D. Prescott is building a large saw mill at Albert, N.B.

Messrs. A. & E. Loignon, Montreal, are building the large steel bridge to be erected at St. Hyacinthe, Que.

The St. Hilaire, Que., Navigation Co. will build a new side wheel steamer capable of carrying 500 passengers.

The Montreal Stave & Barrel Co. will be incorporated and manufacture staves, headings, etc.

Mr. W. Bladow is building a new steam saw mill at Killalaw, Ont.

Messrs. Wegemast & Co., Waterloo, Ont., have placed a large new elevator in their furniture factory.

A company is being organized at Lethbridge, Alberta, to build a telephone line connecting that place with Cardstone, Alberta.

The McKay Milling Company's flour mill at Ottawa is claimed to be equipped with the only Allis duplex mill machines in Canada.

The Cone-Coupler Carriage Company, Kalamazoo, Mich., are seeking a favorable location at which to establish a Canadian branch of their works.

London, Ont., will add to the machinery of its water works system a new pump with capacity of 4,000,000 gallons per day, to be completed by June 1st.

Letters patent have been granted the Bertram Engine Works Co., Toronto, with a capital stock of \$300,000, to manufacture steam engines, boilers, machinery, etc. Messrs. John Bertram, G. H. Bertram, E. B. Osler, William Christie and J. S. Playfair are the incorporators.

Messrs. Robin & Sadler, manufacturers of leather belting, Montreal and Toronto, inform us that they have just received an order from the Standard Woolen Mills, Toronto, for a 25 inch heavy oak tanned double leather belt 56 feet long, waterproofed, and containing no rivets. This is to be the main driving belt, and will be placed in position and made endless by the makers.

Mayor Stewart, of Hamilton, Ont., has written to the chairman of the board of works of that city calling attention to the fact that the city's contract with the Hamilton Electric Light Company for the lighting of the streets expires on September 1, and advising him to make inquiries which may be useful for the guidance of the board and of the city council when the time comes to consider the renewal of the contract. The mayor suggests that it may be wise to consider the advisability of having the city procure an electric plant and do its own street lighting.

Messrs. W. J. Matheson & Co., 178 Front Street, New York, and Montreal, recommend the following for dyeing cardinal on woolen yarn, dyed with their Diamine Fast Red F. patented. For 100 pounds of yarn prepare a bath containing 5 per cent. acetate of ammonia and 3 1/2 per cent. Diamine Fast Red F. Enter yarn at 110° F., and with frequent turning of the yarn, raise temperature slowly to a boil, and continue boiling until the bath is partially exhausted, then add 4 per cent. of disulphate of soda and continue boiling until the bath is completely exhausted, then add 3 per cent. of fluoride of chrome and boil again for 25 minutes. Lift, wash and dry. For dyeing pink on woolen yarn, for 100 pounds of yarn prepare a bath containing 5 per cent. of ammonia, 1-10 per cent. Diamine Fast Red F. Enter yarn at 130 F., and with frequent

turning of the yarn, raise temperature slowly to a boil, and continue boiling until the bath is partially exhausted, then add 3 per cent. of bisulphate of soda, and continue boiling until the bath is completely exhausted. Diamine Fast Red F. is fast to milling, alkalis, light and air.

The Dodge Wood Split Pulley Company, of Toronto, have just supplied the Ontario Agricultural College, at Guelph, Ont., with another elaborate rope transmission of power, the power being carried about 95 feet with two angles. This is the third drive which has been installed into this college, all of which give perfect satisfaction, and are interesting studies for both students and visitors. The Dodge Company also supplied the shafting, hangers, wood split pulleys, belting, etc., for the new creamery, which commenced operations at the college this week.

PAPER : : : :

We carry in stock and make to order every description of Wrappings, Pulley Board, and Press Papers. Fine Cartridge Hosiery a Specialty.

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Foundry Supplies and
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CANADIAN AGENTS FOR

Root's Positive Blower
Colliau Cupola Furnace

HAMILTON FACING MILL CO.,
HAMILTON - ONTARIO.

Messrs. H. Ives & Co, will start a glass factory at Windsor, Ont.
A new Baptist church is to be built at Amherst, N.S., at a cost of \$25,000.

Mr. M. McCauley is erecting a saw and shingle mill at Beaver Lake, Alberta.

Mr. L. Fessington is placing some new machinery in his ware-
house factory at Fulford, Quo.

The Montreal water works will be improved to the extent of \$22,000 for a new turbine water wheel.

Fort William, Ont., wants a new flour mill, and would probably assist in establishing one.

The town of Waterville, Que., is willing to pay \$4,500 as an inducement to the Dominion Spath Co. to remove their works to that place.

The Robb Engineering Company, Amherst, N.S., are supplying Robb-Armstrong engine and Monarch boiler to Messrs. McEl-nion Bros., Leicester, Ont.

The Palmer Pneumatic Tire Co., Toronto, are seeking incorporation with a capital stock of \$10,000 to manufacture bicycle tyres, valves, pumps, etc. J. S. Palmer, J. H. Walker and Nicholas Garland are to be directors.

The Otterville Brick and Tile Manufacturing Co., with head office at Otterville, Ont., is being incorporated with a capital stock of \$5,000 to manufacture brick, tile, etc. A. B. Moore, C. B. Purvis, John Wyatt and John Pennington will be directors.

The Knechtel Furniture Co., Hanover, Ont., are placing a new Wheelock engine of 150 h. p. in their factory to replace one of the same style engine of 100 h. p. The Goldie & McCulloch Co., of Galt, have the order.

Mr. John Stewart, New Glasgow, N.S., has contracted to build four bridges in that province, one at Lockport, which will be two spans, 85 ft 9 in. each, and a pivot span of 116 feet. This bridge is to be made strong enough to carry engine and cars over the proposed narrow gauge line; another is Phinney's Bridge in Digby Co., 81 feet, one span, 16 feet roadway; another, Meisner's Bridge, in Lunenburg Co., 80 feet, one span, 15 feet roadway; another, Ball's Bridge, near Sydney, C.B., 80 feet, one span, and 15 feet roadway.

Messrs. N. McLean and Alexander Gow will establish a saw mill at Eramosa, Ont.

David Goldie, of Ayr, is placing a new 75 h. p. boiler in his mill supplied by the Goldie & McCulloch Co., Galt, Ont.

Mr. T. A. Code is placing a new Wheelock steam engine in his knitting factory at Perth, Ont.

