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VOL. 33.

TORONTO, SEPTEMBER 4, 1896

No. 5.

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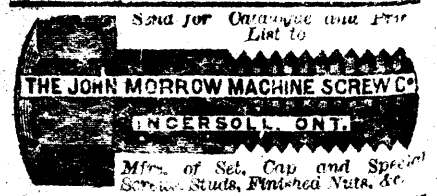
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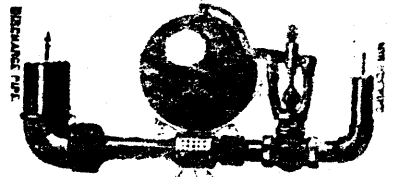


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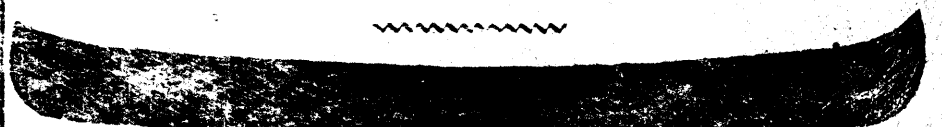
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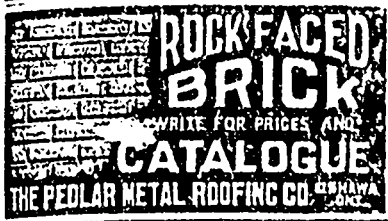


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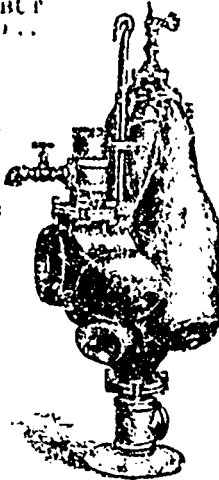
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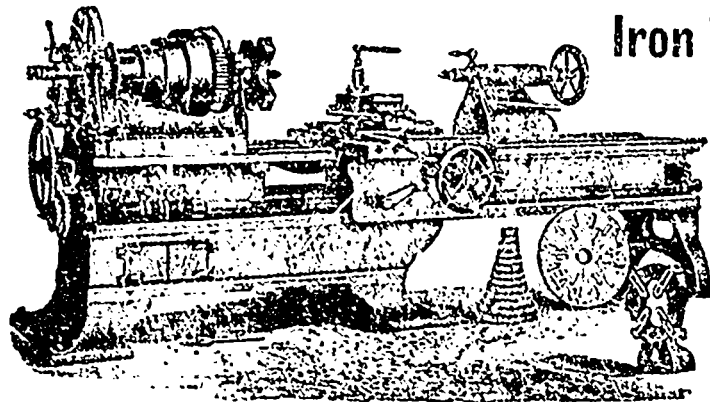
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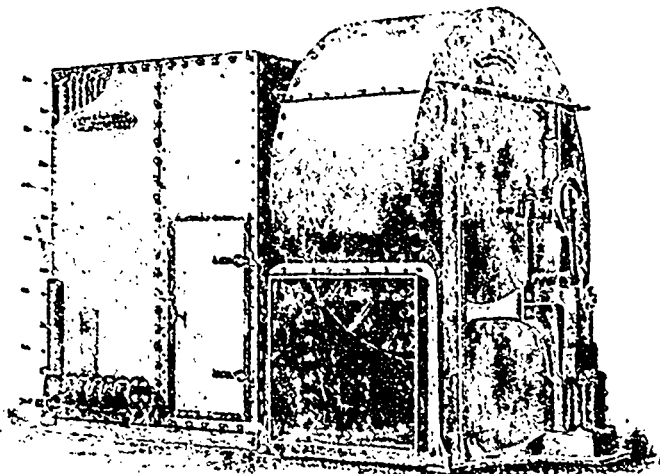
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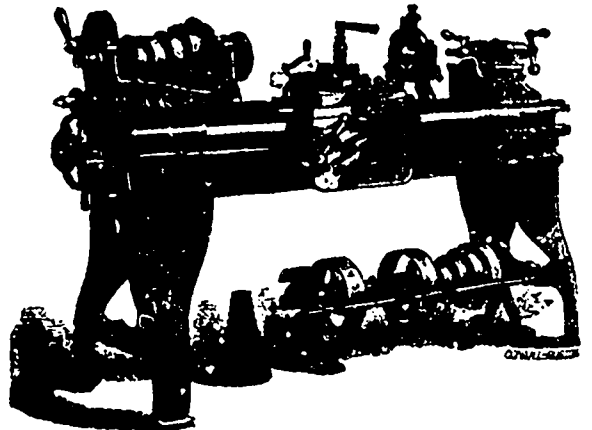
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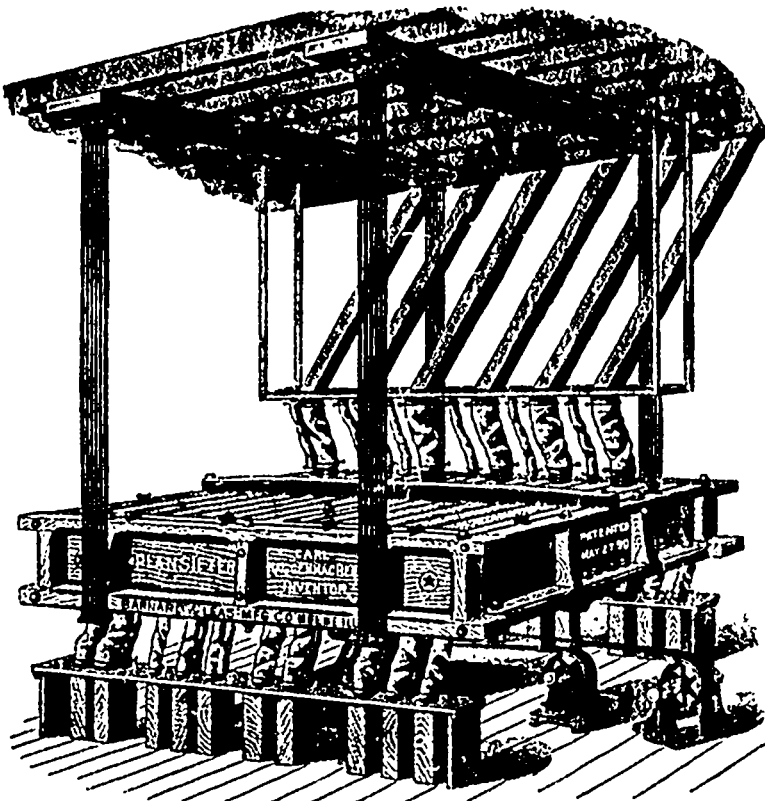
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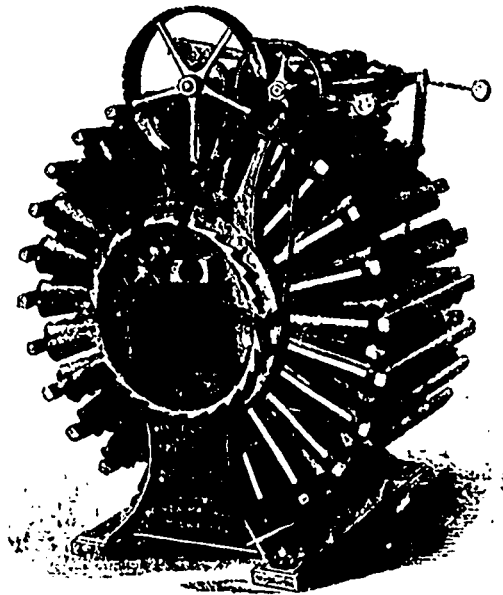
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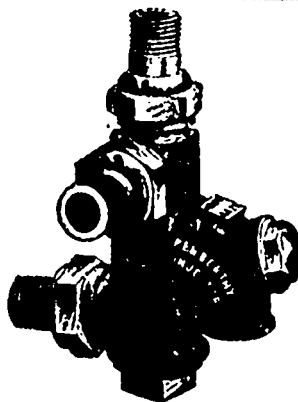
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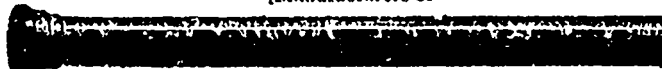
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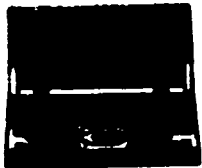
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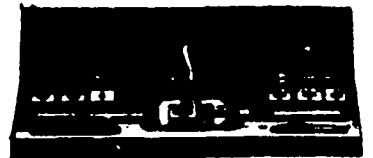
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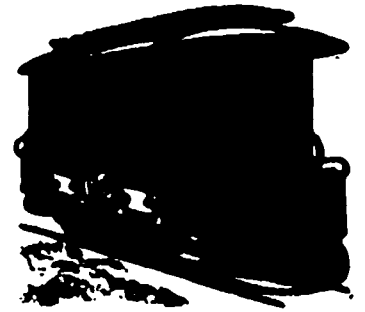
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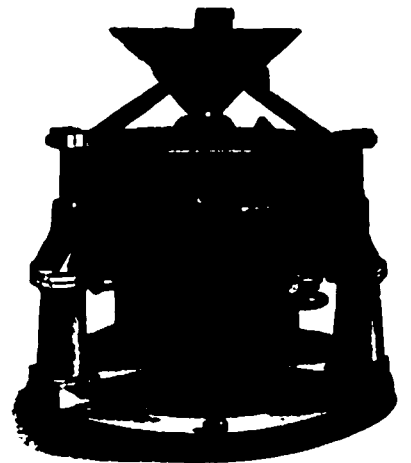
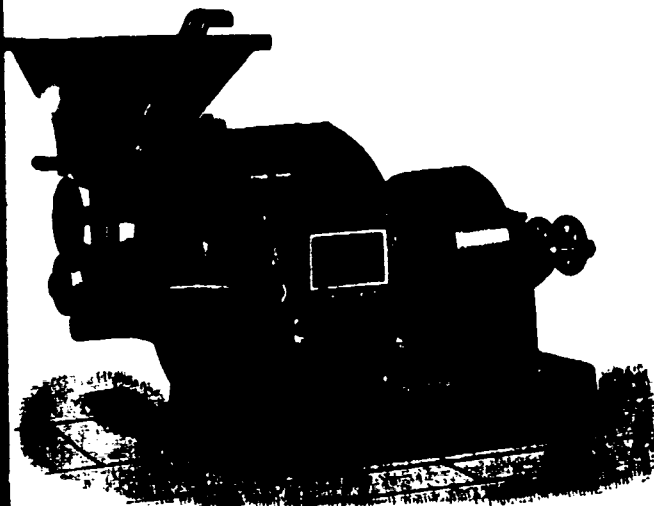
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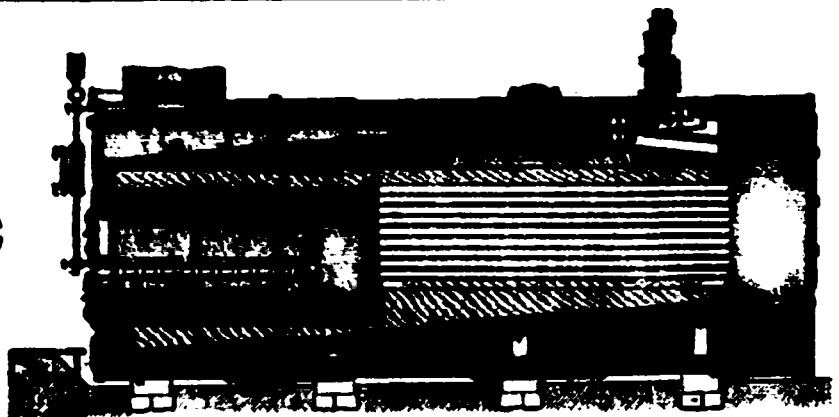
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PREFERENTIAL TRADE — GREAT BRITAIN OR THE UNITED STATES?

The most important duties which devolve upon our new Government and Parliament are, to decide between the alternative policies of preferential trade with Great Britain or the United States; and to devise the best means by which the cost of inland and ocean transportation can be reduced, and the very best facilities be provided for the carriage of perishable products such as butter, cheese, fresh meats, fish, poultry, eggs, fruit, etc. It is evident that a decision must be first arrived at with respect to the direction towards which our future trade is to be pointed, before any intelligent decision

can be made as to the improved character of our transportation system. It is equally evident that any decision in favor of preferential trade with either of above two countries must preclude any effort towards preferential trade with the other.

It was surely a high-minded and culpable act on the part of the Premier, on the eve of opening of a new parliament, and before the matter could possibly have been fully discussed by a full cabinet, to commit himself so unreservedly in favor of what is termed "continental union." Such a precipitate announcement of policy is unprecedented in the history of Canadian politics. Not less culpable was the selection of the channel through which the announcement was made, the columns of an obscure Chicago newspaper. The floor of parliament should have been chosen for this most singular communication. It may be said that the opinions expressed to the Yankee Reporter were not designed to convey the impression that these were the opinions of the Government, but merely the sentiments of himself personally. If they were not the official and authorized views of his cabinet, all the worse, because they forcibly appeal to party fidelity for their support, and may be accepted with submission by many who entertain very different opinions as to the policy which ought to be adopted.

It is claimed for Mr. Laurier's Government that it is a combination of the ablest politicians that have ever formed an Administration since Confederation. It may be true that there has been a clever selection of politicians who have distinguished themselves in provincial administration, or in debate in the House of Commons—men who have succeeded in strengthening the political party with which they have been associated. This, however, is no evidence of their possessing the statesmanship which can decide correctly on those lines of broad national policy which will tend to the progress and prosperity of the country. When the personnel of the Government is carefully scrutinized, it is found that with one or two exceptions, none of its members have had that practical business experience which is necessary to an independent and intelligent judgment of the commercial position and requirements of the Dominion. Not one of them has established for himself a generally accepted reputation as an authority on finance or commerce. It seems unaccountable that Mr. Laurier, in forming his Administration should have overlooked the expediency of inviting some of the leading merchants or bankers of his party, to take charge of the commercial policy of his Government. Mr. Laurier's recent communication to the Chicago newspaper man, and recent addresses of some of his colleagues, show that they do not understand the great change in the conditions between Canada and the United States which has occurred during the last thirty years; otherwise, they would not now be contending that reciprocity between the two countries will result in like advantage to Canada now, as it did then. Their decision is that of politicians, not statesmen; looking rather to the present popularity of their policy than to its ultimate effects. It is much easier to carry on Government in accordance with the wishes of the people, than to frame a policy which sound judgment and careful investigation show to be in accordance with the well understood interests of the country. In another article in this issue, we deal with the question of reciprocity under existing conditions, and feel convinced that should this experiment be tried—which we hope, will not be tried—it will

result in serious disappointment to the people, and will prove a severe condemnation of the Government which may adopt it. But why should Canada be going to Washington year after year, subjecting herself to contemptuous rejection of the fair and reasonable propositions which have been so often submitted? How has the prospect of a satisfactory arrangement been improved? The Democratic party is opposed to reciprocity of any kind. Mr. McKinley's idea of reciprocity is confined to such countries which do not produce the same articles as are raised or manufactured in the United States. It has surely been clearly enough established that there is no political party in the United States that will consent to reciprocity with Canada except on such conditions as will destroy our political connection with England, or on some other equally repugnant conditions.

On the other hand, an arrangement of preferential trade with England would prove to mutual advantage, commercially and politically. It is only there that the natural and constant market is to be found for nearly all our products. Unfortunately, the tendency of prices for grain and animal products, all over the world, has been downwards for many years; and he is a bold man who can predict that bottom has yet been reached. With a moderate import duty in England of say 10 per cent. on all cereals and provisions imported from foreign countries, it is altogether likely that Great Britain would receive as large a supply as at present, and perhaps without any increase in prices to its consumers. It may be asked, if there is going to be no increase in prices, of what advantage would proposed arrangement be to the Canadian farmer? Whether this duty would advance prices or not, the Canadian producer is to that extent protected against further decline, and, as colonial produce will be free of duty, he will obtain 10 per cent. more for it than his competitors in the United States, Russia, Argentine Republic, etc.

It may be urged that England is so wedded to the policy of free trade, especially in grain and provisions, that there is no probability of our Government being able to secure preferential terms for our produce, even although Canada should on her part agree to admit British goods at 10 per cent. less duty than is imposed on like goods from foreign countries. Why should this be assumed? Every year that passes over, every political complication which arises, is rapidly strengthening the sentiment in the United Kingdom in favor of closer political and commercial relations with her colonies. THE MANUFACTURER has recently had the pleasure of quoting freely from its English exchanges, showing that the organs of many manufacturing and commercial bodies there are expressing great dissatisfaction with the present system of one-sided free trade, and are anxious to cultivate more extensively their trade with the colonies. They hope that propositions may come from the latter, by which trade may be extended to mutual advantage. Many such expressions of opinion are found in commercial journals which a few years ago would have ridiculed the idea of the slightest departure from free trade principles. In approaching the British Government with a trade proposition we are appealing to men who have a warm sympathy for Canada, men who will feel a pleasure in acceding to our proposals, if they are found to be reasonable. The time seems opportune for the Canadian Government to take the initiative in this direction, and it will be to the disgrace of our politicians if they fail to avail themselves of the present favorable sentiment in the United Kingdom.

## RECIPROCITY WITH THE UNITED STATES.

In last issue of THE MANUFACTURER it was assumed from then indications, that it is the intention of the Dominion Government to endeavor to effect a reciprocity treaty with the United States. From Mr. Laurier's later utterances, it appears that he is willing to include in such a treaty, not only raw products such as were embraced in the former treaty, but a list of manufactured articles. As we formerly argued, THE MANUFACTURER cannot see that reciprocity would prove of such benefit to Canada as should induce it to weaken its financial position by the loss of the customs revenue now obtained from imports from the United States, or to expose its manufacturers to the one-sided competition which would result from such an arrangement. The avowed object of proposed treaty is to benefit the Canadian farmer, who is being induced to believe that the same conditions exist now which existed thirty to forty years ago, and that a new reciprocity treaty would restore the prices obtained under the old treaty. As opposed to this view, THE MANUFACTURER contended that the conditions have entirely changed, and that inasmuch as during 1894-95 the United States had a surplus of agricultural produce to export of the value of \$319,535,852 as compared with a surplus from Canada of \$48,531,344, therefore, the Canadian farmer has more reason to dread competition in his home market through imports from the United States, than he has ground for expecting any advantage from free access to the American market.

A few more facts will illustrate this. The last year of agricultural prosperity both in the United States and Canada was in 1891-2, when both countries were favored with grain crops of much above average yield, and good prices, owing to partial failure of the wheat crop in France, and to a great shortage in all the grain crops of Russia. Since that year, there has been a great falling off in both countries, both in extent of crop and in prices, particularly in wheat, leading to much agricultural depression which seems to have become more acute every year.