Extensive repairs are to be made to the Vulcan Iron Works, Winnipeg.

It is proposed to build a bridge over the St. Lawrence river at or near Kingston, Ont.

Messrs. R. H. Smith & Co., of St. Catharines, Ont., are placing a new 100 h. p. Wheelock engine in their saw factory. The Goldie & McCulloch Co., of Galt, Ont., are doing the job.

The Toronto Railway Co. are asking tenders for two new slow speed Cross compound condensing engines of 1,600 h. p. each to be in operation in four months.

New Glasgow **I. MATHESON & CO.** Nova Scotia

Engineers and Boiler Makers

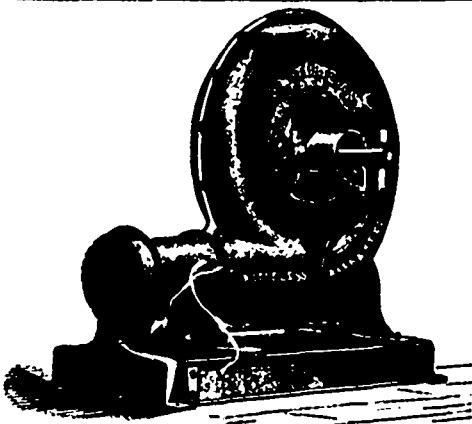
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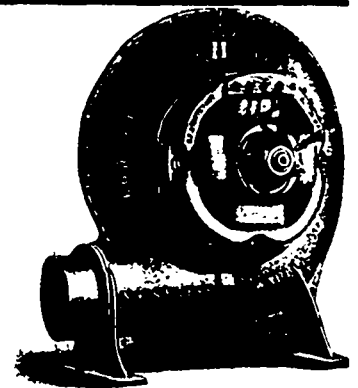
THE STURTEVANT

STEEL

**Pressure
Blowers**

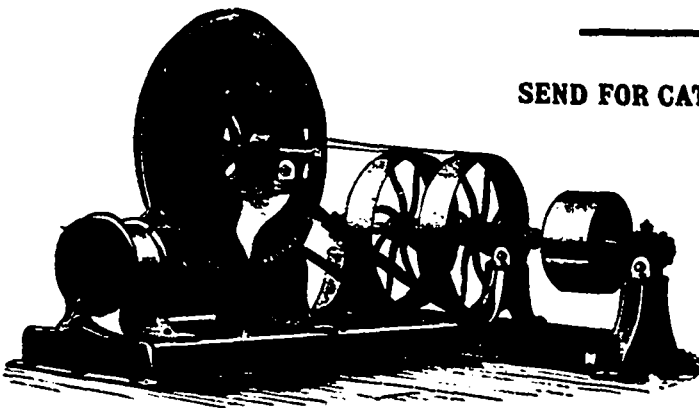
— FOR —

**Cupola Furnaces and Forge
Fires**

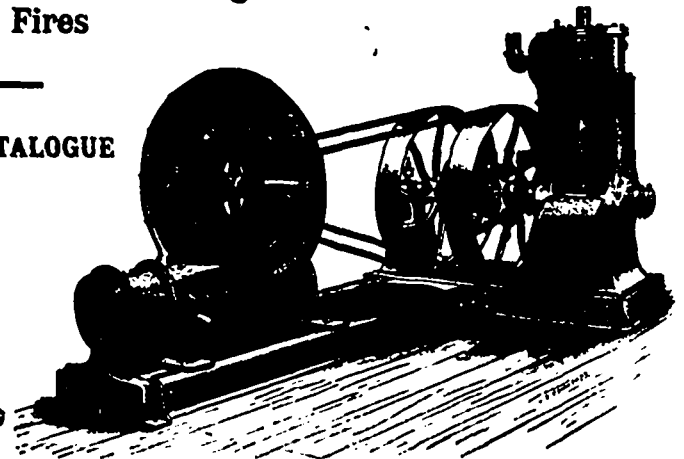


Blower with Electric Motor.

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Blower on Adjustable Bed with Combined Countershaft



Blower on Adjustable Bed, with Double Enclosed Engine.

B. F. STURTEVANT CO., BOSTON, MASS., U.S.A.

Messrs. Shultz & Ames are starting a handle factory at Morris-town, Ont.

Messrs. H. F. McTae & Sons, of Tilsonburg, Ont., will establish a branch of their engine and boiler works at Tilbury Centre, Ont.

Messrs. Graham, Horne & Co., will probably build a saw mill at Port Arthur, Ont.

A water works system will probably be established at Chilliwack, B.C.

The Record Foundry and Machine Co., Moncton, N.B., are putting in the necessary machinery to enable them to manufacture iron and steel bridges.

The Ontario Agricultural College, Guelph, Ont., have ordered a new 75 h. p. steel boiler from the Goldie & McCulloch Co., Galt, Ont.

The Wm. Cane & Sons Mfg. Co., of Newmarket, are busy placing three new steel boilers of 100 h. p. each in their factory, built for them by the Goldie & McCulloch Co., Galt.

Samuel Lukes, of Bradford, Ont., is placing a condenser to his Wheelock engine. This is being supplied by the Goldie & McCulloch Co., Galt, Ont.

Messrs. J. C. Wilson & Co., Montreal, manufacturers of wall papers, are enlarging their premises by the addition of the premises recently occupied by the Star Collar and Paper Box Co., that city, recently acquired by Messrs. Wilson & Co.

The Vankleek Hill Electric Light Company, of Vankleek Hill, Ont., are placing a new 50 h. p. Wheelock engine and new steel boiler in their electric light station from the Goldie & McCulloch Co., Galt, Ont.

At a recent meeting of the town council of Cornwall, Ont., a petition was presented asking that the taxes on the weave shed of the Canada Cotton Mill now owned by the Canada Colored Cotton Mills Co., be remitted for a further period of ten years, they having had a treaty of ten years' exemption which expired the 31st December, 1893. The petition also asked that the taxes on the remainder of the mill be commuted at \$1,000 for ten years. Another petition was presented asking that the woolen mill of the Cornwall Manufacturing Co. be commuted at \$300 per year, that mill having already had 20 years' exemption.

Gilmour's chair factory has been removed from Conticook to Waterloo, Que.

The authorities of Strathroy, Ont., will call for tenders for building two new bridges.

A new bridge is to be built at Ferguson, Ont. The clerk of the town of Wallace, Ont., can give information.

Jacob Sweeney's furniture factory at Yarmouth, N.S., lately destroyed by fire, is being rebuilt.