During the year 1891-92, the United States exported in grain and animal products in value \$173,008,842, and in the year 1895-96 \$310,080,323, the decrease being partially in quantity and partly in prices. If the average export values of grain and grain products had been as high in 1895-96, as in 1891-92, their aggregate value would have been \$64,211,000 more than it was.

The average export values for the two years compare as follows:—

	1891-92	1895-96
Wheat.....	\$1,021	\$ .651
Wheat flour.....	4.96	3.56
Corn.....	.55	.38
Cormeal.....	3.20	2.37
Oats.....	.40 4-5	.27
Rye.....	.35	.45
Barley.....	.62½	.40½

If Canadian farmers will carefully consider the situation, they will see very clearly that the decline in prices has been greater in the United States than it has been here. The above are not the prices paid to farmers, but the values delivered on board vessels at New York, Boston, San Francisco, etc. Do these last year's prices afford any reason for believing that free import into the United States would have improved prices here? Do they not, on the contrary, show that free imports of American wheat, oats and corn into Canada

would have lowered prices here? The relative conditions apply to provisions of all kinds.

The proportion which the exports of grain products bear to the quantity used for home consumption is a very small one indeed. When it is borne in mind that the reduction in export values involves a corresponding reduction in the prices of all that is consumed at home, and if the loss sustained in exports of 1895-6 amounted to sixty-four million dollars from reduction of prices, then the aggregate loss to the farmers through the fall in prices since 1891-92 must be several hundred millions of dollars per annum. Is it any wonder there should be great depression and a wide-spread eagerness for some change—for any change. Is the silver agitation in the West one whit more unreasonable than the expectation of so many Canadian farmers that they can be benefited by admission to an already overloaded market?

The financial aspect of the question suggests important objections to the adoption of the policy of reciprocity. The Trade and Commerce returns for 1895-96 have not been issued in so complete form as to afford a full illustration of this point. But the Trade and Navigation tables for 1894-95 give full information for that year. They show that Canada collected customs duties on raw products imported from the U. S., during that year, \$1,614,522, and on manufactured articles from same country \$5,282,873, altogether \$6,897,395. Under the reciprocity proposed by Mr. Laurier, nearly the whole of this revenue would be lost. Not only this, but the named manufactured articles proposed to be admitted, free of duty, from the United States would require to be admitted on the same terms from Great Britain. Under such a policy our revenue from customs would be reduced to such a low figure that it would become a question whether it would be worth while to maintain any customs service at all. In any event, direct taxation, either in the shape of an income tax or a tax on real estate, would have to be resorted to. It has been the constant boast of the Liberal party that, if they returned to power, they could at once effect through economical administration, an annual saving of fabulous millions of dollars. Now that they are in power, they have submitted their estimates for the current year, but have completely failed in exhibiting any of the wonderful economy which they so persistently promised that they could accomplish.

#### OUR CANAL SYSTEM.

Owing to inexcusable and culpable delay incurred in the completion of our canal system from Port Colborne to Montreal, Canada, so far, has derived a very inadequate return for the immense amount of money expended thereon. It is of considerable importance that, on the earliest date possible, authentic and reliable information should be given to the shipping and commercial interests of the country as to the time at which the completion of the system can be depended upon. There will then be a great revolution in the carrying trade, especially as to capacity of vessels employed, and their adaptation to the different classes of freight, and in order that these should be in readiness when called for, extensive preparations must be made. It is not to be expected that these preparations will be undertaken until it is known at what date they will be brought into operation. When the entire fourteen-foot channel is completed, it will probably be found adequate to

such an extensive trade, that it would be unwise to undertake further deepening and enlargement for the sake of securing such additional traffic as the expenditure involved would be able to attract. With a fourteen-foot channel handy, medium-sized ocean steamers such as many of those now trading to the ports of the Black Sea and Argentina, and drawing sixteen feet of water, will be able to come up to Lake Ontario ports, load down to fourteen feet, and fill up at Montreal to full capacity. Such propellers would certainly be fitted up with cold storage apartments for the carriage of meats, provisions, and perishable products generally. It is not to be expected that any of the harbors, either on Lake Ontario or Lake Erie, will be deepened or enlarged so as to admit of the entry or loading of such steamers, except say at Toronto and Hamilton, because the traffic would not justify the expenditure required. With fourteen-foot draft propellers and steel barges as consort, the cost of transportation between any of the lakes from Ontario to Superior and Montreal will be reduced fully one cent per bushel on wheat, and proportionately on other merchandise, below present cost.

Would the further deepening and enlargement of the system to one of twenty or twenty-one feet still further reduce the cost of transportation to an extent which would warrant the enormous cost of such improvements? Would the cost of transportation by proposed system be so much lower than by competing rates, as to admit of levying canal tolls of sufficient amount to cover the annual interest on cost, and expense of maintenance? If the new canal system is to be operated, free of tolls, would the advantage to the general prosperity of the Dominion prove a sufficient recompense for the cost incurred? All these are important questions which merit careful consideration.

With respect to cost of proposed system, all present estimates, more particularly as to the channel of the River St. Lawrence, are mere guess work. It is considered by many that, so far as the canal portion of the system is concerned, it will be cheaper to construct new canals than to enlarge the present ones. It is very doubtful whether the proposed system could be completed for a less cost than \$100,000,000; the interest on which at 5½ per cent. would be \$3,500,000; to which, add \$500,000 for annual expenditure for maintenance and management, makes an annual charge of \$4,000,000, or equal to one per cent. per bushel on 100,000,000 bushels of grain, or the equivalent on other merchandise. The possibilities of future traffic must be gauged by a comparison with the competitive route via Erie canal to New York. During last season and this the average rate of freight on wheat by this route from Buffalo to New York has been rather under than over 3½ cents per bushel. The improvements and enlargements now under progress on the Erie canal are calculated to reduce the cost of transportation by fully one-third. When completed, the rate from Buffalo to New York may be estimated at 2½ cents per bushel. Under the competition which may be expected, the transfer charges at Buffalo will be reduced, if necessary, to one-eighth cent per bushel. With the much larger volume of coal and other freight moving westward from Buffalo than will go from Port Colborne, the rate of freight from upper lakes to Buffalo is likely to be lower than propellers could afford to take for that proportion of their voyage to Port Colborne. But admitting same rate from upper lakes to Buffalo or Port Colborne, there is only 2½ cents left for the route

Port Colborne to Montreal. There is evidently no margin for the levying of tolls to cover interest and maintenance of proposed ship canal. The indirect advantages of proposed system to the commerce and prosperity of the Dominion are of such an indefinite and remote character, and of absolutely no benefit to the greater portion of the provinces, that there is little prospect of this undertaking being assumed by Parliament.

It is proposed that the United States Government should be invited to contribute the larger proportion of the cost of the proposed improvements, and that it should be admitted to a joint control of our canal and river system. This can never be submitted to. An "imperium in imperio" is always dangerous, and doubly so when one government is so much more powerful than the other. That it would be reasonable for the United States to contribute the largest share of the expense is true enough, because not only to the extent to which its products may be transported by this route, would the great western states be benefited, but the advantage would accrue to all the products of the west, through the lower rates by their own routes which the Canadian route would accomplish for them. In consideration of a reasonable contribution from the United States Government, it might be stipulated by treaty, that for a stated number of years, say thirty, all American vessels and merchandise shall be permitted to pass through Canadian waters, free of toll. This would suit Canada, but no joint control.

If further extension of the Canadian canal system is required, THE MANUFACTURER claims that the route from Georgian Bay, via Lake Nipissing and the Ottawa River to Montreal, can be utilized for a barge canal which will be able to carry the produce of the west to the ocean, as quickly and cheaper than any ship canal. The cost of construction will not be one-fifth as great. The local advantages will be numerous and important. Every acre of land, all agricultural produce, the timber and minerals on both borders of the route for about 400 miles will be greatly enhanced in value, and a great influx of population will follow its construction. THE MANUFACTURER has already expressed the opinion that a grave mistake was made when Parliament granted a charter to a private company for this work. If built at all, this undertaking should be a government work. It is to be hoped that the charter will be allowed to lapse. It would be a commendable act on the part of the Government to appropriate a sufficient sum for a thorough survey of this route and report as to its possibilities for traffic.

#### INTER-STATE RAILWAY COMMISSION.

In last issue of THE MANUFACTURER, copious reference was made to the proceedings of the National Convention of Railroad Commissioners, at Washington, in May last. Extracts were given from speeches and papers submitted bearing on the questions of the duties of Railway Commissioners, and the status of railway corporations and railway rates, and the power and limitation of State control. Some of the reports of the Commissioners for the different states are interesting.

The California Commission, in their report, say, that the board has power to hear and determine complaints, and that during the year they had investigated many complaints as to overcharges and differences between carrier and shipper resulting from improper classification or arbitrary action on the

part of the former, also, as to excessive charges for fruit shipments. The board recommends that some action should be taken to compel carriers to own and operate cars used for these shipments. No good reason exists for private ownership of such cars. The carriers should own and provide for their patrons suitable facilities for transportation of freight, and when the volume of traffic is considerable and circumstances warrant, the most approved devices should be furnished for the preservation of perishable commodities in transit.

The Connecticut Commission report that the Legislature of the state has made it the duty of the railroad commissioners to inspect the several railroads within their limits at least twice in each year, to see that the same are kept in suitable repair, and that all the provisions of the law are faithfully observed; and to communicate the results of such examinations to each company. They find that these examinations have resulted in much benefit, as the knowledge that they are to be made stimulates the companies to avoid unfavorable criticisms. During the year sixty-seven different applications were made on fifteen different subjects, which were heard usually in the locality from which the application came.

The Massachusetts Commission report that during the year they had heard complaints and petitions relative to train and station accommodation, fares, etc. They find that a great addition to the work of the board has arisen from what is known as the "anti stock watering" legislation of 1894, under which "no stock or bonds can be issued except with the approval of the board, after an examination of the assets and liabilities of the company, a valuation of its property by an expert, and an investigation of the purposes to which such issue of stocks or bonds is to be applied, with estimate of cost, etc." The administration of this legislation has put a salutary restraint on unnecessary increase of securities, and has induced economy on the part of the corporations.

The Minnesota Railroad and Warehouse Commission report that no serious complaints against the railroads were filed during the year 1895-96. Most of the work has been the adjustment of informal complaints relating to overcharges, maintaining stations, passenger train connection at junction points, spur tracks to elevators and other industries, inequalities in rates, erection of new or more commodious buildings, etc. In all these matters railroads have shown a willingness to be fair in the adjustment of grievances, and the Commission is firmly of opinion that the very existence of such a tribunal tends to allay much of the feeling that formerly was felt against the railroads. Besides their duty in connection with railroads, the Commission has to take charge of the grain coming to warehouse at the terminal markets, not only from Minnesota, but from adjacent states. At St. Paul, Minneapolis, Duluth and Superior, inspectors are appointed by the Commissioners to place the proper grade on the grain and to see that it is correctly weighed into and out of the elevators. The cost of terminal inspection and weighing is 25 cents per car load. Whenever such fee yields a large surplus the Commission reduces it (it has been as low as 20 cents per car). In this branch of the business 150 men are employed. During the crop year ending August 31, 1895, there were inspected "on arrival," 151,756 cars of all kinds of grain, and "out of store," 42,065 car loads and 22,030,369 bushels into vessels. The cost of the service was

\$147,522. The warehouse business during the current crop year will be largely increased.

The Railroad Commissioner of Michigan reported that his duties were mainly to compute the state tax which is levied on the gross earnings of the railways; to investigate railroad accidents; to inspect all the roads at least once in each year; to see that the railroad right-of-way is fenced through inclosed lands; to see that suitable farm and residence crossings are provided; that the people have ample depot accommodations; to examine tracks and bridges and order repairs when they are unsafe; to examine crossings and determine the necessity for safety gates, or bells, or the stationing of flagmen; to issue permits with plans and specifications for stringing electric or other wires over railroads; to furnish plans and specifications for all new highway crossings, and also to determine the manner of crossing steam roads by street railways and the protection that shall be furnished by each; to arbitrate between companies, this decision is not binding except by mutual consent; to see that railroads do not charge more than the statutory amount for passengers, and do not discriminate between shippers, or that they do not charge more for a short haul than they do for a long haul.

The Railway Commission of Texas is empowered by the laws of the state to make, regulate and maintain freight rates on all shipments in the State and passenger fares; to regulate and control all express rates; to ascertain and report to the Secretary of State the value of each railroad in the state, including all its franchises, appurtenances and property; to regulate the manner of issuing, registering and securing all stock and bonds to be issued by railroad corporations in the state. The commission ascertained and fixed the value of 47 railroads in the state, representing an aggregate of 8 859.87 miles, at an average value per mile \$15,844. The roads are capitalized by the companies in stock and bonds, at \$367,677,044, as compared with ascertained value \$140,301,083. The net earnings for the year ending June 30th, 1895, were equal to 2,788 per cent. on amount of stock and bonds, but 7,449 per cent. on value fixed by Commissioners.

The Iowa Railroad Commissioners are three in number. Their duties are very similar to those in Minnesota. Under the laws of the State they have power to examine any books, papers or documents of any railroad corporation, and to examine, under oath or otherwise, any officer, director, agent or employee. Any person wilfully obstructing the Commissioners in their duty, or refusing to give any information in his possession within the line of their duty, is deemed guilty of a misdemeanor. The Statutes of Iowa provide specifically that all charges made for any service rendered or to be rendered in the transportation of persons or property in this State or in connection therewith, or for receiving, delivering, storage or handling of such property, shall be reasonable and just, and every unjust and unreasonable charge for such service is prohibited and declared unlawful; also, that if any common carrier shall, directly or indirectly, by any special rate, rebate, drawback or other device, charge, demand, collect or receive from any person or persons, a greater or less compensation for any service rendered in the transportation of property, than it charges, demands, collects or receives from another for like service, such common carrier

shall be deemed guilty of unjust discrimination, which is prohibited and declared unlawful." These provisions and those prohibiting preference between patrons, freight pooling, increased compensation for short hauls, invite the complainant to look to the Commissioners for relief, without, however, taking away his right to begin suit in court, but the complainant cannot seek the remedy before the Commissioners and the law at the same time. When complaints are made, an effort is made to secure an amicable adjustment, and this is generally successful. Whenever any common carrier violates, neglects or refuses to obey any lawful order of the Commissioners, they or any person interested may apply in a summary way to the district or superior court, which may grant a writ of injunction or mandamus. Mileage of railroads in Iowa, 8,486 miles; capital, \$149,590,118 in stock, of which \$5,651,073 is held in Iowa; debt, \$170,233,870; cost of road and equipment, \$304,897,227; gross earnings, \$35,835,910; operating expenses and taxes, \$24,726,072; number of employes, 24,107, number of stations in Iowa, 1,520.

#### DISCRIMINATION AND POOLING.

In a resolution unanimously adopted by the Convention, the following views were expressed:—Discrimination in rates as to persons and places is beyond question the greatest evil in the railway management of the present day. To prevent and remedy this offence more than anything else, was the purpose of the "act to regulate commerce," approved February 4, 1887.

Like bribery and other similar offences the practice of discrimination in rates is a crime against the commonwealth. It is, when committed, a crime in the railway official who is guilty of it. It is equally a crime on the part of the shipper who solicits or profits by it. Both parties merit and should receive the severest punishment known to the law.

It is our deliberate conviction that if experience shows that the law as now framed is ineffectual and inoperative, greater and severer penalties should attach to the violation thereof.

The report of a committee on pooling says:—In the past much injury has resulted to the business, shipping and industrial interests of the country, and much strife and loss of revenue to the railroad companies from the cutting of freight rates—from rate wars. The railroad companies have made many efforts in the past to arrest and prevent these mischiefs by the pooling of freights and the division of earnings. But as such contracts were not authorized or regulated by law, and rested on mere moral obligation, they were, as a rule, violated as soon as traffic managers found it to their interest to disregard them, and instead of remedying the evils they generally intensified the rate wars. Besides which, such pooling arrangements were so often made to contribute to the selfish interests of the corporations making them, and operated so unjustly on the interests of their patrons as to cause numerous appeals to Congress to prohibit the practice. On February 4, 1887, Congress prohibited pooling by an act "to regulate commerce." The Inter-State Commerce Commission has found it difficult, if not impossible, to enforce this law, and pooling and unjust discriminations have gone on less openly than before, but not so generally. The object of this committee was to report whether provisions of law should be made authorizing and regulating the pooling of freight and the division of earnings between railroads. In



deliberating on the question, two objects were to be kept in view (1) the protection of shippers against excessive rates and unjust discriminations; (2) the preservation of the necessary revenue to pay for the management and repairs of such railroads, and for reasonable interest on the value of their properties. To accomplish this, Congress is recommended to authorize and empower the Inter-state Commerce Commission to make, regulate and maintain rates on inter-state shipments of freight, and then there would be no need of law or regulations governing pooling. All contracts for the pooling of freights or the division of earnings should by law be required to be submitted to and approved by this Commission, under which the public would be protected against excessive rates and unjust discriminations. Such a law would protect the weaker lines; protect railway property as a whole; protect the small shipper against unfair advantages possessed by the large shipper, and would secure first-class railroads and railroad service for both freight and passengers.

### THE IRON INDUSTRY IN CANADA.

The opponents of the policy of protection or bounty to the iron industry in Canada generally base their objection on two grounds, (1) That the population is too small and the market too restricted to admit of the establishment of the industry on a sufficiently extensive scale to ensure success; (2) That although favored for many years by large import duties on foreign iron and by liberal bounties on the home product, it has not been extended as fast as was anticipated when this policy was adopted.

With respect to the first objection as to the narrow market which Canada affords for iron, this is merely a question of comparison with or proportion to other countries. To arrive at a conclusion on this point, investigation of the position in the United States with its about seventy million population should show what might be done in a country of only five million population.

The American Manufacturer, Pittsburg, July 24th has an article on Pig Iron Production in the United States. Quoting from a report of Mr. I. M. Swank, Manager of the American Iron and Steel Association, it shows the following figures:—

Production of pig iron in all United States (in gross tons of 2,240 lbs.) in 1895 .....	9,446,308
Production of pig iron in all United States (in gross tons of 2,240 lbs.) first half of 1896 .....	4,976,236
Number of blast furnaces on June 30, 1896 .....	469
(of which 196 were in blast, 273 out of blast)	

If the United States population of seventy millions consume an iron product of 9,446,308 gross tons, the five million population in Canada should consume an output of about 675,000 tons; and if the United States can support 469 blast furnaces, then Canada should be able to support 33. Admitting that because of the relative cheapness of lumber in Canada this country does not afford the same opening for iron as in United States, still the comparison shows that there is an opening for far more iron than is now manufactured in Canada. It may be contended that even so, the quantity required would be so small in proportion to that in the United States, as to make the running expenses much higher here than there, and thus make the cost of manufacturing too high. The reply to this is that of the 469 blast furnaces in the United States,

292 are located in the three states of Pennsylvania, Alabama, and Ohio, while the remaining 177 furnaces are distributed through 21 states, running from 1 furnace up to 30 in each state. These smaller establishments have to compete and do compete with the larger ones, the saving in freight being a chief reason for their ability to do so. If 21 states operating in iron on a small scale can sustain local industries of this character, the Dominion of Canada can surely do the same.