Messrs. H. McElroy & Sons, Carp, Ont., will build a grain elevator in connection with their flour mill.

J. M. Green & Co., St. Thomas, Ont., have placed their order with the Goldie & McCulloch Co., Galt, Ont., for a new 75 h. p. Wheelock engine and new steel boiler.

The Canadian General Electric Company are placing two tandem compound condensing Wheelock engines of 150 h. p. each in their new power house in London, Ont.

The Stover Mfg. Co., Freeport, Ill., have arranged with Messrs. Gould, Shapely & Muir, of Brantford, Ont., for the latter to have the exclusive right to manufacture and deal in their "Ideal" pumping wind mill and "Ideal Junior" sectional power mill.

The Canadian General Electric Co. have recently delivered one of their improved snow sweepers to the Kingston (Ont.) Street Railway Co. This railway is entirely equipped with electrical apparatus made by the Canadian General Electric Company, which is of the latest type and is giving great satisfaction.

The "Packard" high grade incandescent lamp, manufactured by the Packard Lamp Company, Montreal, is meeting with great success and is making a name for itself abroad as well as in Canada, as appears from several orders recently received for export, among which were orders for 10,000 lamps for Brazil and 5,000 for the city of Mexico.

The Cornwall Woolen Manufacturing Co., Cornwall, Ont., manufacturers of woolen goods, are running full time as usual and turn out a fine line of goods; 10 sets of cards and 62 looms are operated. This company have lately thrown out 28 narrow looms, and have replaced the same with 14 of the improved Crompton broad looms, and have made other improvements.

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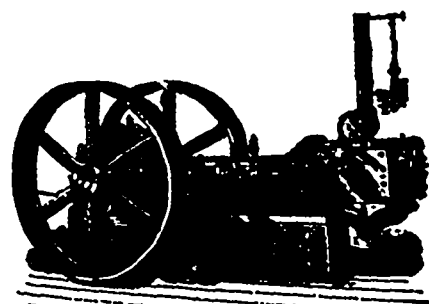
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Highest Economy, Regulation Perfect. Send for Circular. Interviews Desired.

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AUTOMATIC HIGH SPEED ENGINES



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Perfect Regulation and Highest Economy.

STEAM PUMPS
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Second Hand, Return Tubular, Brickset

One 80 H.P. Leonard make, nearly as good as new.

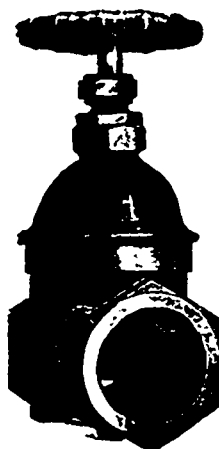
One 60 " " " in fair condition.

Two 70 " Goldie & McCulloch make, in fair condition.

The above were replaced by "Monarch Economic" Boilers, and may be inspected at London, Ont.

Apply for prices and particulars to

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THE WEBER PATENT

Straitway Valve

FOR

STEAM, WATER OR GAS

EVERY VALVE TESTED

THE KERR ENGINE CO. (Ltd.)

WALKERVILLE, ONT.

Sole Manufacturers for Canada

Send for Price List.

The Canada Carriage Company, Brockville, Ont., report having already booked orders for 700 vehicles for the year 1894.

In one day on a recent occasion four million feet of Canadian lumber was received, it is said, at Oswego, N.Y., consigned to the Standard Oil Company.

The Edmonton, Alberta, Electric Light Co., have been making important improvements to their plant, including a large new generator.

The best sugar factory of Messrs. M. Lefebvre & Co., at Berthierville, Que., has been equipped with an electric lighting plant supplied by Messrs. T. W. Ness & Co., Montreal.

The city council of Ottawa, Ont., have decided to have built a substantial steel bridge connecting the city proper with Porter's Island, the site of the city Cottage Hospitals, at a cost of \$5,000.

Mr. A. P. Mende, 14 Water Street, New York, recommends his "Drab B" for dyeing cotton yarn to be used as follows: for 100 pounds of cotton prepare a bath containing 8 Drab B and 3 alum; enter yarns cold, give six turns; raise temperature to 170 F., dye to shade. Lift, wash and dry. Before washing the yarn

drain the same thoroughly. For dyeing drab on cotton goods for 100 pounds of goods prepare a bath as above. Enter the goods cold, run four ends; raise temperature to 170 F.; dye to shade. Lift, drain thoroughly, wash and dry.

A telegram from Lethbridge, N.W.T., states that that town is rapidly going ahead since the Canadian Pacific took over the Galt line from Dunmore to Lethbridge and brought it up to standard gauge. The C.P.R. trains are now running into Lethbridge daily. The Galt mines are in full blast, and an average of 1,000 per day is being mined. The Canadian Pacific is surveying for an extension of the line from Lethbridge to Macleod.

At a meeting of the shareholders of the Brantford, Ont., Electric Light and Power Company, held a few days ago, a by-law was submitted authorizing the issue of \$40,000 of debentures. It is the intention of the company after the issue of the debentures, to duplicate the plant at the power house, which is now doing very good work, and make everything connected with the canal property and the large amount of machinery at the power house as perfect as possible.

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The capital stock of the Gould Bicycle Company, Brantford, Ont., has been increased from \$20,000 to \$100,000.

Letters of incorporation have been issued to the Dominion Bag Company, Montreal, with \$125,000 capital stock, to manufacture bags, twines, etc.

Supplementary letters patent have been issued to the Canada Paint Company, Montreal, increasing its capital stock from \$450,000 to \$750,000.

The Montreal Woolen Mills Co., Montreal, are substituting 30 new Knowles' patent English looms for a like number of old looms which have been discarded.

The Northey Manufacturing Co., Toronto, have placed a first class steam pump in the tannery works of the Breithaupt Leather Co., Berlin, Ont., to be used for pumping tan liquor.

The Belleville Box & Basket Co., Belleville, Ont., are applying for incorporation with a capital stock of \$1,525 to manufacture wooden boxes, baskets, etc. G. L. Glass and J. B. Flint are interested.

Tenders are asked for the superstructure of the new six storey building to be erected on Melinda street, Toronto, by Messrs. S. F. McKinnon & Co. American stone will be used for first storey and hard burned pressed brick above.

Mr. S. T. Willett, Chambly Canton, Que., has recently placed a new 75 h. p. steam engine in his Richelieu Woolen Mills.

The capacity of the Woodstock, N.B., Woolen Mills, of which Mr. Myles is proprietor, will be considerably increased, and horse blankets and carriage spreads will also be made.

The St. Hyacinthe Manufacturing Company, St. Hyacinthe, Que., are operating nine sets of cards night and day on woolen goods and knit underwear.

In the cotton mills at Chambly, Canton, Que., eighteen duck looms have been substituted for an equal number of bag looms, which have been discarded.

John Perkins, Toronto, is building for the Toronto Water Works two 36 inch stop valves with self contained by pass, similar to the celebrated Glenfield valve made in Scotland; also six check valves 36 inches in diameter. Mr. Perkins claims his to be the only works in Canada building valves of these dimensions. He is also building a very large four-way steel connection made of 11-16 steel plate, the immense heads of which were flanged and dished in his own works.

The Wm. J. Matheson Company, Limited, have been incorporated with a capital stock of \$25,000, with head office at Montreal, to manufacture dyes, dye stuffs, drugs, chemicals, etc., and to import and deal in such goods. The head of this concern, Mr. Wm. J. Matheson, is also head of a similar concern doing business in New York, with large chemical works near that city; and who has established this Canadian branch for the greater convenience of his company's business. The business earl of this concern has regularly appeared in the columns of this journal for many months past.

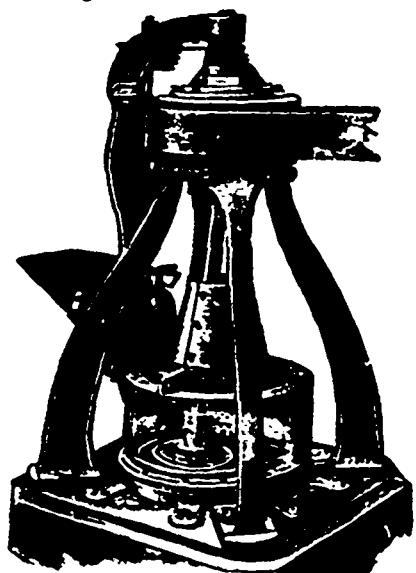
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Standard Emery Wheel Co., Albany, N.Y.

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The Only Perfect Pulverizer

OF QUARTZ, GOLD OR SILVER ORES, PLUMBAGO, PORTLAND CEMENT, OF PHOSPHATE ROCK, FOUNDRY FACINGS, And All Other Refractory Substances.



Will work either wet or dry, and deliver a finished product. Capacity, 3 to 4 tons per hour on Phosphate Rock, 1 1/2 to 2 tons per hour on Portland Cement, Quartz or Ores, depending on hardness of material to be pulverized and fineness of product. Grinds from 30 to 250 Mesh with equal facility.

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Mr. D. S. Clemens will start a stove factory at Guelph, Ont.

Sorel, Que., has granted a bonus of \$50,000 towards the building of an iron bridge over the Richelieu river.

Messrs. Folger Bros., Kingston, Ont., will construct a street railway on Wolfe Island, one of the Thousand Islands.

Messrs. Joyner & Elkington will build a grain elevator at Qu'Appelle, Man.

The British Electric Light Co., Trenton, Ont., will make extensive additions to their plant.

The Amherst Boot & Shoe Company, Amherst, N.S., are adding considerable new machinery to their plant.

The Montmorency, Quebec and Charlevoix Railway Co. have obtained legislation authorizing them to change their motive power to electricity and to enter the city of Quebec.

Mr. D. Campbell has taken over the shingle mill of Messrs. Caruthers & Shaw, at Penetang, Ont., and will add machinery for the manufacture of packing boxes.

The Watrous Engine Works Co., Brantford, Ont., have supplied the mill of the Huntsville, Ont., Lumber Company with an Allis hand saw mill.

The Natural Gas & Petroleum Company is being organized at Winnipeg, Man., to prospect for hidden treasures in that neighborhood.

The ratepayers of London, Ont., are asking the municipality of that city to construct a steel bridge over the Thames river at that place.

Mr. John Perry, of Perry & Brownlee, has joined his brother, Mr. Arthur Perry, of Fergus, Ont., in the purchase of the saw mill at Sauble Falls, near that place and two miles from Lake Huron. The mill has a capacity of about 25,000 feet per day.

A coal deposit has been discovered on the farm of Mr. Duncan McArthur, five miles south of Delorsaine, Manitoba, and within two miles of the northern fringe of the Turtle Mountains. A shaft has been sunk over thirty feet, and the seam is ten or eleven feet in thickness.

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UPHOLSTERS' TRIMMINGS

Mr. E. Perkins, of Tipton, Ind., will probably start a fruit and vegetable canning factory at Brantford, Ont.

Messrs. W. Boulter & Co., proprietors of the Bay of Quinte Canning Works, Picton, Ont., are in receipt of a large order for a variety of their canned goods from Australia.

A few days ago the ship Talbot cleared from Vancouver, B.C., loaded with lumber for East London, South Africa. Other ships are to quickly follow; and this trade seems to be developing into gratifyingly large proportions.

The Gibbs-Franchot-Maclaren Co., Limited, are applying for incorporation with a capital stock of \$50,000, with head office at Buckingham, Que., to manufacture lumber, barrels, boxes, box shooks, wood pulp, lime, brick, drain pipe, etc.

The Winnipeg city council has decided to go extensively into bridge building. The estimated cost in all will be about \$200,000. It is proposed to build a bridge over the Red river, north of Louise bridge, and two bridges over the Assiniboine river, to replace the Main and Osborne street bridges.—Winnipeg Commercial.

Some time ago several thousand dollars worth of nails consigned from England to Mr. Wm. Thoburn, of this town, was held by the customs authorities for non-payment of duty. Mr. T. held that the goods were not dutiable. His contention has been upheld, after a long wait, and the nails have been released.—Almonte Gazette.

Several years ago Messrs. Barnes & Co., who carried on an extensive business at Ottawa manufacturing box shooks, because of the provisions of the American tariff removed their works to Rouse's Point, N.Y., to which place they carried their raw materials, lumber, from the Ottawa mills. It is now said that if the American duty on manufactured lumber is removed, or considerably reduced, Messrs. Barnes & Co., will again start up their works at Ottawa.

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BUSINESS SAMPLES PHOTOGRAPHED.