With respect to the objection that although the iron industry in Canada has been favored by direct bounties, and by a heavy protective duty on foreign iron, still it has not been extended as fast as was anticipated, it may be fairly contended, that the practical season of protection commenced with the date when the bounty was fixed for five years' duration. Up to that time the political aspect for the trade was of such an uncertain and undecided a tone that there was really no security afforded for the investment of the large amount of capital required for this industry. As soon as this principle of permanency and stability was adopted, confidence was created, and with a continuance of a like policy rapid extension will be assured.

THE MANUFACTURER has for years contended that an essential step to the extension and prosperity of the iron industry lies in the manufacture of steel rails. In a rough way it may be estimated that 100,000 tons of steel rails are required annually for new railways and for renewals, of a value of about \$2,500,000. Here alone is the nucleus for a large iron industry, and at whatever temporary cost, the manufacture of these rails in our own country should be secured. Under the agreement with the Canadian Pacific Railway Company, the rails for their road were agreed to be admitted free of duty, and in fairness to other railways, steel rails were made free to all. It is time that this policy should be reconsidered. It may be argued that a duty on steel rails will add to the original cost of new railroads and to the annual working expenses of all roads, and that this will lead to the increase in cost of transportation. The same argument will apply to the duty on all iron required for wagons, implements, horse shoes, etc., and this fact tends to create dissatisfaction, as there is an appearance of discrimination in favor of large corporations. If the extension of manufacturing industries and the resulting increase of population contribute to the general prosperity, they do so in a special degree to railway prosperity, and railway interests should cheerfully submit to a fair share of the burdens imposed. But why should not our two great railway systems, either separately or conjointly undertake the manufacture of steel rails? If Parliament would impose a duty of say \$7.50 per gross ton on steel rails, and at same time offer a bounty of same amount for all steel rails made in Canada, the revenue derived in the first few years would probably pay all the bounty earned in the five years. The revenue might also prove sufficient to pay a direct bounty on all the soft coal mined and sold in Canada, and the reduction in the price of coal would prove of great advantage to railway companies and all classes of manufacturers.

In illustration of what can be accomplished in the way of reducing the cost of steel rails, after a few years' experience, we append the following clipping from the Iron Trade Review, Cleveland, August 20th:—

Mr. Iwahara, who placed the recent order for 9,000 tons of rails for Japan with American mills, has this to say regarding

future business in rails between the two countries: I believe Japanese railway companies will place further orders for rails in America. Americans are able to underbid English rails, although English makers have been the principal sellers thus far. Japan cannot yet make her own rails because her iron mines are few and undeveloped. The chief of the Japanese Government railway inspectors will be here next month to study American roads with reference to construction, equipment and management and his report will have an influence in determining future railway trade with Japan.

### DOES PROTECTION INCREASE WAGES?

Fibre and Fabric, Boston, gives the following testimony from a reliable correspondent as to the effect of protection in Germany, on the woolen industry there:—I cannot speak of my own personal knowledge of any country but Germany. Previous to the era of protection in that country, Forst in the principality of Brandenburg had eight woolen mills; to-day there are 254 firms manufacturing woolens in this city. To verify my statement, I can mail you a reliable German textile directory, and you may count up the firms for yourself. The fact that there have been two mills looking for one man, instead of two men looking for one mill to give them employment, has more than doubled the rate of wages in the German woolen industry. These are facts that cannot be disputed.

The London correspondent of the New York Tribune says:—"There has been a marked improvement in the social condition of the Fatherland during the last twenty years." "It would be unscientific and unreasonable to ascribe this beneficent change to a single cause. Protection has done much, but not everything. Many causes have been co-operating to produce this effect, but protection is one of them, and a most important one. It has increased and multiplied the facilities for earning a livelihood. It has diversified industries, and widened the range of employment." Among other causes which have aided in this direction are:—technical education, habits of military discipline, etc. Referring to the generally entertained opinion that the success in manufacturing in Germany is due to cheap labor, the correspondent says:—"The delegation of the British Iron Association which made an exhaustive investigation of this branch of the subject, last year, did not find the differences of wages between England and Germany as great as has been represented. The miners and lower classes of workers in the iron and steel trades received lower wages in Germany than in England, but the earnings of the upper grades of mechanics were higher, and the average pay of workmen was nearly on a level in the two countries." "There is no reason to doubt that the tendency of wages in Germany is upwards, and that there is an improvement in the average workman's manner of living. If wages on the whole are lower in Germany than in England, they are higher than they were under free trade, and employment is more constant and trustworthy. The hours of labor, moreover, are shorter." "German manufacturers, having secured the control of the home market, have invaded Europe, and are competing directly and effectively with England in the British Empire, the far East, and in North and South America."

Without undertaking to prove whether protection has been the sole cause of the success achieved, which is difficult to prove, the correspondent says that the following facts are indisputable:—"That a great enlargement of foreign trade has

not been prevented by the protective system, and that it followed nine years of industrial stagnation under free trade. The recent experience of Germany proves that industries can be successfully developed under protection, and that England can be exposed under that system to tremendous competition in foreign trade." "Protection does not operate alone in producing the general effect of industrial prosperity; but it is a factor which cannot be eliminated without affecting all the conditions of the main problem. The future of industrial Germany was not secure until the protective system was adopted, the home market reserved for domestic industries, employment diversified for the masses, and a base of operations secured for the invasion and conquest of foreign markets. Germany languished under free trade during the eight years which followed the establishment of the Empire. It was not until the fiscal system was changed for the double purpose of providing adequate revenues, and protecting and developing home industries that Germany was enabled to invade foreign markets, and to challenge the commercial supremacy of England."

### OUR LUMBER TRADE.

The Year Book for 1895 shows that the United States imported from Canada during 1894 pine logs valued at \$2,359,951, and in 1895, valued at \$1,860,725. These logs would produce a larger quantity of sawed lumber, than is imported into the United States from Canada in the shape of boards, planks and deals. THE MANUFACTURER has shown, time and again, that the United States is so dependent upon Canada for part of its supply of lumber, that without this supply it would be unable to maintain its extensive export in this article, to West Indies, South America, etc. In this connection, Mr. E. L. Baker, United States consul at Buenos Ayres, in his report to the Government at Washington, dated December 29, 1894, puts the value of pine lumber imported into Argentine from the United States in 1893, \$3,394,677. Thus, he says, is incorrect, as it is well-known that nearly all the white pine comes from Canada, via Portland, Boston, etc. There is no good reason why the above quantity of saw logs should not be cut at Canadian mills and transported to the frontier of United States by Canadian vessels and railroads. If so, the money spent in Canada would amount to six million dollars instead of two millions, and additional employment would be furnished for about ten thousand men in every year. Party papers whine over the alleged exodus from Canada. An export duty on pine logs would greatly aid in keeping our people here; but they refuse to support this common sense, practical policy, because it is at variance with their pet theory of non-intervention with the movement of trade.

Our pulp wood industry has increased amazingly in last few years. In 1881, the capital invested was \$92,000; in 1891, \$2,900,907; wages paid in 1881, \$15,720; in 1891, \$292,000; product in 1881, \$63,300; in 1891, \$1,057,810. Our exports of wood pulp in 1895 amounted to \$590,874, and of wood for pulp \$468,009. Our exports are chiefly to the United States. Besides supplying the paper mills of that country with the raw material for paper for its own use, Canada's exports of pulp wood enable our neighbors to export paper to the value of \$2,713,875. With abundant supply of water and water power, unlimited supply of suitable wood, and cheap labor, it is evidently sound policy on the part of Canada to impose an

export duty on all pulp wood exported to any country which imposes a customs duty on Canadian pulp. That this policy is the correct one is evidenced by the very general anticipation on the part of the paper journals in the United States, that it will soon be in force.

#### EDITORIAL NOTES.

It is announced in Birmingham that the sale of Alabama pig iron in Europe promises important new developments for Southern irons.

Japan has despatched a commission to investigate trade conditions on the western coast of South America, in Central America, and in Mexico, and, should the report be favorable, new steamship lines will forthwith be established between Japan and the American Pacific ports.—Textile Mercury.

The Textile Mercury, Manchester, August 22nd, says that Mr. Louis Becke, one of the first authorities on South Sea affairs, who visited the South Pacific twenty-five years ago, and again recently, now reports that although England was the first country to commence trading with the South Seas, British commercial supremacy has gone, and Britons have been supplanted by the Germans. German competition has driven English traders away, yes—crushed them out.

The American Wool and Cotton Reporter, in a letter from its London correspondent, August 27th, refers to the action taken by the cotton manufacturers of England, towards extending their trade with China and the far East. An expedition organized by the Blackburn Chamber of Commerce, composed of Mr. Bourne, (lately appointed one of Her Majesty's consuls in China) together with Mr. Neville and Mr. Bell, two experts, were to leave Blackburn, on August 26th, for New York, and thence via Vancouver to Shanghai, where they will engage an interpreter and assistants, and proceed to Hang Chow and the western provinces. The expedition, as planned, will occupy three years.

Several attempts have been made to belittle the importance of inland water-ways improvements as compared with railways. The alleged financial failure of the Manchester ship canal has frequently been referred to in this connection. There has been a great improvement in the service and increase in the tonnage employed, as appears from the American Manufacturer, August 28th, since opening to regular traffic on January 1, 1891. The traffic for the first half year was 262,000 tons; this had increased in last half year to 668,000 tons. Arrangements have been completed for regular, frequent sailings of steamers from New Orleans and Galveston to Manchester. As a means of reducing freights, this canal has proved a success. The Canadian Gazette, London, August 20th, says that the Manchester ship canal authorities are making renewed efforts to secure a largely increased trade via the canal, with the United States and Canada. The consumption of imported grain in the Manchester district is about 2,000,000 tons per annum.

Over thirty years ago, when through a series of misfortunes to the Allan line of steamers, it became necessary to their maintenance that the Government subsidy should be increased, the proposal met with a good deal of opposition from many of the Reform party. The late Hon. Wm. Merritt strongly

rebuked them for their lack of liberality, and from his seat in Parliament urged them to waive their opposition. He referred to the great benefit which the country had derived from the construction of the Welland canal, of which work he had been the principle promoter, and in connection with which he had been exposed to a good deal of ridicule because of what was considered his over sanguine expectations. Many of the members might consider him too sanguine now, when he predicted that some of the younger members would live to see the day when the arrivals and departures of ocean steamships at and from the port of Montreal would average one per day during the season of navigation. Some of those who then ridiculed this prediction have lived to see that not only has it been fulfilled, but the results have greatly exceeded Mr Merritt's estimate. The Montreal Star, August 26th, contains a good deal of information about this season's business. From the opening of navigation to date, there has been 437 sea-going vessels in the port. Of these, 29 were sailing ships, brigs, barques and schooners from distant and Gulf ports. In only one previous year has this number been exceeded—in 1893—when 505 vessels had been reported, but as the average tonnage of this year's arrivals is much larger than in 1893, it may be that the tonnage is equal to that of 1893. The Star says:—"With freight rates higher than they have been since 1891, and with all the freight the shippers can handle, the port of Montreal is having a banner year."

The American Manufacturer has an interesting article on peat fuel in the manufacture of steel. It refers to some experiments now being conducted at Glasgow, Scotland, on the use of peat bogs in the manufacture of iron and steel. The problem of converting the peat into combustible material which will be cheaper than coal is said to have been solved by utilizing the natural gas in the peat as fuel to dry the whole mass. If successful, it is said, this discovery will give the supreme mastery of the steel trade of the world. By a clever arrangement of furnaces the slimy mass of the bog is converted into a hard, dry material, absolutely free from sulphur, which, when converted into charcoal, is as near as possible pure carbon, and superior to the best oak charcoal. It is claimed that the fuel can be delivered at a lower price than the best coke and without the latter's deleterious constituents. The charcoal made from peat, being absolutely free from sulphur and phosphorous, its value in the smelting of iron and manufacture of steel is of the first importance. When iron ore is smelted with coal or coke, some of the impurities in the fuel are imparted to the iron, which requires to go through a purifying process before it can be turned into steel. With pure fuel in smelting, pure iron is obtained ready for adaptation to the highest purposes. Peat carbon is a pure fuel, and the pig iron obtained from it is malleable, ductile and tensile in the highest degree. It is pure charcoal iron, and in this way steel can be made direct from ordinary iron ores. Peat carbon produces as good results in iron from the commonest ores as from the best Swedish or Spanish ores. This is the claim. It is further claimed that peat charcoal is more beneficial and economical in the hardening of armor plates than the ordinary Harvey process, and a harder plate can be produced in one-third of the time. The processes are now actually in operation in experimental works in the west of Scotland, for the purpose of ascertaining cost, etc. It is believed that this discovery may revolutionize the iron trade.

Outing for September is up to the usual high standard of this popular magazine. Two excellent complete stories and many delightful sketches of out-door life furnish a most acceptable variety. The illustrations are numerous and good. The frontispiece stalking antelope, is full of character, and the full-page drawings of moose calling, fishing, shooting rail, etc., are gems in their way. The number opens with "The Secret of the Pines," by H. M. Hoke, in which the author weaves a pleasant romance about the haunts of suspected moonshiners. The second complete story, "The Courtship of Jack Curtis," by Geo. Gleadden, is an Adirondack romance, with a thrilling climax, such as deerhunters seldom experience. Able writing and beautiful illustrations mark R. B. Burchard's treatment of "The Thirty-Foot Class," Jas. R. Benton is at home "With the Upland Plover"; John W. Hayes describes "Tenting in the Arid Land"; Ed. W. Savady contributes "Rail and Roadbird"; H. H. Smith tells how the natives go "Pirarucu Fishing on the Amazon"; Frank H. Risten explains "The Moose Call," while other articles on canoeing, rifle shooting, cycling and other reasonable amusements complete an excellent number.

*Editor CANADIAN MANUFACTURER.*

DEAR SIR,—It is quite clear that Sir Richard J. Cartwright has not been quite tamed by his more prudent associates, and that so far as lies in his power the manufacturers of Canada will be made to sweat blood in the coming revision of the tariff. We are now beginning to realize the effects of these threats, and the general contraction of business, both in importing and domestic manufacturing, is showing its effects in many lines.

As is well known the wholesale dealers continue to hold the reins to a considerable extent, and the purchase of many lines of goods is regulated by them. Just at this season many manufacturers place their samples on the market and from them selections are made for the coming season's trade. It is now well established that in many lines the fiat has gone forth that purchases are to be limited to the very lowest possible quantities, and in some cases Canadian makers are receiving the go-by altogether, the preference being given to foreign makers in the expectation that the tariff will be lowered so as to enable the foreign dealers to capture the Canadian market. It is also beyond doubt that samples of the goods prepared by Canadian makers for next season's trade are being sent to English and German manufacturers in order that they may be copied and prepared for importation into this country when the reduction in the tariff takes place next spring.

As has been intimated many of our wholesale houses are not placing their usual fall orders, and we may expect a gradual closing of many large manufacturing establishments throughout Canada. What that means to the laboring classes in our towns and cities can well be imagined, but I confess that it seems to me that with the experience of the United States in the same line before us, such a course as these theorists seem determined to follow will be unpardonable. One thing is certain that the history of many wholesale houses in Canada proves that no question of honor or patriotism or justice will prevent them from copying anything which has been invented or designed here and giving the work to foreigners. The story of the Cornwall blanket and the wincey fabrics is proof of this.

We suppose that it is the intention of our new rulers that the duties will be taken off all kinds of produce also, in order that we may get cheap bread, etc., although if we have not the chance to earn money it will be difficult for us to buy food or anything else.

GALT, August 26, 1896.

A MANUFACTURER.

**MANUFACTURERS AND THE BANKS.**

It is exasperating in the extreme for those who employ large numbers of men to be cut short in their banking facilities and at the same time see speculators maintaining the most cordial relations with bank managers. At a time when financial stringency makes it difficult for employers to collect enough funds weekly to pay their help, millions of cash have been locked up in one of our large cities by a small group of speculators who thought there was no limit to the capacity of a bubble and blew it until it burst. Complacent bankers advanced the funds needed, meanwhile curtailing manufacturers' and merchants' credits. These remarks are prompted by the experience of manufacturers whose appeals for regular banking accommodations have been unsuccessful. Among them are companies manufacturing seasonable goods, and whose materials and labor must be paid for several months in advance of sales. They have been told that ordinary conditions do not apply this year and to get money elsewhere if they can. Cases like these deserve better treatment, and banks should use their reserves to reasonable extent for the mitigation of hardships ruling in business circles.—Iron Age.

**"MADE IN GERMANY."**

A book has just appeared in England under this title which has created a sensation.

Englishmen have for some time realized in a general way that German manufacturers have successfully invaded British territory and captured a large part of the trade from under the noses of the local concerns, but this volume presents facts and figures which have come as a surprise even to those who have recognized to a dim extent the serious nature of the invasion.

The author in the early part of the work draws this picture of the universal extent of the evil—for such it must be regarded from the British standpoint:—

"Your investigation will work out somewhat in this fashion. You will find that the material of some of your own clothes was probably woven in Germany. Still more probable is it that some of your wife's garments are German importations. The toys and the dolls and the fairy books which your children maltreat are made in Germany; nay the material of your favorite newspaper had the same birthplace as like as not. Roam the house over and the fateful mark will greet you at every turn, from the piano to the mug on your kitchen dresser, blazoned though it be 'a present from Margate.' (Seaside resort). Descend to your domestic depths and you shall find your very drain pipes German made. You pick out of your grate the paper wrappings from a buck conignment and they also are made in Germany. You stuff them into the fire and reflect that the poker in your hand was forged in Germany. As you rise from the hearthrug you knock over an ornament on your mantel piece; picking up the pieces you read on the piece that formed the base, 'Manufactured in Germany,' and you jot your dismal reflections down with a pencil that was made in Germany. At midnight your wife comes home from an opera that was made in Germany, has been here enacted by singers, and conductors and players made in Germany, with the aid of instruments and sheets of music made in Germany."

This would be amusing if it did not contain the tragedy of foreign goods displacing domestic manufactures and throwing British workmen out of employment.

The book contains a mass of tables placing these facts in statistical array. Here is a partial record of German articles imported into Great Britain during 1895:—

Steel and iron goods.....	\$6,000,000
Woollen manufactures.....	5,000,000
Paper do .....	2,500,000
Musical instruments .....	2,500,000
Cotton manufactures.....	2,500,000
Tags .....	2,250,000
China.....	1,000,000
Prints and photos .....	500,000
Linen manufactures.....	450,000

In wire England imports more from German than she in turn exports to the rest of the world.

In addition the Germans are visiting the colonies and cutting out English goods, the figures in nearly every instance showing that German sales are advancing and the English declining. England, for example, does not now export any toys while Germany has raised her export sales in this one item to \$5,000,000 annually and so the list might be extended.