"The application of photography to the matter of mercantile samples," says the New York Sun, "has wrought a marvelous economy in scores of wholesale trades. The loss upon samples is millions of dollars annually. Hundreds and thousands of sample hats are sold at absurd prices in this city. A successful retail trade in shoes has been built up by a concern that began by buying samples brought in by commercial travellers at the end of each season. What is true of hats and shoes is equally true of one hundred other articles of merchandise. The loss upon solid silverware sent out as samples has been very great, so great indeed, that many houses sell solely by photographic samples. When the actual pieces are sent out the salesman must hire a show room in each city he visits, and must pay for expressage, while the item of insurance is worth considering. Photography has made it possible to sell to advantage by sample bulky articles that cannot be carted all over the country by salesmen. Furniture, iron and brass work, massive clocks, and a hundred and one other such articles are thus sold. Cut glass and china are among the samples most successfully photographed.

If the dream of photographing in colors should be realized, the application of photography to the matter of mercantile samples will be wider than ever. Fairly good work in colored photographic samples is already done. Young women, many of them technically educated at Cooper Institute, are usually the colorists employed in this work. Wages for such work have sometimes been as high as \$25 a week, but it was only women of much skill and industry who could earn so much. Most of the work is done at home, the photographic samples being entrusted to the colorists in large batches. Aniline colors are used, so that the work usually lacks softness of tone.

The actual work of photographing samples is done at the photographer's, the shop, or factory. The art of commercial photography is one requiring considerable technical skill, and, in a certain way, a knowledge of posing. The essential thing in the pose of a sample is that it shall result in producing a faithful picture of the original, and the chief advantage that photography has over many cheaper pictorial processes is its truthfulness. Photo-engraving is a vastly

cheaper process, since the first cost of the plate having been met, the after expense is simply a matter of printing and paper. The costly chemicals used in photographic printing make it expensive.

BEEP SUGAR PRODUCTION.

While it is impossible to establish and maintain a world's variety of industries in the United States, it is nevertheless good policy to encourage the starting of as many kinds as the diversity of our natural resources and the requirements of domestic consumption may economically warrant. This has been the controlling idea, conspicuously and unmistakably, since the civil war, and the results it has worked as a legalized part of our system of taxation are present and "speaking" in hundreds and thousands of lines of manufacture and production.

The general scheme, as reflected in national legislation, has looked to the duplication in this country of industries contributing largely to our imports. And in the main, the ends sought have been attained. Occasionally a fostering tariff has failed of its purpose, because of the absence of the natural advantages and other special conditions at the command of the foreign producers. In such cases the duty has proved simply a burden—an oppressive discriminating tax applying to certain lines of consumption.

It is with the knowledge of these facts and a regard for the equities, that the public mind must consider the question of the

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TORONTO

value to the country likely to accrue from Treasury payments to the domestic sugar interests, or from tariff duties, in case the repeal of the bounty law shall become imminent. At the present time two cents a pound is paid out of the Federal Treasury on sugar of domestic production, and while some progress has been made in both the cane and beet branches of the industry, it is doubtful if the rate of advance betokens a future supply of saccharine matter adequate, or largely contributory, to the country's consumptive requirements. In the case of beet sugar, its manufacture has been established in California, Nebraska and Utah. In these two States and Territory there are six sugar beet plants, with a capacity for converting 300 tons each per day of twenty-four hours, from which thirty tons of sugar are produced, or, for the six, a total of 180 net tons. Each manufactory consumes for the season the product of 3000 acres, distributing to the growers in the vicinity of each establishment more than \$100,000 per annum. On the other hand, futile efforts have been made to establish the industry in Maine, New Jersey, Pennsylvania, Michigan, Illinois and Wisconsin; while in Kansas and Nebraska several sugar beet enterprises have failed, largely in consequence of the limited production per acre and the inferior quality of the beets.

It would, however, undoubtedly be a great saving to this country if the home demand for sugar could be supplied from home production. At present, fully eighty-five per cent. of all the sugar consumed in this country is imported, entailing an expense for the raw article of \$116,000,000 in gold or its equivalent, in addition to the cost of transportation. The magnitude of the business that would be supplanted by the exclusion of foreign "sweetness" may be understood from the following table showing the imports of sugar during the years ending with June, 1889, 1890, 1891, 1892, 1893, expressed in tons of 2,000 pounds:

YEAR.	Beet Sugar Tons.	Cane Sugar Tons.	Total Tons.	Aggregate Value.	Import Price per pound.
1888-89.....	122,000	1,138,000	1,260,000	\$ 70,405,000	\$0.0504
1889-90.....	301,000	1,054,000	1,355,000	\$1,545,000	0.0512
1890-91.....	320,000	1,200,000	1,525,000	\$5,412,000	0.0283
1891-92.....	147,000	1,032,000	1,179,000	104,400,000	0.0284
1892-93.....	218,000	1,055,000	1,273,000	110,050,000	0.0510
Totals.....	1,117,000	6,775,000	7,892,000	\$477,087,000	
Averages...	223,400	1,355,000	1,578,400	\$5,417,400	\$0.0342

To produce at home the sugar we import would require over 400 such establishments as those working beets in California, Utah and Nebraska, and the product, it is further estimated, of 1,200,000 acres of land. And if, during the next forty years, our population shall double, with only a moderate increase in the per capita consumption of sugar it will require in 1930 5,000,000 tons of the article to supply the home market more than we now produce.

The desirability of producing our own sugar is emphasized by these figures, and at the same time the wonder grows that the home industry does not flourish more robustly and palpably under our liberal bounty system. For beet culture and the connected manufacture are not partial to any particular locality or territory within certain wide degrees of latitude. The saccharine matter we import from Europe, whose product is over 2,000,000,000 pounds larger than the entire cane sugar output of the world, comes indiscriminately from France, Germany, Belgium, Holland, Austria, Russia, Denmark and Sweden - or from an area 500 miles from south to north and 2000 miles from east to west, embracing every variety almost of soil and climate. In the United States the beet sugar area, as determined by the department of agriculture, is a belt of country varying in width from 300 to 500 miles, with its centre line passing through Boston, Chicago and Omaha, thence across the mountains to San Francisco, and southward along the Pacific Coast.

The profitableness of sugar beet culture may be inferred from the land value it gives, which are from \$500 to \$1000 per acre in Europe and from \$200 to \$400 in California - and also from German official statistics. The latter place the average acreage under beets in the German empire in 1888, 1889 and 1890 at 702,000 acres, and the average yield per acre in sugar at 3037 pounds, making the total annual production 1,065,987 tons. - The Age of Steel.

SMOKE PREVENTION.