Mr. Williams, the author of this notable book, boldly states it as his opinion that protection is what England needs and that with a steady market at home she would be able to sell cheaper abroad and thus better hold her manifestly fast diminishing prestige.

**SOME STATISTICS OF ELECTRIC POWER.**

The economy and efficiency of electric power is forcibly demonstrated by the extent of the orders placed for power apparatus. We have been furnished by the General Electric Company's Power and Mining Department with some figures which illustrate not only the growth in the use of electric power, but also its economy and efficiency. These figures are represented in the unfluctuating horse-power instead of in dollars which, on account of the fluctuation in prices, offers no standard gauge. The figures taking cognizance of electric power apparatus only.

	1892.	1893.	1894.	1895.
Horse-power	13,719	18,762	42,379	46,727

In 1896 the missionary work of the past four years began to come to rapid fruition. From January 1st to July 31st, the total horse-power of the apparatus amounted to over 48,000 horse-power. During the same period in 1895 the aggregate orders amounted to 25,737 horse-power. From January 1st to August 18th, the total

amount of power apparatus ordered during 1896 was increased to the respectable figure 62,164 horse-power.—The Electrical Engineer.

IRON ORE ON THE MESABA.

The fact is that there is now too much ore in sight and it is too easy to mine it. The discovery of the Mesaba range has added hundreds of millions of tons to the visible supply. In the third year of its development it easily distanced all other ranges in shipments and its possibilities as a producer are now limited only by the carrying power of its railroads. What was considered an immense output of ore in former years on other ranges is considered only boys' play here now. Where hundreds of men were given employment in seasons past a steam shovel and thirty or forty men do the work now. If the owners of its mines were so disposed, and its railroads could handle the product, the Mesaba range could supply the entire demand for iron ore this year of 1896. This very season it will ship more ore than the entire output of the Lake Superior field ten years ago. The consumption of ore must wonderfully increase before there can be anything like activity in the iron industry. — The Mesaba Range.

GOVERNMENT BOND EARNINGS.

The Philadelphia Press says:— "The profits of holders of bonds of the United States have not been large during the last ten years. They have not only seen the value of their bonds depreciate in a marked way, but in no case have the bonds even brought in full three per cent. interest per annum on their average market price. A Boston Bank recently made up the following table showing the average yearly interest or earning capacity of the various forms of government bonds:—

Year.	per cent.	4½ s.	4's 1907.
1885.....	2.5395	2.6385	
1890.....	1.5955	2.3467	
1891.....	2.5860	2.5530	
1893.....	.....	2.9540	
1895.....	.....	2.7875	

HIGHEST AVERAGE EARNING CAPACITY.

1891.....	per cent. 2.536	.....
1893.....	" .....	2.954

LOWEST AVERAGE EARNING CAPACITY.

1889.....	per cent. 1.390	.....
1890.....	" .....	2.139

THE NEW FRENCH ATLANTIC CABLE.

It might have been thought that there were enough Atlantic cables to take care of the traffic now offering, and it has often been assumed that there would be no early addition to the number. But the French Government has now given powerful support to the latest plan for another cable from Brest to Cape Cod, as already noted in these columns, and as a spirit of patriotic independence appears to be at the bottom of the enterprise, we see cause for expecting that presently Emperor William will also be wanting an exclusive German cable starting from some point on the coast of the Fatherland and running directly to these shores. The sentiment at the back of the French scheme is not concealed. The cable is to be manufactured entirely on the soil of France: it is to be laid by Frenchmen and at least one of the laying ships is to be French; it is to be managed by Frenchmen and the French Government has guaranteed a substantial subsidy of \$160,000 a year for no less than thirty years.

It is, of course, to be understood that this cable will be owned and operated by the Compagnie Française des Câbles Télégraphiques, to which belongs the existing "P.-Q." (Pouyer-Quertier) cable, and that it will link into the West Indian and South American cables under French and Dutch control. The gross estimated revenue of the system is \$500,000, and as there is no appreciable new source of income of that amount, it is likely that other lines may suffer and that a new cutting of cable rates may ensue. The cable is to be working by next year, by which time perhaps an improvement in business may come to relieve the competitive tension.—The Electrical Engineer.

According to the Street Railway Journal for August the total number of miles of street railways in the United States is 14,470, of 1,219 miles are operated by horse power, 12,133 miles by electricity, 590, miles by cable, and 519 miles by miscellaneous power. The number of cars in use on all the roads is 48,182.

In Argentina a skilled workman now gets \$40 a month while he got \$40 before the depreciation of the currency, but the money in which he is paid has fallen 60 per cent., which means a net loss to him of 16 per cent. The same object lesson is presented in Colombia, where wages have increased 50 per cent. and the prices of food and clothing have advanced 180 per cent. The recent examples of the effect of cheap money on the interests of wage earners should be carefully studied by the laborers of the United States, whose votes are being solicited for free silver.—Bradstreet's.

The production of pig-iron in Great Britain in the calendar year 1895, according to statistics recently collected and published by the British Iron Trade Association, amounted to 7,895,675 gross tons, compared with 7,364,745 tons in 1894 and 6,829,841 tons in 1893. The increased production in 1895 over 1894 amounted to 530,930 tons and over 1893 it amounted to 1,065,834 tons. These figures indicate an improvement in the pig iron industry of Great Britain as compared with recent years. In 1893 the quantity of pig iron produced in the United Kingdom was very small, amounting to less than the average production during the previous ten years. As far back as 1880 Great Britain produced almost as much pig iron as it did in 1895.

As stated in the Manufacturers' Record last week, a Southern concern—the White-Crosby Co., of Baltimore—has secured the contract for the construction of electrical-power transmission circuit between Niagara Falls and Buffalo, N. Y. This line is intended to carry a current which will develop 25,000 horse-power in Buffalo from the generating station at Niagara Falls, which is twenty five miles distant. It is stated the contract amounts to fully \$500,000, and the line is to be completed by November 15th. The current will be conveyed in twelve bare copper cables, each cable being nine-sixteenths of an inch in diameter. The current will be transmitted under a pressure of 10,000 volts. Above the cables will be a lightning protector, consisting of three barbed fence wires, which will be grounded every 500 feet.—Manufacturers' Record.

A correspondent of the Philadelphia Press sums up the situation in the iron trade as follows: "Never, perhaps, in the history of our iron and steel industries has trade been in a more demoralized condition than at the present time. Furnaces are either blowing out or banking their fires all over the country; but few rolling mills or steel works are working on more than one-half or three-quarters times; and in many of the industries which are closely connected with the iron trade, and which consume large quantities of both iron and steel, work has ceased altogether and the plants are closed up tight."

The following table shows the gas prices being paid in a number of cities in the United States. In all of the cities, the gas furnished for heating purposes, other than natural gas, is illuminating gas.

	Ill. gas per 1,000 cubic ft.	Ill. gas for heat. per 1,000 cubic ft.	Nat. gas per 1,000 cubic ft.
*Cincinnati.....	\$1.00	\$1.00	.....
*†Cleveland.....	.80	*.80	.....
Toledo.....	.80	.80	.20
St. Louis.....	.90	.80	.....
Canisteo, N.Y.....	.50	.25	.....
Dayton, O.....	1.00	1.00	.25
Buffalo, N.Y.....	1.00	1.00	.25
Chicago, H. P'k.....	1.00	.72	.....
Detroit, Mich.....	1.00	.86	.30
Springfield, O.....	.....	.....	.25
Indianapolis.....	.....	.....	1.07

\*Net.  
†Of which eighty cents the company pays to the city five cents, making it net the company seventy-five cents per 1,000 feet.  
‡Meter measurement.

Officials of the New York, Ontario and Western Railroad Company have under consideration a plan for the establishment of a uniform passenger rate of two cents a mile between all points on its line and the consequent abolishment of mileage books.

Messrs. Pope & Morgan, Government live stock importers, have issued the following statement of the shipment of live stock from the port of Montreal up to August 31st, and also a comparative statement for the years back to 1891:

	Sheep.	Cattle.	Horses.
1896.....	41,393	63,938	7,255
1895.....	72,341	60,216	8,281
1894.....	60,977	55,382	3,174
1893.....	712	60,836	1,123
1892.....	15,703	74,612	1,323



## CHINESE INDUSTRIES.

Consul-General Jerinagan reports that the prospects of a new industry is now before the public at his station, Shanghai. It is called the Shanghai Oil Mill Company, which proposes to manufacture oil from cotton seed. It is the logical result of the cotton mills at Shanghai and the consequent stimulus given to the cultivation of cotton in China.

Since 1890 there have been forty-five new manufacturing plants established in Shanghai. They are all in successful operation, especially the cotton factories in which large capital is invested.

The area suitable for cultivation of cotton in China is almost as limitless as the supply of labor, and labor being very cheap, there can be no doubt that China will soon be one of the great cotton producing countries of the world, and that this product produced and manufactured in China, will command serious consideration in all calculations with reference to the cotton market. It will not be safe to discount the cotton of China, because it now grades low, for it is certain to improve. At present it is estimated that there are 3,000,000 tons of cotton seed, equal to 90,000,000 gallons of oil now yearly lost to commerce, which would find a ready market.

## A VALUABLE BUILDING MATERIAL.

The Government at Washington has just secured a special report from the United States consuls in Europe upon the manufacture of the recently invented substance, tectorium. Tectorium is a composition of iron and a gelatinous substance and is designed to take the place of glass for some uses, being translucent but not transparent. It is described as a substance that can be bent without being broken; is both tough and flexible; is not softened by the rays of the sun and is non-soluble; is not affected by severe cold; is a bad conductor of heat; is well adapted for roofs on account of its extreme lightness; when exposed to the sun it loses its original yellowish color in time and becomes harder and more durable; can be made by a very cheap process to imitate stained glass in such a manner that it cannot be recognized from the genuine article. It can be cut by shears, nailed to wood and transported without danger; can be repaired in case it is cut; does not break, is well adapted for factory windows and skylights, for hot houses, market halls, verandas, transportable buildings and for roofing.

The consular reports say it has been made in small quantities only and as a commercial quantity is yet in an experimental stage. But if it shall be found to meet the manufacturers' claims it will speedily rank with aluminum as an invention of process material. While it cannot serve the purpose of transparent windows, which enable dwellers within to see out as well as to admit light, it will completely solve the problem of lighting in closely built districts. The combined qualities of being penetrable by light, being flexible, capable of being shaped out, and being nailed, like boards or shingles, which naturally lead to the extensive use of it for roofs, floors and ceilings, the latter being ornamented after the manner of art and stained glass. Such use would add immensely to the health, comfort and convenience of those who spend most of their lives indoors.

The consular reports are clear upon the point that all the desirable qualities mentioned have not yet been demonstrated, but admit the existence of the substance in small quantities. In this age of invention the possibilities of almost any mechanical or chemical achievement is admitted, and as in the case of aluminum, the discovery of the process will open the way to cheap production and utility. Tectorium will most likely be added to the wonderful achievements of a wonderful century of progress and invention.—The Age of Steel.

## MINING SPECULATION.

The Winnipeg Commercial of August 31st, has the following:—A wave of mining speculations seems to be developing both east and west of us at present. Our advices from British Columbia intimate that some questionable mining enterprises have or are being floated there. During a time of mining activity there will always be some such enterprises floated, and it is not always easy to distinguish between sound and unsound concerns. This has created a mistrust for mining investments which has greatly injured and retarded many legitimate mining enterprises.

Mr. Kingsmill, president of the Ontario Mining Institute, in a letter to the president of the Toronto Board of Trade, recently enumerated several important points on which investors should satisfy themselves before parting with their money. These he states as follows:—

- (1) Whether the company has been incorporated, and where?
- (2) Whether the stock is paid up and unassessable; if not, what

is the extent of the liability of the holders of it? (This depends on the legislation of the place of incorporation.)

(3) Whether the company has procured a mineral grant for the mining locations.

(4) Whether any development work has been done; and if so, whether it is established that the location justifies further expenditure.

(5) Whether the incorporators are men worthy of the trust reposed in them, and such men as the investors would trust with the management of their affairs and the investment of their money.

(6) Whether money raised on the first sale of stock is to be devoted to development purposes or not; if not, a good reason for declining to accept shares would be afforded thereby.

Mr. Kingsmill comments further as follows:

"In my opinion no portion of promoters' stock should be placed upon the market until sufficient treasury stock has been disposed of and expended to demonstrate the value of the property.

"Of these points none is more important than the fifth. Trustworthiness is perhaps an indispensable qualification, but a mining manager must be equipped with more than honesty. No higher recommendation could be given a mine than the fact of its being in the hands of men of experience, and whose experience has been crowned with success. The investor will have a very convincing guarantee of a mine's merit, if he knows the promoters have given evidence of their faith by making large investments themselves. The warning regarding assessable and unassessable stock does not necessarily condemn the former, if the investor feels assured he is prepared for assessments and can await profits as slow to come as they may be enormous when they do come."

## BEET SUGAR IN THE MIDDLE STATES.

The American Agriculturist, of August 8th, very truly says in its leading editorial that "we have got to get out of the rut, to raise new crops," and a plank in one of the national platforms favors the production on American soil of all the sugar which the American people use and for which they pay other countries more than \$100,000,000 annually. Investigations have shown that the soil and climate of York state are favorable to the culture of the sugar beet, and it cannot be a vain hope which leads us to expect a large development of this valuable industry throughout this state within the next few years. The area of land necessary to produce the whole of the sugar consumed in the United States would probably not exceed five million acres, and it is therefore seen that those localities which are most favorable to its production should be selected for this purpose.

The experiments which have been conducted at agricultural experiment stations have demonstrated beyond any possible doubt the fact that beets of a reasonably high sugar content can be produced and in quantities as large if not greater than those grown in the best fields of Europe. In so far as the manufacturing is concerned, conditions are practically identical, although it must be admitted that in some parts of this country they are more favorable and in others less so than in Europe. Taking everything together, however, it may be said that the conditions of manufacture, including the abundance of fuel and its cheapness, and the other factors active in determining the cost of production, are as favorable here as in other parts of this country or in Europe.

## A MODEL AMONG MODELS.

'Twas Addison who wrote:

"'Tis not in mortals to command success,  
But we'll do more, Sempronius, we'll deserve it."

And yet some people and some things, considering the ease with which they achieve it, appear to come perilously near to the commanding of success. Among the institutions at whose beck success has joyfully approached is Toronto's Great Exhibition. For eighteen years it has annually grown larger and better, until now one almost wonders in what department it can be improved.

In this year of grace 1896, it presents many superlative attractions, among which is that model and modern marvel, Edison's Eidoloscope. It presents the greatest array of horses, cattle, sheep, pigs and poultry that have ever been gathered together within one enclosure. Among the pictures is Mr. F. M. Bell-Smith's portrayal of events attending the death and funeral of Sir John Thompson, for which the Queen herself honored him with a sitting. It presents an electrical theatre. It presents the most wonderful elephants the world has ever known. It presents a collection of cheese and butter that all the nations of the earth together could not surpass. It presents a hundred novel attractions,

such as have never before been gathered together in one place. It presents the resources and products of the greatest country under the sun—our magnificent Dominion. It shows a collection of minerals, cereals, vegetables and fruit, all gathered in Canada, that no other country could equal, let alone excel. It presents nightly a startlingly brilliant display of fireworks and a series of stupendous spectacles. Above all, it affords amusement, instruction and information for hundreds of thousands of hard-working people, for whom Toronto Fair provides more entertainment than can be got in any other city for ten times the expenditure it involves.

The Belgian Inspector-General of Mines for the Province of Hainaut has just issued his report on the iron and steel trades in that district during last year. The total production of pig amounted to 324,865 tons, consisting of 186,580 tons of forge pig and 138,275 tons of steel pig. The total shows a slight decline, as compared with 1894, the output of forge pig having declined 46,430 tons, while that of steel pig increased 45,135 tons. The average price obtained for the pig metal was last year only \$8.95 per metrical ton, a decline of about 30c. as compared with 1891. The number of workmen employed at the blast furnaces in this district last year was 970, their average daily wage being 2 f. 87c., or about 57c.—American Manufacturer.

Rails for Japan.—Mr. Iwahara, who placed the recent order for 9,000 tons of rails for Japan with American mills, has this to say regarding future business in rails between the two countries: I believe Japanese railway companies will place further orders for rails in America. Americans are able to underbid English rails, although English makers have been the principal sellers thus far. Japan cannot yet make her own rails because her iron mines are few and undeveloped. The chief of the Japanese Government railway inspectors will be here next month to study American roads with reference to construction, equipment and management and his report will have an influence in determining future railway trade with Japan.—American Manufacturer.

The arrival is recorded this week at Philadelphia of a British schooner from Newfoundland with a cargo of 150 tons of chrome ore. This ore is from some newly discovered mines thirty miles northeast of Cape St. George, N.F., and has been brought as a sample. If found equal to the ore hitherto brought from South America, it is said that arrangements are to be made for working the Newfoundland mines on a large scale and shipping the ore regularly to Philadelphia.—The Manufacturer, Phila.

“Japan’s Diet voted \$45,000,000 for the construction of railroads, telegraphs and cables at its last session, and \$17,000,000 for the construction and purchase of war materials and ships. Since January, 1895, \$600,000,000 has been invested by Japanese in banks, railroads and other companies.” The above figures we quote from an exchange. The purchase, in Philadelphia the other day, of a cargo of Alabama pig iron to take to Japan to make into machinery for manufacturing machinery is an evidence of Japanese business shrewdness. A policy that makes us “hewers of wood and drawers of water” for Japan isn’t much of an American policy.—Daily Financial News.

After an exhaustive series of tests, the Minister of War in France has decided that aluminium is the best material for army utensils. All the camp equipments in the French army will be replaced by those made of aluminium. The cost will be enormous, and the change would use up all the aluminium in sight if it were made at once. For this reason the new material will be used in the equipments of only two army corps at first. Gradually one corps after another will be supplied, until the whole army will be equipped. Aluminium equipments were used in the Madagascar campaign, and stood the test splendidly. Besides being very light, they showed no signs of wear, and are easily cleaned.

The total consumption of sugar in the entire United States in 1895 was 1,949,724 tons against 2,012,714 tons in 1894, 1,905,862 tons in 1893, and 1,853,370 tons in 1892. The decrease in 1895 is 62,970 tons, 3.12 per cent. against an increase in 1894 of 106,812 tons, 5.09 per cent. The consumption in 1895 consisted of 324,506 tons of domestic sugar, 30,000 tons of domestic beet sugar, 300 tons of sorghum sugar, 7,500 tons of maple sugar, 15,000 tons of domestic manufactured molasses sugar—a total of 377,306 tons of United States production—and 1,460,573 tons of foreign cane, 33,809 tons of foreign beet sugars, and 28,036 tons of foreign refined sugars—altogether 1,572,418 tons of foreign production. The total meltings of our refineries in 1895 were 1,738,744 tons. Of this amount the American Sugar Refining Company manufactured 1,330,744 tons, or 76.6 per cent., and the independent refineries 408,000 tons, or 23.4 per cent.

The North-Eastern Lumberman, August 22nd, reports that last week over 10,500,000 feet of deals, etc., cleared from New Brunswick for British ports, and there are now half a dozen steamers loading, resulting in an advance on deals 50 cents. A cargo of nearly 1,000,000 feet of deals, etc., cleared this week from St. John, N.B., for Buenos Ayres, and a mixed cargo of 275,000 ft. for Tenoriffe. Shipments for the past fortnight from New Brunswick include several cargoes for South America, one for France, as well as a number for United Kingdom. The imports of Canadian hewn and sawed lumber into Great Britain for the six months ending June 30, 1896, were 303,521 loads as compared with 172,200 loads during the same time in 1895. For July, 1896, the imports were 171,463 loads; in July, 1895, 94,639 loads. So profitable has this season’s trade been, that one large exporter in St. John is said to have cleared \$80,000 on his operations since commencement of the season. Some of the shipments from that port are by immense iron steamers, in some instances taking 2,500,000 feet at a single cargo. These steamers usually lie out in the stream and are loaded by lighters from the saw mills. Some of these lighters carry 100,000 to 150,000 feet each. The South American cargoes go mainly by sailing vessels.

The Lumberman advises that all the cargoes of spruce arriving in Liverpool are going into consumption as fast as landed. It gives the annual value of timber imported into the United Kingdom, nearly \$90,000,000, and of minor forest produce \$40,000,000.

The Canada Lumberman reports that the steamer Rosefield cleared from Clutham, N.B., on September 10th, for Barrow-on-Furness, with a cargo of 3,027,003 feet deals and ends.

Power and Transmission says that a report on the railways of Japan, lately issued by the British foreign office, shows the total mileage of railways open to the public on March 1, 1895, was 2,118, of which government lines amounted to 580, and private lines to 1,538 miles.

The production of coal in India is steadily increasing. In 1885, 1,295,000 tons were mined, while last year the product was 3,167,000 tons, about 2,500,000 tons of which were from the Bengal collieries. The efforts to develop mineral oil wells have not been very successful.

One of the singular features of the spruce trade this season is the fact that while many of the mills in the Maritime Provinces are employed in sawing lumber for the New England and New York markets, United States mills on the Penobscot have recently contracted to supply several millions of spruce deals for the west coast of England, thus crossing on their way to Europe, the shipments from Nova Scotia to American markets.

Philadelphia is shipping an entire locomotive-building plant to Russia for the Sarmova works at Nijni Novgorod, a concern which employs 5,000 hands in making cars, machinery, steamboats, boilers and locomotives. The plant costs \$500,000.

The Economist gives the following summary of failures in the United States during the first seven months of 1896:—

Lumber.....	\$9,200,000
Woolens.....	4,600,000
Machinery.....	3,500,000
Iron.....	3,200,000
Printing.....	2,700,000
Clothing.....	2,500,000

Paper Mill says:—There is no decline in the demand or price for spruce pulp wood. Many lots of spruce logs intended for the sawmills have been purchased for pulp and paper mills at far better prices than could be netted if sawed into lumber. Paper is king now. The supply of all other varieties of lumber is greater than the demand. On the other hand there is no overstock of ground wood pulp or newspaper.

Extract from the recent speech of General Harrison at Carnegie Music Hall, New York:—So much for the power of the President. As regards the limits of the power of the government, as a whole, General Harrison said that it can fix its money unit. It may declare by law what shall be the relative value of an ounce of gold and an ounce of silver, but it cannot make the last declaration good. It is unquestionably fully within the power of the government to bring this country to a silver basis by coining silver dollars and making them legal tender. This government may say, “You shall take one of these dollars in discharge of any debt owing to you for a dollar, notwithstanding you may have loaned gold dollars,” but it cannot say and enforce the decree that one ounce of gold is the equivalent of sixteen ounces of silver. Not only that, not France and England and Germany can do that unless the markets respond.

The Record gives the following particulars as to the cargo and speed records of Upper Lake propellers:—Iron ore, "Coralia," 4,813 gross or 5,391 tons net; draft 16 feet 1½ inches. Grain, "Queen City," 205,500 bushels of corn, draft 16 feet 7 inches. Coal, "S.S. Curry," 4,535 net tons. Speed, "Owego," Buffalo to Chicago, 889 miles, in 54 hours and 16 minutes, 16.4 miles an hour.

The Electrical Engineer, New York, August 26th, has an interesting illustrated article on an electric railway up Mount Salve, Geneva. The road is named Chemin de Fir Electrique du Salve. The visitor leaves Geneva by the ordinary trolley line to the outskirts of the city, then exchanges to a clumsy tramway, and then embarks on the mountain electric road to the top of Mount Salve, 4,000 feet above Geneva. The electric part of the road is about four miles in length, single track and turn-outs, and of twin lines built so as to form a loop, giving the passengers alternate routes. It was built by the Compagnie de l'Industrie Electrique of Geneva. The system used is that of the third rail, the contact apparatus being placed outside the track, and the current-carrying rail being placed a few inches above the ground for insulation, on short posts. The gauge is one metre (39.37 inches). Between the rails runs a rack rail, and where the grade is extreme the rack is double, the teeth being set so as to give the car a two-fold grip.

The Minnesota Iron Company has already enough ore in stock pile for all shipments this season, and mining operations are now being carried on simply to keep the married men at work.

During the last fiscal year the passenger earnings of the steam railroads of the United States decreased \$33,103,378, while the freight earnings increased \$30,502,549. It is asserted that a very large part of the decrease in passenger earnings is due to the competition of electric railways. It would be interesting to know the exact figures.—Electrical Review.

Private advices from Buffalo to the Boston News Bureau are to the effect that the New York Central road has recently signed a contract with the Niagara Falls Power Company to send power from the power company's plant around the city of Buffalo via that company's "Belt Line." This will cause all the factories anticipating building near Buffalo, in order to secure the benefits of cheap power, to locate on the New York Central tracks, and the contract is considered a valuable one for the New York Central road.—Electrical Review.

Advance sheets of Poor's Manual for 1896 give the total miles of road at the close of the year as 180,955. The share capital was \$5,182,121,909, an increase of \$106,492,929, or 2.1 per cent. The funded debt of all lines amounted to \$5,640,942,567, an increase of \$35,166,903, or .63 per cent. Other forms of indebtedness amounted to \$418,505,092, an increase of \$35,577,258. The main results of working show the following changes: Miles operated increased 1.66 per cent.; tons of freight moved gained 11.72 per cent., and freight mileage 7.72 per cent. Passengers carried decreased 6.73 per cent., and passenger mileage 7.05 per cent. Freight earnings increased 6.18 per cent., passenger earnings decreased 5.21 per cent. The total gross earnings of the roads

were \$1,093,139,605, an increase of \$25,496,092. Net earnings were \$323,196,454, an increase of \$5,439,055. Earnings per ton per mile were .839 per cent. against .864 per cent in 1894. The street railway lines in the country foot up 15,596 miles, an increase of 3,514 since 1891. The capitalization representing all but 530 miles amounts to \$828,547,285 in stock and \$525,949,928 in bonds, an average of \$87,809 per mile of stocks and bonds, against an average of \$60,188 per mile on steam roads. The earnings of 77,269 miles of trunk line roads last year were 817 millions, compared with 807 millions in 1892 and 923 millions in 1893. Net earnings were 251 millions against 247 millions in 1894 and 279 millions in 1893. The interest per cent. on bonded debt of this mileage average 4.89 per cent. against 4.88 per cent. in 1894 and 4.75 per cent in 1893. The dividends paid amounted to 1.95 per cent. on the share capital invested compared with 2.23 per cent. in 1895, 2.40 per cent. in 1893, 2.43 per cent. in 1892 and 2.46 per cent. in 1891. As far as dividends are concerned, the average return on share capital was considerably less than in any recent year.—Financial News, New York.

It is said that the new transatlantic steamer Pennsylvania, which the Hamburg-American line is having built at Belfast, Ireland, will have a dead weight carrying capacity of between 13,000 and 14,000 tons. Her displacement will be 20,000 tons. She is 568 feet long, sixty-two feet beam and forty-two feet depth. Engines will be quadruple expansion of 7,000 horse-power, and the ship is expected to attain a speed of fourteen to fifteen knots. She will be launched in October and will ply between New York and Hamburg.

# ROBIN, SADLER & HAWORTH

Manufacturers of

## OAK TANNED LEATHER BELTING

TORONTO AND MONTREAL

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



The export of bicycles from the port of New York alone, for the month of May, amounted in value to \$220,176; of which, \$109,965 went to England; \$30,208 to Germany; \$11,058 to Australasia and \$10,263 to France; the balance being widely distributed all over the world.

The Joseph Lucas and Sons Manufacturing Company, of Birmingham, England, have organized an American stock company under the name of the Joseph Lucas & Sons Company, which will proceed to manufacture their bicycle lamps in this country. It is stated that the plant will be located at Hartford, Conn., in a building now being erected by the New Departure Bell Company for joint occupancy by the two concerns.

What is said to be the longest train of cars ever hauled by a locomotive was sent over the Lehigh Valley Railroad a few days ago. It consisted of 240 coal cars, loaded, and was pulled from the mines along the Lehigh Valley road to Perth Amboy, N.J.

The Marine Review, Cleveland, says that the production of pig iron of all kinds throughout the United States has been reduced to less than 150,000 tons a week as compared with 217,000 tons a week in November last. It says that one great thought which Mr. John D. Rockefeller has in his mind is to provide through his varied interests, constant employment for 20,000 men.

In a circular just issued the American Electric Heating Corporation, Boston, announces that it has a laboratory established for working out problems of new applications of electric heating, and calls attention to the opportunity for electric heating in many

branches of industrial work. In many establishments a small amount of heat is required for raising the temperature of special tools, fluids or other elements pertaining to the manufacture of different products. In many of these cases electric heating is not only practical, but far superior to the methods in vogue, as well as being much more economical. In other cases it may cost more, but prove to be much more effective on account of cleanliness and absolute control of the heat, ease of application, safety, etc., so that there is no comparison with other methods. The advantages of electrically heated smoothing irons are clearly presented. The continuous steady heat permits of an increased output per operator, varying from thirty-three to fifty per cent. This alone, it is claimed, more than pays for the current supplied in industrial establishments. A little pamphlet which accompanies the circular describes and illustrates the electric cooking and heating apparatus manufactured by this company.

A Philadelphia firm of scrap dealers has bought the old Cordelia Furnace in West Hempfield township, Lebanon county. It will be torn down and disposed of as scrap. The furnace was built in 1848. During the war its product sold at \$72 per ton. The Cordelia is the sixth furnace in the Columbia region which has gone into the scrap pile.—The Manufacturer, Philadelphia.

The Queen City arrived at South Chicago Monday evening of last week, at 5.30 with 4,109 gross tons of iron ore. Twenty-seven hours later she was being towed down the Calumet with 5,796 tons of grain aboard. The handling of over 10,000 tons of freight in less than twenty-four working hours is said to be without precedent.

The Iron Age for August 20th says that a mill in the Central West has taken a further order for steel rails for export to Japan, the quantity being 9,000 tons. This carries the export sales of rails for this year up to about 45,000 tons.

Dr. Nansen, the Arctic explorer, reports that his staunch ship, the "Fram," withstood the strains of the ice floes with perfect success. She was equipped with an electric light plant run by a windmill. The plant fulfilled every expectation. The lowest temperature Dr. Nansen found was 62 degrees below zero.

Appropos of German trade rivalry, the recently-published returns of imports and exports for the first half of the present year show that the business of that country is still increasing. Taking the mark at one shilling value, the imports amounted to £112,070,960 and the exports to £86,947,266, the increase of the former over the first half of 1895 being £8,700,250 and of the latter £7,989,850. To compare these with our own figures, we imported during the six months to the value of £216,481,063 and exported £119,002,722, an increase in the former of £12,793,336 and in the latter of £12,885,206.—Textile Recorder, Manchester.

In a recent address Mr. McKinley said: "The best consumers for the American farmer are those at home. They consume eighteen times as much of the products of the American farm as the foreign consumer. Their earning power has been cut off in the past two years, so that it makes our home market less desirable. Prosperity of manufactures is inseparable from the prosperity of agriculture."

# The Royal Electric Co'y

MONTREAL, QUE.

Western Office.... TORONTO, ONT.

## S.K.C. Two-Phase Alternators

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

Highest Efficiency

Best Regulation

Slow Speed

Least Attention



No Collector

No Moving Wire

No Exposed Parts

No Compounding

S.K.C. 50 Kilowatt Two-Phase Generator

# CAPTAINS OF INDUSTRY.

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

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

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

A. Frank's saw mill at Wellandport, Ont., was burned September 2nd. Loss \$2,000.

R. P. Roblin is erecting a 30,000 bushel elevator at Austin, Man.

Winchester, Ont., is agitating for an electric light plant.

J. R. Booth, Ottawa, will put two arc machines in his electric light plant at his saw mill.

The Owen Sound Electric Light Company, Owen Sound, Ont., will enlarge their plant to open power.

The Port Elgin (Ont.) brush factory is having an unusually busy season. The number of hands employed has been largely increased of late, and there are more orders waiting to be filled than at any previous time in the history of the factory.

Mr. Wilson McCredie's saw mill in South Dorchester, Elgin County, Ont., was burned August 27th. Loss \$3,000.

J. Martin's barrel factory, Gaspereaux, N.S., was destroyed by fire recently. Loss \$2,000.

The superstructure of the Meadowvale bridge over the river Credit is being erected by the Central Bridge and Engineering Co., Peterborough, Ont.

M. B. Berry has removed his blanket mill from Quebec city to Lorette, P.Q.

The new wrapper factory at Woolstock, N.B., will soon be in operation with sixty hands at work.

The Prescott Electric Light Company, Prescott, Ont., contemplates adding to their plant.

The total output of the British Columbia canning factories this season will be about 550,000 cases.

Messrs. Rider & Co., Brampton, Ont., veneer manufacturers, have recently added some new machinery to their factory and are shipping considerable quantities of their product.

Deloraine, Man., is to have two new elevators this fall, says the Times. Mr. Mann, of Souris, has secured a site, and another site has been secured by the Lake of the Woods company. These two elevators, together with the mill, will about double the storage capacity for grain in Deloraine.

Mr. Hughes is building a flour mill at Deloraine, Man. The mill is to be completed early in November.

Last week J. W. Howry & Sons, of Fennell Fall, Ont., closed a contract with the Skillings, Whitneys & Barnes Lumber Company, of Burlington, Vermont, for 34,000,000 feet of lumber. The price is given as \$13.50 per thousand.

Bids have been invited by the British admiralty for the construction of two of the five new battleships for the English navy which it has been decided to have built by private contract. They are to be 14,000-ton vessels, with armor of a maximum thickness of six inches and Belleville boilers, which are expected to develop 12,500 horse-power under natural draft.

A Beerholm cable says: "A French decree just issued and in force at once has practically destroyed the bounty on flour exported, and until the law is changed there will be very little flour exported to England."

# MICA BOILER and STEAM PIPE COVERING

## WHAT IS THOUGHT OF IT!

To whom this may concern.  
**PENKTAUQUISHIK, March 21th, 1896.**  
 This is to certify that we have used some of the Mica Pipe Covering on one of our main pipes in the tannery during the present winter and must say that it has given the very best satisfaction, there is no heat that escapes from the outside covering, it hardly being warm, in consequence there is very little condensation in the pipes. We can cheerfully recommend it to any parties wanting pipe coverings.  
 Yours truly,  
 (Sgd.) **BRETHAULT BROS. & HALL.**

**PETROLIA, April 22, 1896.**  
**Messrs. THE MICA BOILER COVERING CO., Toronto, Ont.**  
 GENTLEMEN:—In regard to the Mica Pipe Covering on which you have asked us to report, we would say that we placed this covering on the steam pipes in our block of stores and offices last winter and at once noticed the larger increased heating capacity of our plant and a great saving in fuel. The covering was put on by our own men without any difficulty whatever.  
 Yours faithfully,  
 (Sgd.) **VANTUYL & FAIRBANK.**

**TORONTO, December 3, 1895.**  
**THE MICA BOILER COVERING CO., City.**  
 GENTLEMEN:—We have tested the Mica Covering which you put on the bow of the Dredge "Atlantic" in September last and find that it has effected a saving of about one-half ton of coal per day, or about twenty-five percent. We believe it is the most durable covering for marine boilers in

the market, and will stand the wear and tear incidental to such boilers. We consider it a valuable improvement over the cement coverings owing to the convenience of removal and replacing same, for inspection or repairs to boiler.  
 Yours truly,  
**TORONTO DREDGING & CONTRACTING CO.**  
 (Sgd.) **F. DOTY.**

**THE TORONTO FERRY COMPANY, (LIMITED),**  
 North of Scotland Chambers,  
 15 King Street West,  
**TORONTO, December 22, 1895.**

**THE MICA BOILER COVERING COMPANY, Toronto.**  
 GENTLEMEN:—I have much pleasure in certifying that the Mica Boiler Covering placed by your company on the boiler of our steamer "Thistle" has proved satisfactory in every respect and has fully proved every claim you made for it. I find that since it has been put on, the consumption of coal has been reduced no less than twenty per cent. My chief engineer's report of the Mica Covering is very favorable, not only for its extraordinary coal saving qualities but also on account of the ease with which any part of it can be removed and replaced without injury. After the sea-on's work I find the covering in perfect condition, and from the flexible nature of it and its liability to crack or crumble I anticipate a very long life for it.  
 All the steam pipes at our Electric Power Station at Hanlan's Point are covered with the Mica Covering and my engineer there also reports it as a first-class piece of work. From my experience of the above covering during the past season, I have no hesitancy in pronouncing it to be the best that has come under my notice.  
 Yours truly,  
**W. A. ESSON, Manager.**

Full Particulars, Reports of Trials, Prices, Testimonials, etc., from  
**The Mica Boiler Covering Company (Ltd)**  
**9 JORDAN STREET, TORONTO.**

R. Dunn & Son's saw mill at Arkona, Ont., has been destroyed by fire.

Work has been begun on the Amhurst, N.S., waterworks system.

The committee of citizens and the city council at Moncton has recommended that the city donate \$1,000 to the Johnson Cold Storage Company for a site for a building, give free water and light and exempt from taxation.

The Bennett Furnishing Company, London, Ont., will erect a two-storey brick addition to their factory on Rectory street, at a cost of \$2,000.

A large quantity of hemlock and elm timber is being cut at the Ruffean mill, Lindsay, for use on the Lakeland section of the Trent Valley Canal.

According to the Chatham Planet, Mr. Archd. Lamour, pork packer, has decided to erect a building and go into the cold storage business himself. The plans have been prepared.

Negotiations are still pending for the conversion of the Hamilton & Dundas railway into an electric road.

Large quantities of asbestos are now being shipped from the Thedford mine in Quebec to England.