The president of the Steam Heating Company in this city is reported to have said during the recent attempt of that company to burn soft coal in spite of the city authorities that the saving by the use of that fuel under a part of their boilers only was \$200 a day. This may or may not have been an exaggerated statement; it probably was. But in any event there was undoubtedly an important

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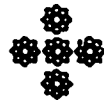
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saving which the company was obliged to forego because of the smoke nuisance.

It is astonishing that in the apparently simple matter of smoke prevention the ingenuity of man has not been able to modify natural laws to any very important extent. The quantity of unconsumed carbon, which is the principal trouble making constituent of smoke, is small comparatively, but its satisfactory combustion in the furnace, or before it reaches the chimney top, has baffled the skill of the engineer and the scientist for a good many years. At one time an immense amount of fuel was believed to go to waste in the form of unconsumed carbon in smoke. The fallacy of this supposition has been shown by an analysis of dense smoke from a furnace in which bituminous coal was being burned, the result being that the escaping carbon was a wonderfully small percentage of the total in the fuel used.

The fallacy was one for which no one appeared to be directly responsible, and like many another error still keeps on travelling. It got into the form of a "popular science" item in the daily press, from which such items get strained through weekly and monthly editions and then begin their rounds again. They may be differently dressed every two or three years, but they never die.

The trouble with the unconsumed carbon in smoke is that it is in the wrong place. It pollutes the atmosphere and blackens and defaces everything about it, insinuating itself into closely shut drawers and penetrating the closest of closets. If it at once, after getting beyond the possibility of combustion, found itself in some place where it could go to waste in a state of innocuousness the loss would not be great enough to call for serious attention. This may be the direction in which the thought will tend that solves the problem of the satisfactory use of bituminous coal in great manufacturing cities. Some—not very much—attention has been given to this disposition of the carbon nuisance at different times, but the popular idea seems to be that somehow a great saving in fuel must accompany the prevention of smoke. That is neither possible, nor necessary to success. Absolute smoke prevention without loss in fuel consumption is all that can be expected, and is in itself quite enough. Even a trifling waste in fuel may be overlooked if the chief end is accomplished. In a city like New York, for example, the difference in the cost of a given amount of heat potentiality as between anthracite and bituminous coal would make a very important saving possible even if something were sacrificed

for the purpose of preventing smoke in the burning of the latter, and it would immensely alter the conditions of many Western cities where the burning of fuel yielding dense smoke is practically a matter of necessity.

There is, to-day, just as much room as there ever was for devices that will overcome the smoke nuisance. The man who satisfactorily solves the problem presented will be a public benefactor, and he ought to make money from his efforts.—American Machinist.

Having regard to the numerous railroad accidents which have recently occurred all over the world, in which the damage has been increased by the explosion of gas used for lighting the cars, the Austrian State railway authorities have recently issued a circular to all the private railway companies in Austria, urging them to make experiments with the electric lighting of their cars with the view of replacing the present system of lighting by oil and gas.

According to one of the London correspondents in a provincial newspaper, electrical parcel cars somewhat resembling in shape the parcel-post vans will soon be seen in the streets of London. The novelty in the construction of the cars consists in placing the accumulators underneath, and outside the body of the vehicle. It is estimated that for every mile run by an omnibus of one of the great companies the cost for horse traction is exactly 5d., while the cost of running an electrical car would be just 2d. The accumulators have been made so that they can be charged with electricity sufficient to last for four hours' work. The same electrical arrangement is about to be applied to broughams and private carriages, but it is doubtful whether a brougham would be much improved in appearance by having no horse in it, and appearance go for a great deal when the question of commercial expediency has not to be considered. If those figures as to cost are correct, remarks a contemporary, we may soon see electrically propelled cabs and omnibuses as well as parcel cars, but it may be doubted whether the figures are correct. Possibly the correspondent may have been misinformed, for though electrically propelled cars on train lines have met with a fair measure of success, the attempts to use storage batteries on free-moving vehicles running on common roads have been commercial failures.

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1 $\frac{3}{4}$	1 $\frac{3}{4}$	5.01	"	3	2 $\frac{1}{2}$	22.50	"
1 $\frac{1}{2}$	1 $\frac{1}{2}$	5.04	"	3 $\frac{1}{2}$	3 $\frac{1}{2}$	20.00	"
1 $\frac{3}{4}$	1 $\frac{1}{2}$	7.40	"	3 $\frac{1}{2}$	3 $\frac{1}{2}$	30.04	"
2	1 $\frac{1}{2}$	9.83	4 cts.	4	4	42.33	5 cts.
2 $\frac{1}{2}$	2 $\frac{1}{2}$	12.53	"	4 $\frac{1}{2}$	4 $\frac{1}{2}$	53.57	"
2 $\frac{1}{2}$	2 $\frac{1}{2}$	15.55	"	5	5	60.13	"