The following mining companies have been organized in British Columbia: The Pictou Development Syndicate, Nelson, capital stock \$15,000; the Phoenix Consolidated Mining Company, Sandon, capital stock \$750,000; Delacoe Gold Mining Company, Rossland, capital stock \$1,000,000; the Lordeau Mining and Development Company,

Revelstoke, capital stock \$500,000, the British Columbia Consolidated Gold Mining Company, Rossland, capital stock \$1,000,000; the Consolidated Sable Creek Mining Company, Vancouver, capital stock \$1,500,000; the Yale Gold-Copper Mining Company, Rossland, capital stock \$1,000,000; and the Standard Gold Mining Company, Vancouver, capital stock \$1,000,000.

The following is a list of the manufacturers who are exhibiting at the Dominion Furniture Exposition which opened on the 3rd inst., at the Caledonia Rink, Toronto:—H. Krug, Berlin; the Gibbard Furniture Company, Nanaimo; the Anthes Manufacturing Company, Berlin; Porteous & McLagan, Stratford; the Simpson Company, Berlin; Watson & Malcolm, Kincairdine; American Rattan Company, Toronto; the Anderson Furniture Company, Woodstock; D. Hehner & Company, Berlin; Gold Medal Furniture Manufacturing Company, Toronto; Knechtel Furniture Company, Hanover; Synder, Ross & Company, Waterloo; G. Gale & Sons, Waterville, Que.; W. Taylor Bailey, Montreal; Delaney & Company, Toronto; Joseph Orr, Stratford; Zoellner & Company, Mount Forest; D. Scharlach, Berlin; H. R. Ives & Company, Montreal; North American Bent Chair Company, Owen Sound; and the Kippert Furniture Company, Waterloo. The Exposition will remain open until September 12th, so visitors to the Toronto Fair may have an opportunity of visiting the Furniture Exposition.

The latest catalogue sent out by the Gouibert Manufacturing Company, Fixed Water Heaters, 14 and 16 Church street, New York, is an unusually handsome piece of work.

The Roche Perceé Coal Company Ass., N.W.T., have a large staff of men at work getting in their railway track to their mines. They are expending \$6,000 on railway and buildings in addition to former expenditures. This company is building adequate offices, store, stable, boarding houses, in addition to putting in tipples and other plant to provide for an output of 200 tons per day.

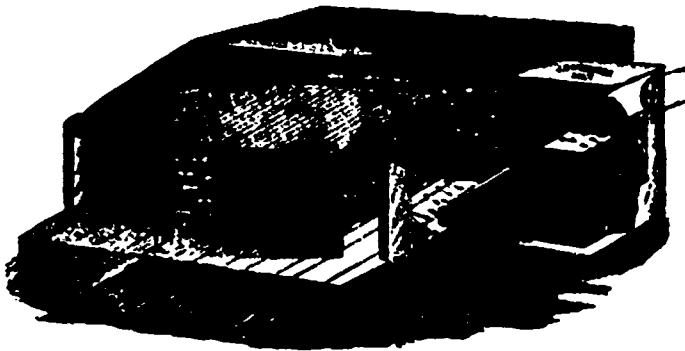
The north shore of Lake Superior has been added to the gold producing districts of the world. The Empress mine, Jackfish bay, Lake Superior, has turned out the first gold brick from the new mill recently erected at the mine. The Empress was organized last December under the Ontario mining laws with \$100,000 capital. The owners of the mine took \$50,000 paid up stock for the property; \$40,000 of the remainder was issued at fifty cents, putting \$20,000 in cash in the treasury and before this amount is expended in mining buildings and mill the mine is producing more gold bullion than will pay working expenses of the mine and mill.

The following foreign mining companies have been registered in British Columbia: The Golden River Queneille, 6 Great Saint Helens, London, England, capital stock £350,000; Big Valley Creek Gold Mines, 6 Great Saint Helens, London, England, capital stock £125,000; Price-Eaton Company, San Francisco, California, capital stock \$500,000, and Kootenay Consolidated Mining Company, Everett, Washington, capital stock, \$1,000,000.

The B. Greening Wire Company have lately added several sizes to the coil chain made by them. These chains, made of cold drawn steel, are both light and strong.

## McEachren's System of Drying, Heating and Ventilating

Under Recent Patents.



In construction and process of drying this Kiln differs widely from all others in use. They have given entire satisfaction where all other Dry Kilns have failed. They will season More Lumber in a Given Time, with a given heating surface and a given quantity of steam than any other Kiln now in the market. Their construction and mode of operating is such as to season Lumber without Case Hardening, Checking or Warping. They work equally well on Lumber Right from the Saw and on Air Seasoned Lumber, the only difference being that one takes a little more time than the other. By a Peculiar Arrangement Found Only in Our Dry Kilns we extract the moisture from the heated air, return it through the heater again and thus preserve the heat passing from the kiln instead of wasting it as is the rule with all other Blast Kilns.

Ventilating Fans, Shaving Fans, Pressure Fans, all sizes.

### BLAST HEATING SYSTEM FOR LARGE BUILDINGS

Little Wonder Boiler and new Hot Water Heating System, half price of usual hot water system. STEAM BOILER CLEANERS, Feed Water Heaters covered by Patents of recent date in Canada and United States.

Second-hand Heaters and Fans made by the best American Manufacturers, only in use a short time, for sale at great reduction. Send for Illustrated Catalogue and Prices to

McEACHREN HEATING & VENTILATING CO.

GALT, ONT.

## 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 Room area with exhaust steam at mere nothing in the way of cost, compared with old way. Your arrangement is very simple and easily managed, being a money saver in operation. We are able, with the Kiln you sent us, to dry soft woods in three days, and hardwoods in five days. That's good enough for anyone." SETH HOOK, Sayre, Penn.

Send for Catalogue.

## Buffalo Forge Co., Buffalo, N. Y., U.S.A.

Sold in Toronto, Ont., by H. W. Petrie.

Brantford, Ont., by Canadian Machinery & Supply Co.

Montreal, Que., by Canadian Machinery Agency.

Chicago Store, 123 and 24 West Randolph Street.

New York Office—26 Cortland Street.

The Selater Asbestos Manufacturing Company's premises, Montreal, were damaged by fire on August 29th.

Messrs. Payan and Ducloux, St. Hyacinthe, P.Q., are building an addition to their tannery. They also contemplate the purchase of a new and more powerful engine than the one they are now using.

The large saw mill of D. & J. Ritchie, at New Castle, N.B., was burned August 29th. The barque Valona, loading at the wharf, was considerably damaged as well as the wharf and lumber on it. The loss is between \$40,000 and \$50,000. Four hundred men are thrown out of employment.

John M. Mulkin's shingle mill at Indian Head, N.B., was burned on August 29th. Loss several thousand dollars.

The City Council and Board of Trade, Kingston, Ont., have named special committees to discuss schemes by which an elevator with a capacity of a hundred thousand lbs can be erected there.

Messrs. A. C. Miller & Co., Picton, Ont., will establish a canning and evaporating factory at Harrowsmith, Ont.

The eighty h.p. boilers for the new collegiate institute at Hamilton, Ont., were made from Hamilton Smelting Works iron. Messrs. John Inglis & Son, of Toronto, recently made a twenty one ton wheel of this iron for the Toronto Electric Light Company.

Letters Patent, under the Ontario Joint Stock Companies Act, have been issued by which the Pipestone Gold Mining Company, an English concern, is authorized to do a mining business in Ontario.

The steam saw mill of J. G. Simonson, at Centreville, N.B., was burned last week, together with a quantity of lumber. Loss \$3,500.

The saw mill of Arthur Castonguay, at Notre Dame, Que., has been destroyed by fire.

J. T. Simpson, of Moose Jaw, N.W.T., is putting a saw mill in operation at that place.

D. A. Jonah, of Petitediac, N.B., has made extensive improvements in his furniture factory.

The Kootenay Lumber Co. is erecting a saw mill at Lardeau, B.C. The mill will have a capacity of 20,000 feet per day.

A 20-stamp mill is being erected at the Foley mine, Rainy River, Ont., a saw mill of a daily capacity of 15,000 feet of lumber, hoisting engine, pumps and six air drills have been added, and a cyanide plant is also to be put up.

According to the Woodstock papers, Jas. Hays & Co., a firm which employs some seventy-five hands in manufacturing sewing machine tops, have been notified to vacate the premises leased by them by the middle of this month, and Mr. Hays in an interview admits that if they cannot succeed in immediately procuring other premises in that town, they are liable to remove their business and plant to some other town. They expect before long to employ over 100 hands and add machinery for a different line of manufacturing, concerning which Mr. Hays made a recent trip to England.

The Hygienic Ventilated Shoe Company, of Toronto, is being incorporated with a capital stock of \$50,000.

E. Bergeron has commenced operating a shingle mill at Clarence Creek, Ont.

Messrs. Brodie & Co., Hespeler, Ont., have recently added machinery for making beavers.

Messrs. Leitch & Turnbull are putting in a hydraulic elevator at (No Brockville, Ont.) asylum.

Mr. P. S. Buzzell's saw mill at Cherry River, P.Q., was destroyed by fire August 25th.

A storehouse in connection with the Stratford branch of the Imperial Oil Works was destroyed by fire August 19th. There were some 100 barrels of oil, benzine and gasoline in the building which were destroyed.

Stratford, Ont., flax millers estimate that they will handle 1,200 tons this year.

J. O. Gilbert & Son, Bishop's Crossing, Que., are placing a new 100 h.p. engine and boiler in their water mill, six miles from that place, preparatory to cutting about two million feet of lumber for Cross & Ewing the coming winter.

The result of the vote on by-law at Listowel, Ont., Aug. 21st, for electric light and waterworks was a majority of 18 in favor of the by-law.

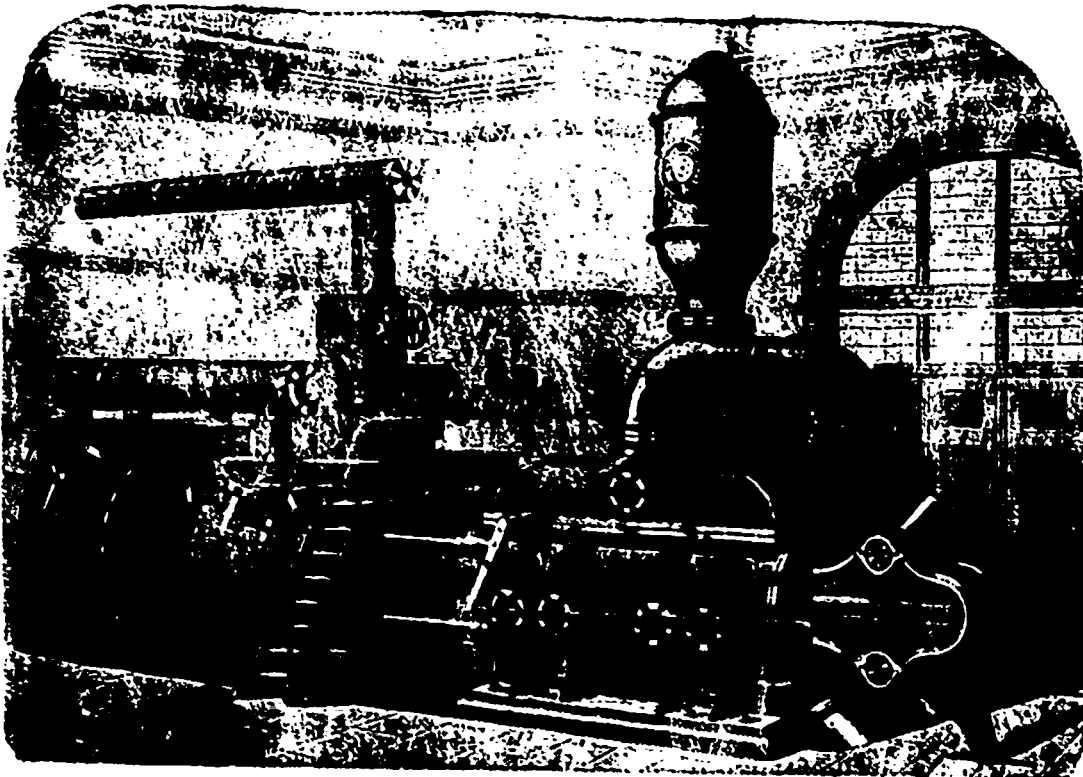
Young Bros. Company, Ltd., Parrsboro, N.S., have sold their property at Halfway River and Newville, including timber land, steam mill and complete lumbering outfit, to W. W. Black of Amherst, N.S. The price is said to be \$40,000.

Mr. J. L. Squire, Norwood, Ont., is building a foundry and machine shop.

# JOHN McDOUGALL

CALEDONIAN IRON WORKS,

MONTREAL, QUEBEC



General Agents  
in Canada for

THE FAMOUS

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Pumps

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Machinery

Condensers

AND

Water Works

Supplies

WORTHINGTON PUMPS ARE UNEQUALLED FOR EFFICIENCY AND ECONOMY

The Hamilton Biscuit Company's works were damaged by fire August 30th. Loss on buildings, stock and machinery about \$12,000.

Mr. Peter McEwan's salt works, dairy salt mill, saw mill, stave and heading factory at Salford, Ont., were destroyed by fire August 30th.

The Jencks Machine Company, Sherbrooke, Que., have orders for five plants of mining machinery for British Columbia mines, the total amount aggregating over \$100,000.

The St. Jerome Power and Electric Light Company is being incorporated with a capital stock of \$50,000 to take over the electric plant now being operated at St. Jerome, Que., together with the water power and mill privileges. Head office to be at Montreal.

The Granite Knitting Mills, St. Hyacinthe, P. Q., have put in a new fifty-one inch water-wheel.

The Norfolk Knitting Mills, Port Dover, Ont., are running over-time.

The quantity of pulp now produced in Canada, is estimated at 170 tons per day, of which on the average 100 tons are exported.

H. A. Best has bought the Gilmour Paint Works, Bedford, Que., and has commenced manufacturing.

The Boston Rubber Company, of Montreal, is being incorporated with a capital stock of \$200,000.

Alfred Lapointe has commenced the manufacture of nails, and also the manufacture of blouses at Stanfield, Que.

A large pump was placed in the oil well on the Finlay farm lately struck by the Pelee Gas and Oil Company, Pelee Island, and by an actual test five barrels an hour were pumped.

It is reported that Mr. Thos Parker, proprietor of the Port Credit Pressed Brick and Terra Cotta Co., is negotiating for the purchase of the works of the Toronto Pressed Brick Company at Milton, Ont.

The Gutta Percha and Rubber Manufacturing Company will supply 1,200 feet 2½ inch "Maltese Cross" fire hose, without couplings; 1,000 feet 2½ inch "Eureka"; 500 feet 3 inch "Eureka," and 1,150 feet 2½ inch "Paragon," and the Canadian Rubber Company will supply 500 feet 2½ inch "Maple Leaf," to the Toronto Fire Department.

The furniture manufacturers of Ontario will hold a convention at Toronto in the Mutual street rink Sept. 9th at 2 o'clock.

Murphy's saw mills at Murphy's Siding, five miles from Owen Sound, Ont., were set on fire by lightning August 23rd, and the mills, together with a millon and a half feet of lumber, logs, ties etc., were entirely consumed. Loss \$25,000.

World & Howard's saw mill, Powassan, Ont., was burned recently. Loss \$1,000.

Messrs Shaver & McDonald purpose building a saw mill near the O. A. & P. S. Ry. station, Eganville, Ont.

The Otto Higel Company, Toronto, is being incorporated with a capital stock of \$50,000 to manufacture pianos and other musical instruments.

The Rat Portage Gold Mining Company, Rat Portage, Ont., is being incorporated with a capital stock of \$1,000,000.

The Preston Gold Mining Company, of Seine River, Rat Portage, Ont., is being incorporated with a capital stock of \$50,000.

MacGregor, Gourlay & Co., Galt, Ont., are being incorporated as the MacGregor Gourlay Company, with a capital stock of \$30,000.

The Callender Telephone Exchange Company is being incorporated with a capital stock of \$100,000. Romaine Callender, Edward Hart, E. L. Gould all of Brantford, and J. Enoch Thompson, Toronto, are the incorporators.

The Toronto Carpet Company, manufacturing the carpets for the Niagara Navigation Company's new steamer Corona.

The Canadian Paving and Building Company, Montreal, is being incorporated with a capital stock of \$100,000 to carry on the business of contractors in constructing railways, canals, bridges, etc.

The following mining Companies are seeking incorporation in British Columbia. The Rossland Homestake Gold Mining Company, Rossland, capital stock \$1,000,000. The Young British-American Gold Mining Company, capital stock \$1,000,000, Rossland, The Morning Glory Mining Company, Vernon, capital stock \$500,000; The Pacific Consolidated Gold Mining Company, Victoria, capital stock \$500,000; The Silver Belle Mining Company, Rossland, capital stock \$1,000,000; The Two Friends Mining Company, Vancouver, capital stock \$750,000; and The Columbia and Ontario Gold Mining Company, Rossland, capital stock \$750,000.

## THE BUSY MAN'S HOLIDAY

BE SURE YOU VISIT

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TUESDAY, SEPTEMBER 1st, to SATURDAY, SEPTEMBER 12th

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THE ONE OPPORTUNITY OF THE YEAR TO THOROUGHLY COMBINE BUSINESS WITH PLEASURE

CHEAP RATES AND EXCURSIONS ON ALL RAILWAYS

J. J. WITHROW, PRESIDENT

H. J. HILL, MANAGER, TORONTO

The Cariboo Lumber Company, Clinton, B.C., is being incorporated with a capital stock of \$4,000.

The Fairview Gold Mining Company, Seattle, Wash., capital stock \$1,000,000, has been registered in British Columbia.

The Morning Glory Mining Company, Vernon, B.C., is being incorporated with a capital stock of \$500,000.

Messrs Cowan & Co., Galt, Ont., have recently filled the following contracts:— Kilgour Shires, Campbellton, N. B., 65 h.p. boiler; H. Provost & Co., Maisonneuve, P. Q., large planers and matchers and sand paper machine; Lesage & Piche, St. Therese, P. Q., large planer and matcher and moulder combined, also a pedestal shaping machine and other machines; Heathering Bros., Rodney Ont., new engine and boiler in their grist mill; Corbeil & Leveille, Montreal, band re-saw; J. Caher & Son, Thorold, Ont., 40 h.p. boiler, making the second supplied them within six months; Schultz Bros., Brantford, Ont., a twelve-inch four side revolving bed moulder; The Shelburne Flax Co., Shelburne, Ont., engine and boiler; The Rathbun Co., Deseronto, Ont., a ten-inch four side revolving bed moulder; James Love, Pictou, Ont., a No. 6 planer and matcher; R. W. Goodfellow, a pedestal tenon machine and power mortise machine; J. M. Hicks, Sackville, N.B., a No. 6 planer and matcher with beading and moulding attachment, making the second machine of this kind supplied him by Cowan & Co.; S. Winger, Hagersville, Ont., an engine and saw mill; N. W. Roberts, Renfrew, Ont., a band re-sawing machine; O. S. Stephen,

Cobden, Ont., a four-side moulding machine; The Ottawa Lumber Co., Calumet, P. Q., several new machines among which was a surface planer; Caldwell & Co., Galt, Ont., engine and boiler; Anderson & Murray, Oil Springs, Ont., band saw.