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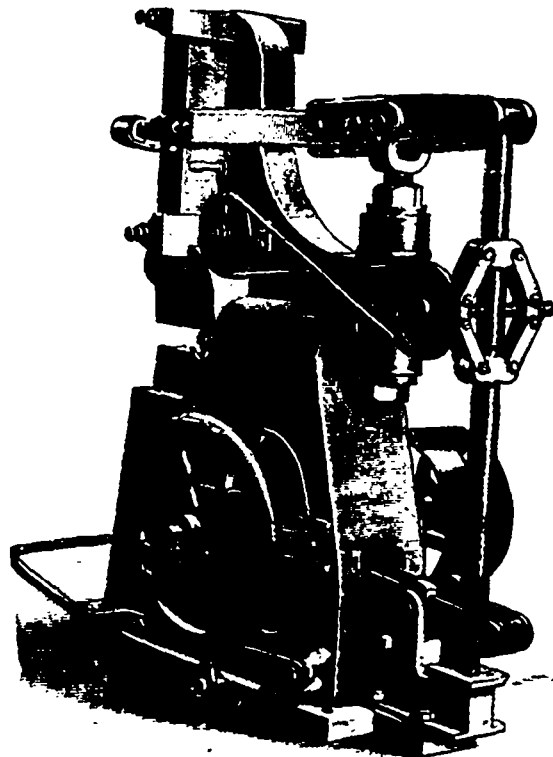
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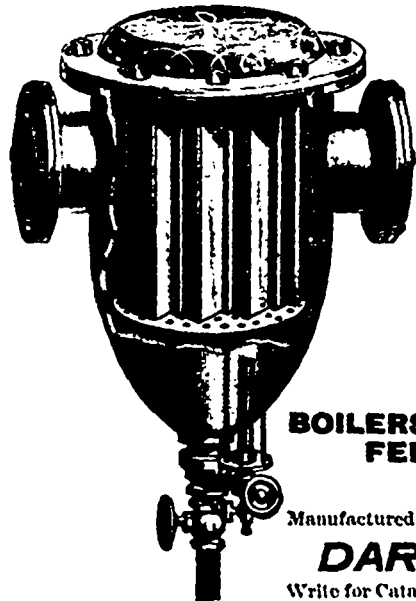
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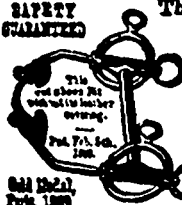
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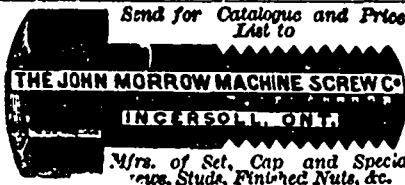
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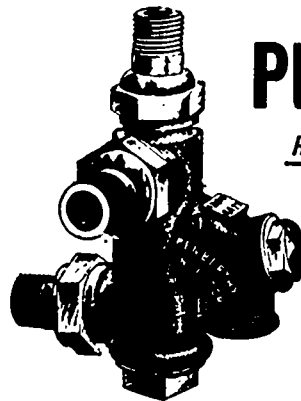
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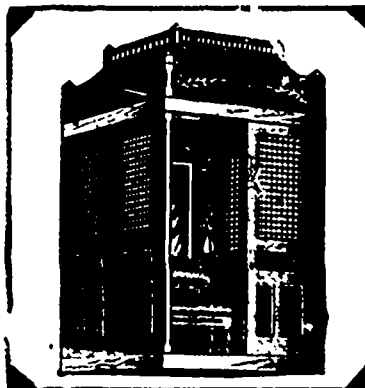
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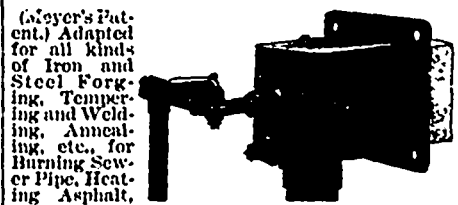
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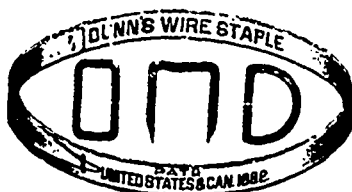
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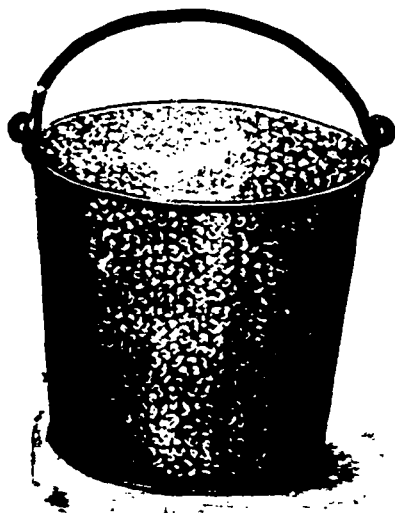
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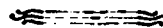
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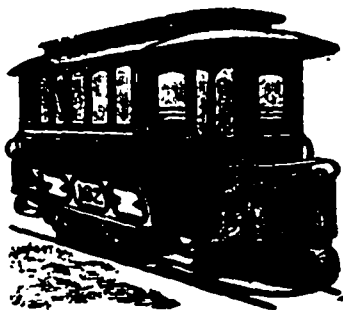
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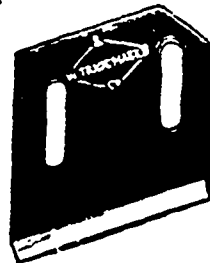
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Besides achieving such result, we now also have, over all liabilities—including a re-insurance reserve (based on the Government standard of 50 per cent), a cash surplus of 1.25 per cent, to the amount of risk in force.

Such results emphasize more strongly than any words I could add the very gratifying position this Company has attained. I, therefore, with this concise statement of facts, have much pleasure in moving the adoption of the report.

The report was adopted and the retiring Directors unanimously re-elected. The Board of Directors are now constituted as follows: James Goldie, Guelph, pres.; W. H. Howland, Toronto, vice-pres.; H. N. Baird, Toronto; Wm. Bell, Guelph; Hugh McCulloch, Galt; S. Neelon, St. Catharines; George Pattinson, Preston; W. H. Story, Acton; J. L. Spink, Toronto; A. Watts, Brantford; W. Wilson, Toronto.

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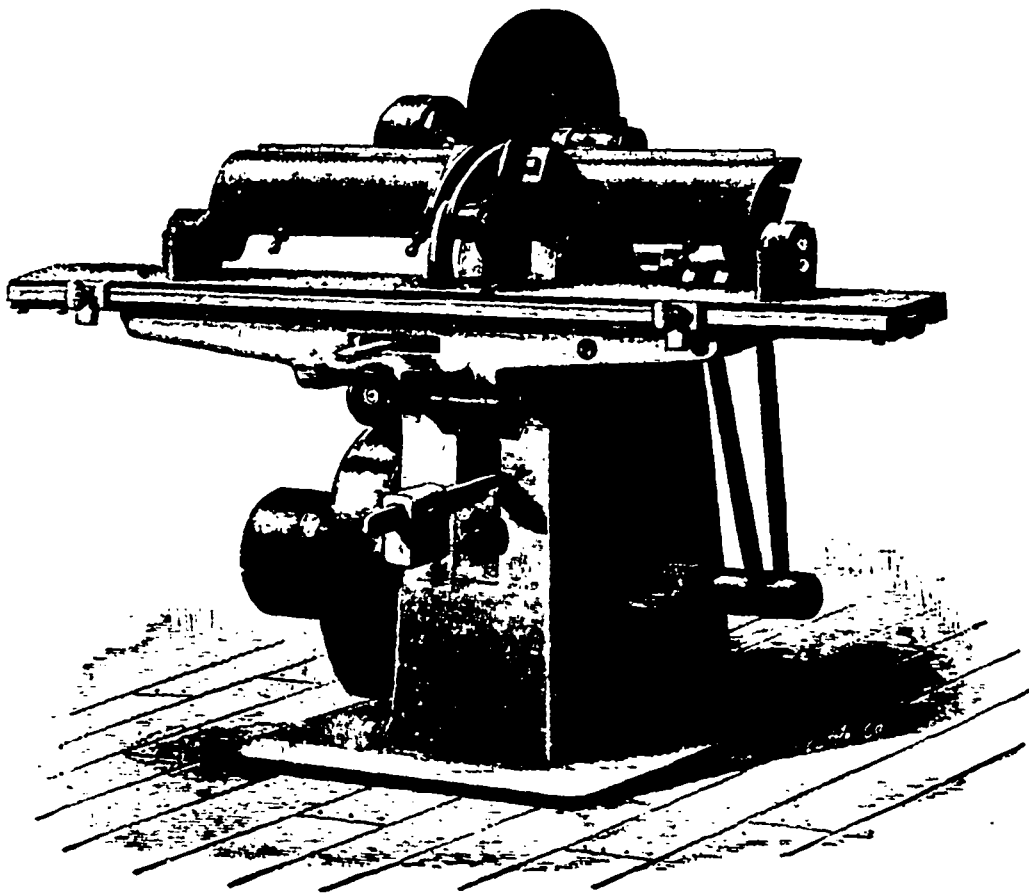
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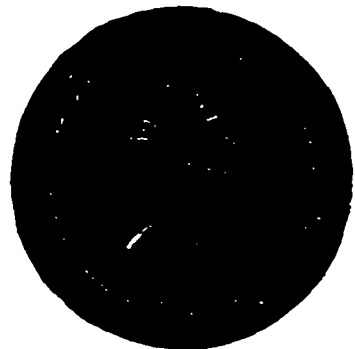
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JOHN BERTRAM, President. J. J. CASSIDY, Secretary. GEORGE BOOTH, Treasurer.