The farmers throughout the townships of Houton and Malahide, Elgin county, Ont., are digging bog iron ore along the shore of Lake Erie, and are hauling it to Port Burwell, where they get from \$2.75 to \$3.50 a ton for it. The ore is shipped to Hamilton.

Meldrum & McDougall, have closed a contract with R. P. Roblin, of Winnipeg, Man., grain merchant, for the erection of three elevators, at Gretna, Austin and Deloraine, respectively. This firm has also contracted to build three elevators for Dyell & Company, of Soeris, and are building a number for the Northern Elevator Company.

A movement is on foot to start a mill in New Westminster, B.C., for the manufacture of oilcake, the raw material being brought from Manitoba until it can be grown in the neighborhood of the mill.

It is estimated that the British Columbia salmon pack will approach 600,000 cases and represent a value of \$1,000,000. The northern pack is 67,000 cases better than that of last year, and worth \$335,000 more, and the good run in the Fraser promises to enable an excellent southern pack.

The tender of John Hartnett, of Toronto, for the excavation, pipe-laying, setting of hydrants, etc., in connection with the water-works system of Deseronto, has been accepted.

A special meeting of the Dundas Town Council was held last week to consider repairs to the various bridges. J. F. Armour, C.E., submitted plans, and it was decided to call a special meeting at an early date to again consider the matter.

## The Wellington Mills

LONDON, ENGLAND

# Genuine Emery

Oakey's Flexible Twilled Emery Cloth.  
Oakey's Flint Paper and Glass Paper.  
Oakey's Emery Paper, Black Lead, Etc.

Prize Medal and Highest Award Philadelphia, 1876, for Superiority of Quality, Skilful Manufacture, Sharpness, Durability, and Uniformity of Grain.

Manufacturers....

**JOHN OAKEY & SONS, Ltd.**

WELLINGTON MILLS

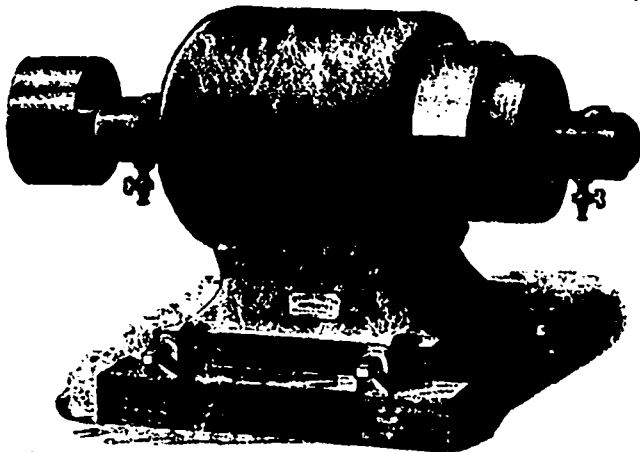
Westminster Bridge Road, London, Eng.

Inquiries should be addressed to

**JOHN FORMAN**

650 Craig St., Montreal

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Send for Catalogue.

MANUFACTURED BY

**The STOREY MOTOR and TOOL CO.**

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

## ROSAMOND WOOLEN COMPANY

ALMONTE, ONT.

FINE TWEEDS, CASSIMERES, AND FANCY WORSTED SUITINGS AND TROUSERINGS.

## FERGUSON & PATTINSON

PRESTON, - - ONTARIO.

MANUFACTURERS OF

**FINE AND MEDIUM TWEEDS**

## Guelph Woolen Mill Co., Ltd.

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Manufacturers of

**Underwear, Hosiery, Wheeling, Fingering and Worsted Yarns**

EIDERDOWN FLANNEL, ETC.

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

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Manufacturers of

**VARNISHES AND JAPANS** | Importers of Oils, Paints, Colors,

SPRITS, Shellacs, Resins, Glue, Gold Leaf, Bronze, etc.

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Factory and Warehouse—25 to 29 ST. THOMAS ST., | MONTREAL

## AUBURN WOOLEN COMPANY

PETERBOROUGH, ONT.

**Manufacturers of Fancy Tweeds, Etc.**

Selling Agents, D. MORRICE, SONS & CO., Montreal and Toronto.

## Penman Manufacturing Co., Ltd.

PARIS, ONTARIO.

Manufacturers of

**HOSIERY, SHIRTS, DRAWERS, GLOVE LININGS AND YARNS**

Selling Agents: D. MORRICE, SONS & CO., Montreal and Toronto.

**Rabbitt Metal.**



**BRASS, BRONZE, PHOSPHOR BRONZE, ALUMINUM BRONZE, COPPER, ZINC and ALUMINUM CASTINGS TO ORDER. Large or Small.**

Write for Prices.. **DEAN BROS., 184 Richmond St. West, Toronto**



## REFRIGERATING AND ICE-MAKING MACHINERY.

Messrs. John Inglis & Sons, Toronto, have secured from Messrs. John Featherstone's Sons, Chicago, the sole right for Canada to manufacture their consolidated ice machines and refrigerating machinery.

The accompanying cut represents their 75-ton ice machine which was manufactured for a Chicago brewery.

These machines will be built of all sizes from a 25-ton refrigerator to 150 tons. The smaller sizes are all built vertically, similar to the pattern illustrated in the cut, but many of the larger sizes are built horizontal as well as vertical to meet requirements of customers.

In the vertical single-acting machines, the engine and compressors are all connected on one bed-plate, which is made very heavy and rigid, and planed top and bottom. The advantage of this arrangement in securing and preserving alignment of all working parts will be readily understood.

The engine is connected to a double crank in middle of crank shaft, with wide journal bearings on either side of engine crank. The power thus transmitted to crank shaft is then immediately balanced by the fly-wheels, which are themselves exceptionally heavy, and are true and perfectly balanced. The power thus balanced is delivered to the pumps or compressors. The advantage of thus balancing the power transmitted by the

engine, before delivering it to the pumps, instead of placing the pump connections between engine crank and fly-wheels, lies in securing uniformity and steadiness of motion, and in reducing wrenching strain, vibration and friction of crank shaft to a minimum.

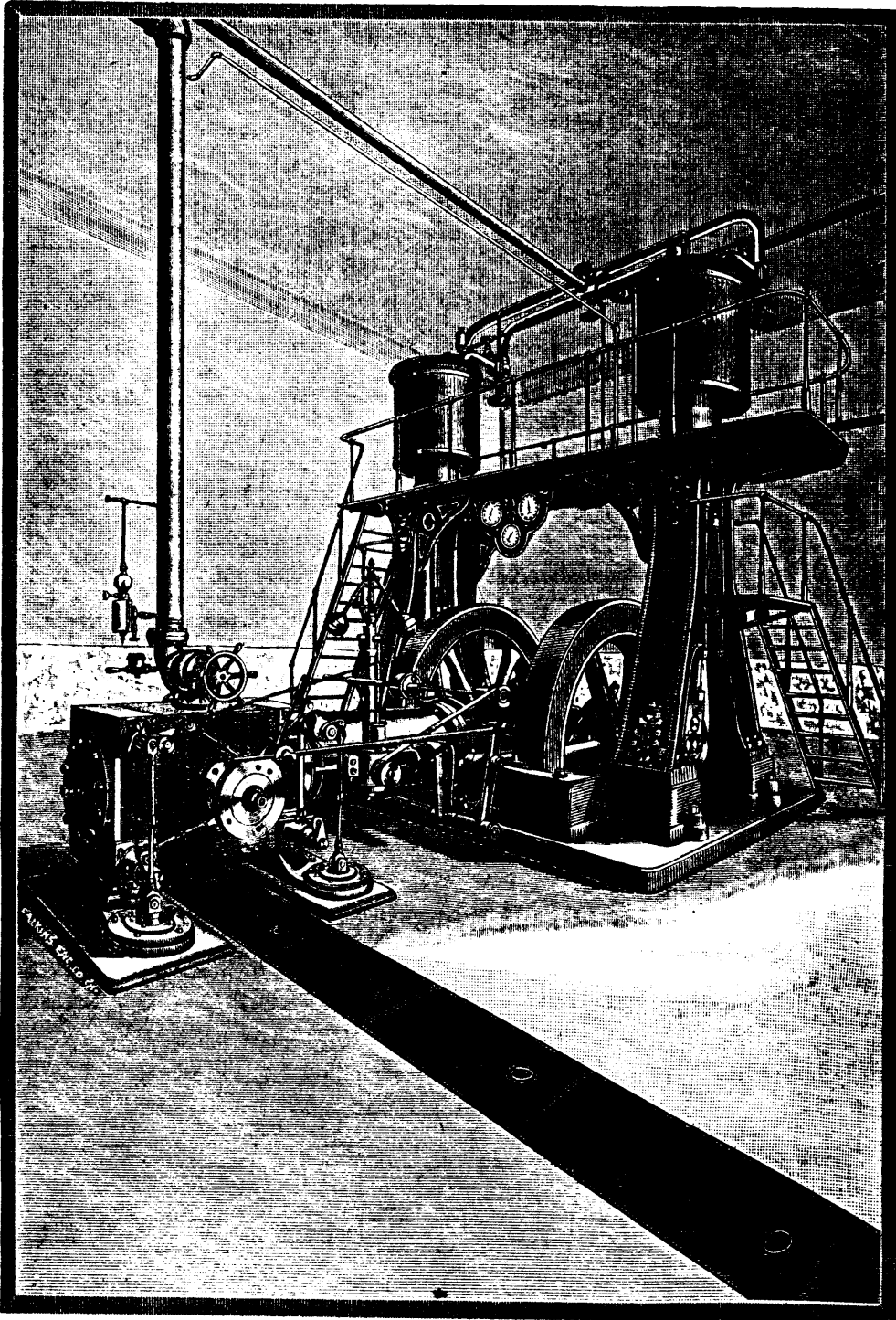
The compressors are set vertically, and are single acting, compressing only on the up stroke. The gas has free entrance to and exit from the cylinder below piston, thus keeping the pump cylinder and piston cool. The extreme lower portion of the pump forms an oil chamber or reservoir, which effectually seals the stuffing box around pump piston, and as the pressure on the stuffing box end of the pump is only the direct evaporator pressure (about one-eighth of the condensing pressure usually), there is absolutely no chance for escape of ammonia through the stuffing box.

The suction and discharge valves are located in the pump-head. The suction valve is perfectly balanced, allowing the pump to fill perfectly with expanded gas from the evaporator. The discharge valves, of which there are two, have ample area for discharging the compressed gas, and are so cushioned as to be noiseless in their operation. The valves are set in steel cages, which are held in position in the pump-heads by means of yokes and set screws, so that the work of removing the valves, whenever it is desired to do so, may be accomplished in a moment, and a duplicate valve can be as quickly put in place, and the machine started up immediately.

The suction and discharge pipe connections are made outside of the pump-head, so that when for any reason it is desired to remove a pump-head, neither of these connections need to be disturbed, and thus a large element of trouble, danger and delay is avoided.

The pump piston is so constructed as to prevent the gas leaking either through or by the same, neither can it get into the piston on the compressing stroke, and re-expand on the return stroke, as the piston when packed is absolutely solid, with no cavities or chambers whatever into which the gas can be compressed, and as the piston travels flush to the pump-head, all the gas is expelled at each stroke, and as nothing but gas is pumped, i.e., no large quantities of oil or lubricating fluid, the discharge valves are proportioned accordingly and are not therefore subject to the inevitable complications and difficulties which are necessarily encountered in the operation of a valve which is designed for performing the double purpose of discharging both oil and gas. The stuffing box is so constructed as to preserve under all circumstances perfect alignment with the pump, and is operated by a worm gear, so that the simple turning of a hand wheel adjusts the stuffing box perfectly while the machine is in motion, and without the difficult and frequently dangerous use of spanners, and also avoiding the possibility of cutting the piston rods through uneven adjustment of stuffing box.

The piston rods are of high grade steel and are turned and lapped



Seventy-five Ton Ice Making Machine.

true to gauge from end to end. The whole upper portion of the pumps is surrounded by a copper water jacket. The amount of water used in these jackets is very small, as the function performed by the water in these jackets is not only to keep the pump cool, but also to equalize the temperature.

The pumps are lubricated by a patent sight feed oiling system, which automatically feeds the oil as required for lubrication of the pumps, and with all the economy and exactness of a first-class sight feed steam engine lubricator.

**CONSTRUCTION OF APPARATUS.**

To a practical man, it is an obvious fact, that no matter how perfect may be the design and construction of the engine and pumps, the balance of the apparatus must be equally well proportioned and adapted to the work to be performed, in order to secure satisfactory results.

If condensing surfaces are insufficient, a correspondingly high condensing pressure is the legitimate and natural consequence, and in working against such a high condensing pressure, the machine will require more steam to operate it, and consequently more cost.

If the evaporating surfaces are insufficient, only a portion of the gas which the pumps are capable of compressing can be expanded, and in consequence to that extent the effective work of the machine is diminished.

If valves, pipes, fittings or connections are imperfect, the result is a constant loss of ammonia, and the consequent necessity of replenishing the charge of ammonia.

The following are some of the reasons claimed by the manufacturers why the apparatus connected with their machines is so durable and gas-tight under all conditions and circumstances.

The coils for both condensing and evaporating surfaces, are made from extra strong pipe of a special quality, they are welded and bent by a special process, being made without joint or connection from end to end. By this process of welding pipe for making coils, the weld is not perceptible either inside or outside of the pipe, except to an expert, there being a perfect amalgamation of the iron at the weld, without leaving any ring or ragged projections on the inner side of the pipe, neither is the inside diameter of the pipe contracted by the operation of welding; the bends are not flattened, but preserve the full contour of the pipe, and the iron forming the outer circumference of the bend is not drawn and weakened in making the bend, but the iron at the inner circumference of bend is evenly upset, making the pipe at that point somewhat thicker.

The ammonia valves are of special design, and are peculiarly adapted to the work required of them, and each valve is tested under a heavy air pressure under water.

They are easily handled, and may be opened or closed quickly without straining the pipe connections; are fitted with soft metal seats, and are gas-tight under all pressures.

The ammonia unions are flexible. By their use, the chances of accidentally breaking pipe connections through carelessness or otherwise, is reduced to a minimum.

**AMMONIA CONDENSERS.**

The company builds two forms of ammonia condensers in connection with their machines, which perform the work of condensing and liquefying the ammonia as it is discharged from the compressors. In the submerged form of condenser the coils in which the gas is condensed are completely immersed in a

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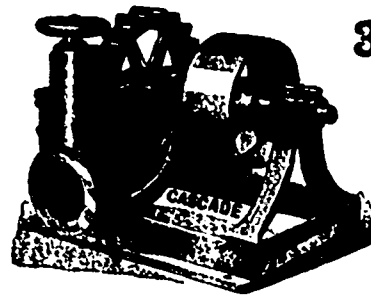
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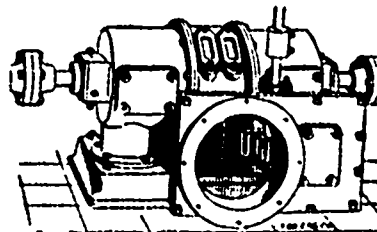
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deep tank of water. In this form of condenser the heated gas from the compressors enters the coils at the top of tank, and the condensing water enters the tank at the bottom and overflows at the top of tank. In this form of condenser the hot gas from the machine first meets the water at the top of condenser tank, and as it passes towards the bottom of the coils gradually gives off its heat to the surrounding water until it reaches the cool water at bottom of tank, where it becomes liquefied and passes into the liquid receiver.

In the air condenser, the coils are not submerged in tanks of water, but water is trickled over the pipes, and both air and water absorb the heat of compression and serve to condense and liquefy the gas. Where the temperature of the atmosphere is much higher on an average than the temperature of the water supply, the use of the submerged condenser is recommended, but where the average temperature of the atmosphere is lower than the temperature of the water supply, the use of the atmospheric condenser is advised.

The function of an ammonia condenser, is to cool the heated gas, which has been compressed and discharged into it by the pumps, at as near the temperature of the condensing water as is possible; the extraction of the heat having the effect of reducing the pressure to which the ammonia gas is required to be subjected in order to condense and liquefy the same. The more successful the operation of the condenser, in extracting the heat from the ammonia gas, the less the pressure against which the pumps are required to perform their duty of compressing the expanded gas received from the evaporating

coils and discharging the same to the condensing coils.

The "Empire Machine" is built with horizontal engine and horizontal double-acting ammonia compressor. In the design and construction of these machines the same careful attention to detail which characterizes the construction of machines with single-acting vertical pumps has been observed throughout.

The difficulties usually experienced in packing the stuffing box of a double-acting pump against condensing pressures have been almost entirely overcome by improved oil-sealed stuffing boxes and perfect alignment and ease of adjustment which is attained in the construction of these stuffing boxes is also a commendable feature.

The advantage of being enabled to quickly remove and re-place both sets of suction and discharge valves is attained in the horizontal machines equally with the vertical machines.

The balance of the plant furnished in connection with these horizontal machines is an exact duplicate of the apparatus furnished with the single-acting machines.

For full particulars regarding these machines write to Messrs. John Inglis & Sons, Toronto, Ont.