Office, Room 66 Canada Life Building

KING STREET WEST, TORONTO. TELEPHONE 12 THE OBJECTS OF THIS ASSOCIATION ARE:

- To secure by all legitimate means the aid of both Public Opinion and Governmental Policy in favor of the development of home industry and the promotion of Canadian manufacturing enterprises.
- To enable those in all branches of manufacturing enterprises to act in concert as a united body whenever action in behalf of any particular industry, or of the whole body, is necessary.
- To maintain Canada for Canadians.
- Any person directly interested in any Canadian manufacturing industry is eligible for membership.
- Manufacturers desiring to hold meetings for the promotion of their business are invited to avail themselves of the Board Room of the Association for the purpose, which is offered to them free of charge.

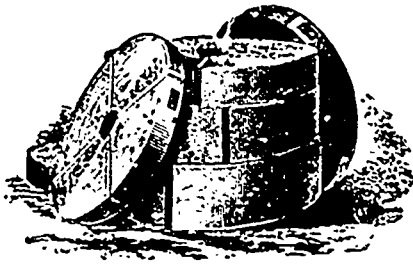
J. J. CASSIDY, Secretary.

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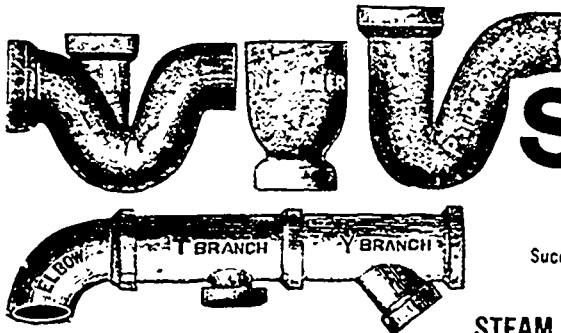
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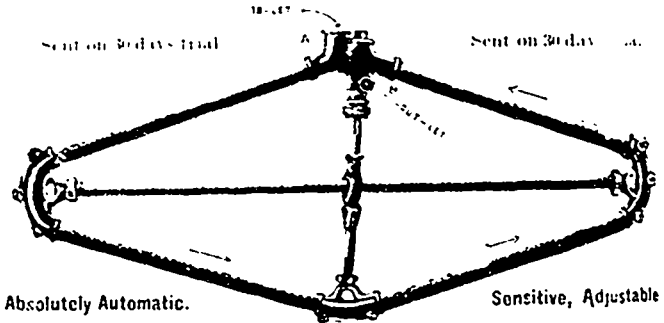
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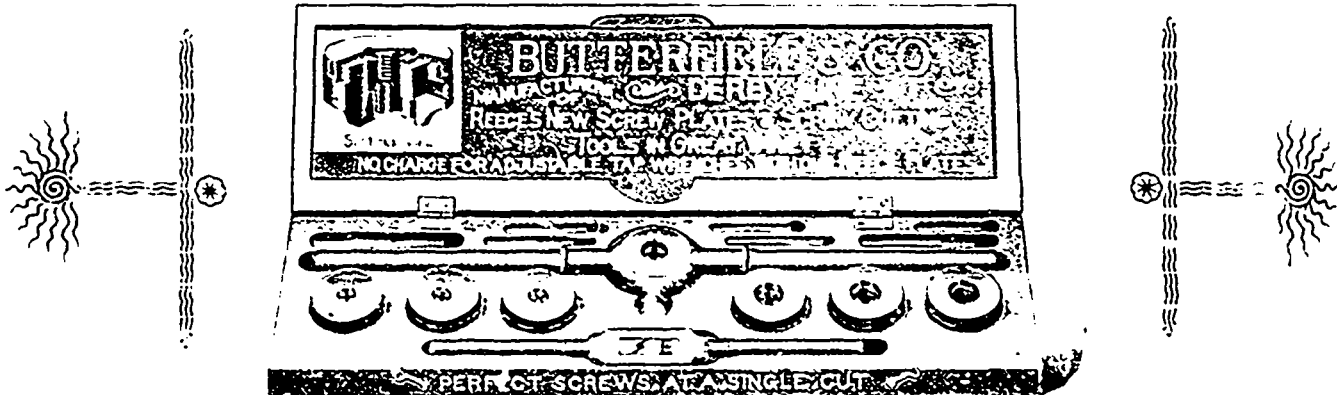
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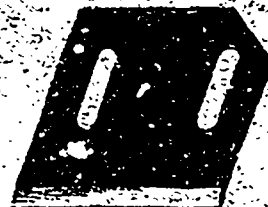
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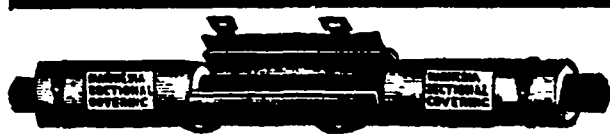
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