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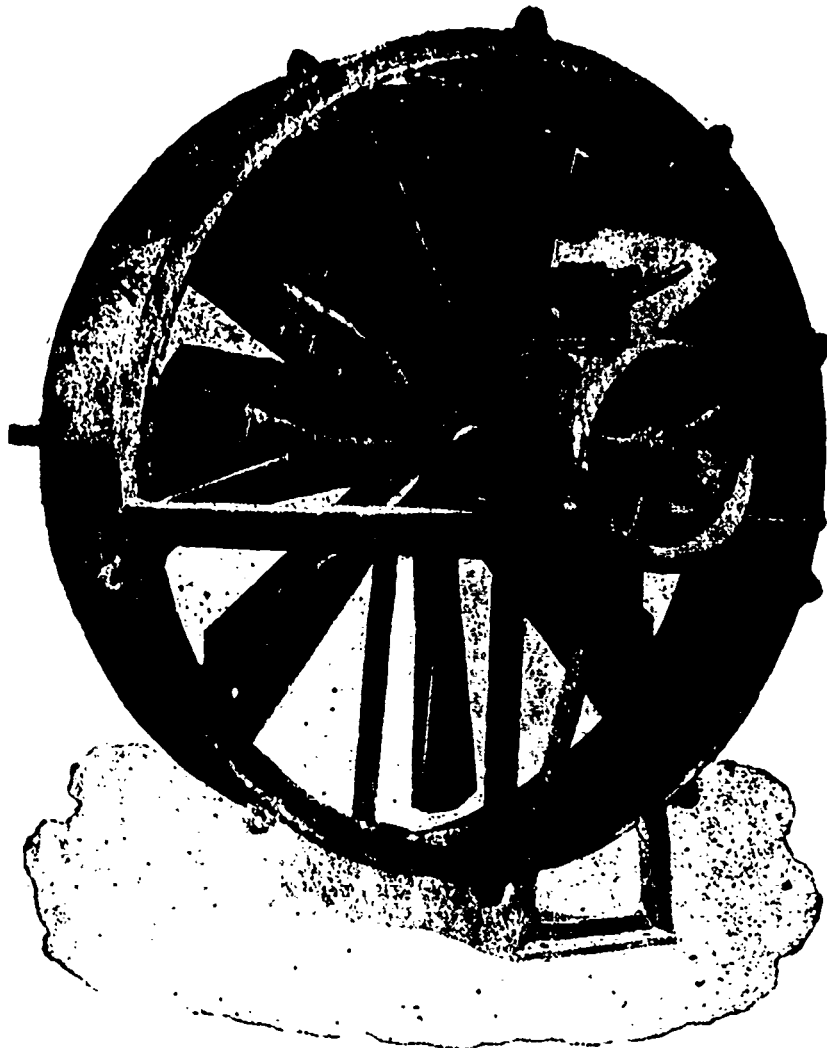
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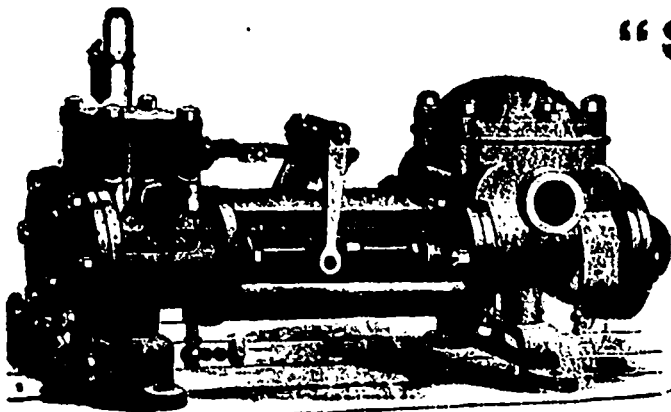
*Buffalo Disk Wheels.*

tion to power expended than any other wheel of same diameter on the market, and to be noiseless in operation. Each machine is fitted with a self-oiling device, which permits the wheel to be left without attention for a long period, a valuable feature when used in cupolas or other places not easy to access.

The Bureau of Statistics in Berlin records the fact that of the steam-engines now working in the world, four-fifths have been constructed during the last twenty-five years. France has 75,500 stationary and locomotive boilers, 1,850 heat-boilers and 7,000 locomotives; Germany, 59,000 land-boilers, 1,700 ship-boilers and 10,000 locomotives; Austria, 12,000 boilers and 2,800 locomotives. The working steam-engines of the United States represent 7,500,000 horse-power; of England, 7,000,000 horse-power; Germany, 4,500,000 horse-power; France, 3,000,000 horse-power; Austria, 1,500,000 horse-power. The whole number of locomotives in the world is estimated at 105,000, representing a total of 3,000,000 horse-power; and the world's steam-engines aggregate more than 26,000,000 horse-power.—Sun.

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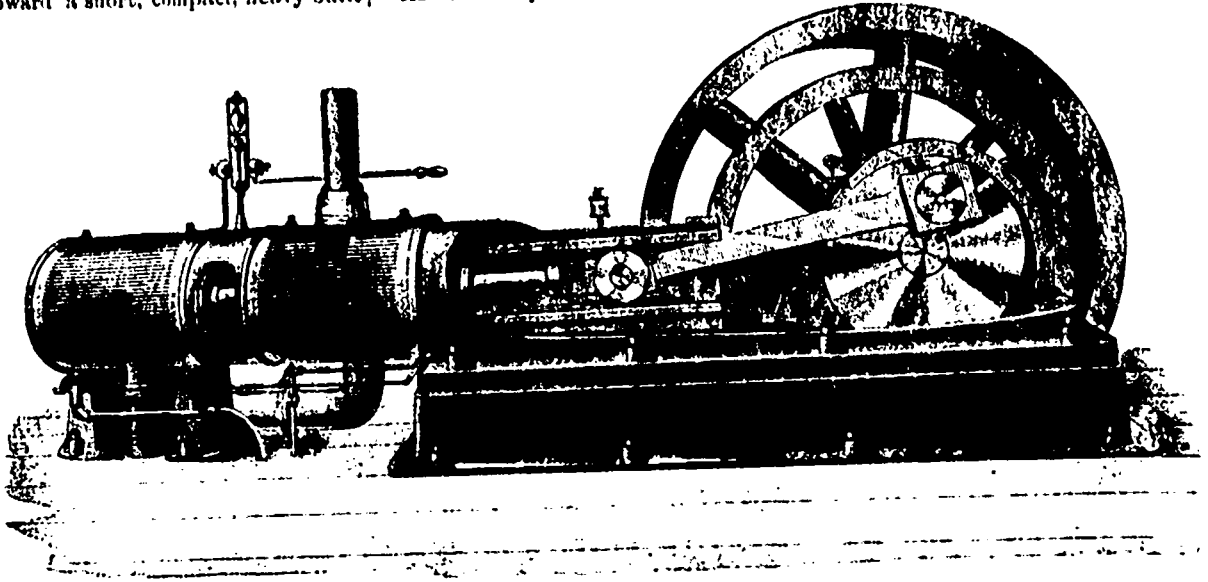
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**ROBB ENGINEERING COMPANY'S  
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Those who have observed the trend of steam engine designing during the past few years, will have noticed that there is a tendency toward a short, compact, heavy built

there is also a tendency to increase the speed to suit direct driven dynamos and give better regulation. In fact there seems a tendency for the advocates of high and low speed to meet half way in a type of engine which will embody the best points of each. As an example of what is being done in

type of engine designed with a view to combine the best points of long and short stroke engines. The design of frame and general proportion of parts is similar to recent types of long and medium stroke engines designed for railway work. The shaft bearings, crank



frame with strong simple parts suited to the severe and incessant work imposed upon power plants by street railways and other heavy work. Corliss and other types of long stroke engines have been shortened and straightened in order to meet these conditions and to occupy less room, and

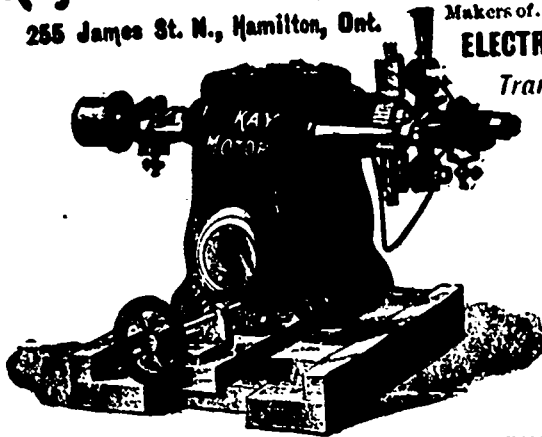
this way, we give an illustration of a tandem compound engine, built by the Robb Engineering Co., of Amherst, Nova Scotia. The cut is from one of four engines of 300 horse power each, recently installed for the Halifax Electric Tramway Co., for railway and lighting purposes, and represents a

and crosshead pins are much larger than usual, to insure cool running under stress of overloading or irregular work. The guides are cylindrical, allowing the crosshead free alignment. The disc crank contains sufficient metal to permit the crank pin and shaft to be forced in under heavy hydraulic pres-

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sure, and is balanced. The main journal has quarter boxes with adjustment at top and sides. The governor, which is of the "swool" or "straight line" pattern, used in all engines made by the Robb Co., is of the simplest and most sensitive form and directly connected to the valves. The high pressure cylinder is placed next to the frame, low pressure in rear, and so arranged that the cylinder head and pistons may be removed without disturbing the cylinders, valves or other parts. The valves are of the "Porter" type, consisting of a flat plate balanced by a pressure plate, which have proved so successful in the "Porter Allen," "Straight Line" and other engines, their greatest merit being simplicity and freedom from wear. Both high and low pressure valves are attached to the governor in such a way as to divide the load exactly between the high and low pressure cylinders. This system is new and peculiar to the Robb engines and is found to give better economy with variable loads, such as are found in railway work.

The Robb Engineering Company are building a full line of these engines, in simple, tandem and cross compounds up to 700 horse power, having a medium length of stroke, speed from 150 to 200 revolutions per minute, and as the parts are massive and bearings unusually large, parts simple and strong, they are splendidly adapted for direct connection to electric generators or for other valuable work.

The Bras d'Or Marble Company, of West Bay, N.S., have recently received orders for the supply of large quantities of marble for building purposes. They are said to possess fourteen varieties of marble in the immense deposit at Marble Mountain, some of which are exceedingly beautiful. The company are taking steps to extend their trade, and as the bulk of granite used in Ontario and Quebec is imported from Italy, it is quite probable that a portion of this trade at least can be secured by Canadian companies.

**CANADIAN PATENTS.**

The following patents have been issued from the Canadian Patent Office, from June 12th, to June 27th 1896.

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

Fetherstonhaugh & Co., Bank of Commerce Building, Toronto.

Ridout & Maybee, 103 Bay Street, Toronto.

C. H. Richea, Canada Life Building, Toronto.

A. Harvey, Central Chambers, Ottawa.

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

52,621 Current wheel for the elevation of water, A. W. Porton, Regina, Assa.

52,622 Manufacture of copper and other metal tubes, etc., E. Dumoulin, Paris, France.

52,623 Refrigerator, The G. F. Quinn Refrigerator Co., Portland, Me.

52,624 Combined belt tightener and shifter, P. H. Quinn, Salamanca, N. Y.

52,625 Bolster stake, J. H. Jackson, Keady, Ont.

52,626 Air brake, G. S. Lee, Hawthorne, N. J.

52,627 Air brake, G. S. Lee, Hawthorne, N. J.

52,628 Air brake, G. S. Lee, Hawthorne, N. J.

52,629 Window fastener and lock, T. Martin, Wallaceburg, Ont.

52,630 Disinfector, R. S. West, Cleveland, Ohio.

52,631 File, R. Bennett, Neihart, Montana.

52,632 Riveting and pressing machine, C. B. Allree, Allegheny City, Pa.

52,633 Caster, G. J. S. Collins, Chicago, Ill.

52,634 Liquid dispensing apparatus, W. M. Fowler, Stamford, Conn.

52,635 Monument and marker, R. Drury and J. Bowden, Toronto.

52,636 Dust collector, A. Dobson, Beaverton, Ont.

52,637 Puncture proof covering for pneumatic tires, C. W. Hazeltine, St. Louis, Mo.

52,638 Draft mechanism, P. Brown, Wilmington, Del.

52,639 Steering gear for bicycles, E. F. Cobb, Onslow, N. S.

52,640 Boiler, W. McCallum, Wetaskiwin Territory, Alberta, Canada.

52,641 Holder for bicycle lamps, The Bridgeport Brass Co., Bridgeport, Conn.

52,642 Water closet, W. Knauff, St. Johns, Que.

52,643 Valve device for pneumatic tires, F. W. Morgan and Rufus Wright, both of Chicago, Ill.

52,644 Plough sulky, H. Mulkins and R. J. Davis, Simcoe, Ont.

52,645 Machine for inserting threads in fabrics, Ford Johnson & Co., Michigan City, Ind.

52,646 Dental engine, The S. S. White Dental Mfg. Co., Philadelphia, Pa.

52,647 Hose coupler, P. E. Guerard and N. Malhieu, Montreal, Que.

52,648 Brush, A. E. Magoris, Binghamton, N. Y.

52,649 Manufacture of artificial fuel, W. H. Biggs, Cardiff, and R. R. Greenhow, Lanishon, Glamorgan, Wales.

52,650 Arc lamp, S. P. Parmely, Chicago, Ill.

52,651 Double vent, double flashing water closet, P. Nicolle, Toronto, Ont.

52,652 Photochromoscopes and photochromoscope cameras, F. E. Ives, Philadelphia, Pa.

52,653 Clothes dryer, P. Schaefer, St. Peter, Minn.

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 52,658 Asbestos filter, F. Breyer, Vienna, Austria.  
 52,659 Mid-wire take-up, G. S. Dorney and R. J. Dorney, Finlay, Ohio.  
 52,660 Stall fixture, R. C. Eldridge, Niagara Falls, Ont.  
 52,661 Envelopo, H. DuPro Bounethoau, Jacksonville, Florida.  
 52,662 Ratchet wrench, H. Markel, Spencer-ville, Ind.  
 52,663 Sprinkler, J. L. Philp, Montreal, Que.  
 52,664 Petroleum burner, H. H. Sutherland, Truro, N. S.  
 52,665 Pruning rod, W. S. Young, Pomona, Cal.  
 52,666 Device for protection against robbers, G. H. Jackson, Ypsilanti, Mich.  
 52,667 Musical instrument, N. Merrill, Oshkosh, Wis.  
 52,668 Feed water heater, etc., The Harrison Safety Boiler Works, Philadelphia, Pa.  
 52,669 Steam separator, The Harrison Safety Boiler Works, Philadelphia, Pa.  
 52,670 Auger handle, A. T. Binkerd, Allegheny City, Pa.  
 52,671 Oil can, W. A. Wallingford, Newberry, S.C.  
 52,672 Clothes pounder, E. J. Rogers, Newmarket, Ont.  
 52,673 Wagon jack, G. N. Campbell, Southampton, Ont.  
 52,674 Spring heel for shoes, H. D. Richey, Bellevue, Pa.  
 52,675 Process of and apparatus for charging liquids with gas, The A. M. Hofman Carbonating and Racking Co., Chicago, Ill.  
 52,676 Wrench, E. H. Smith and W. O. Vanschaik, Canisteo, N. Y.  
 52,677 Head light for electric cars, F. E. Huntress, Boston, Mass.

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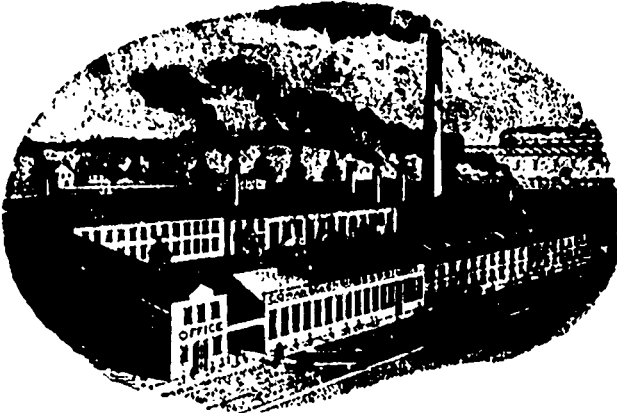
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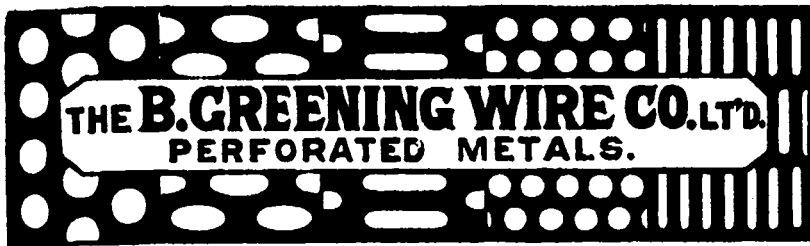
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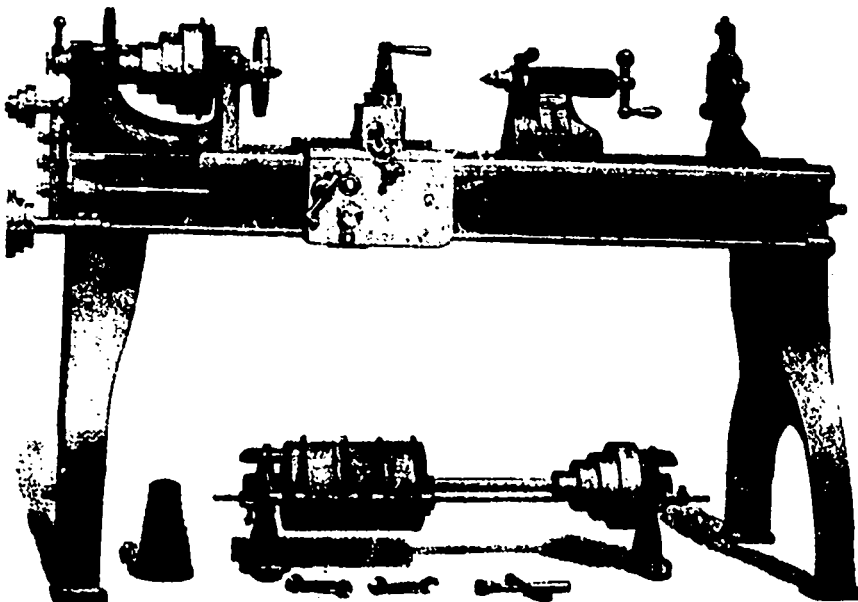


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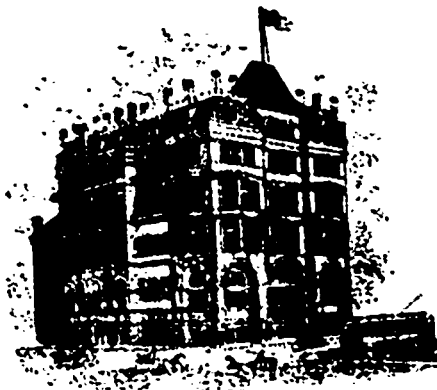
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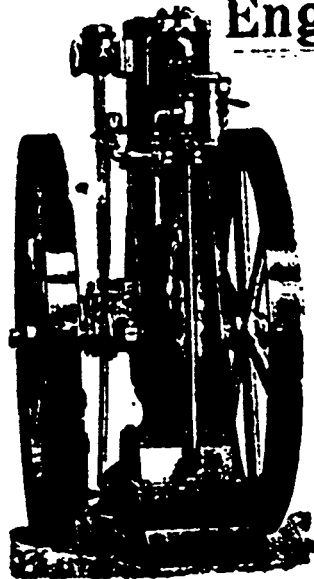


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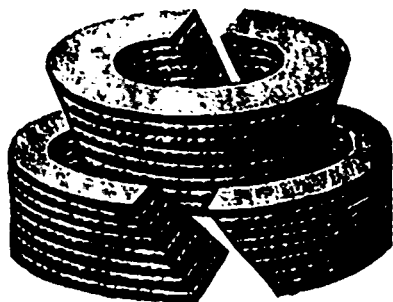


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52,753 Violin, E. T. Cass, Whitewater, Wis.	52,767 Stove, The Co-operative Foundry Co., Rochester, N.Y.	52,780 Tongue support, R. B. Clement, Grayneville, Kentucky.
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52,764 Bread raising box, G. W. Cowan and W. H. Duniap, both of Camboursburg, Pa.		

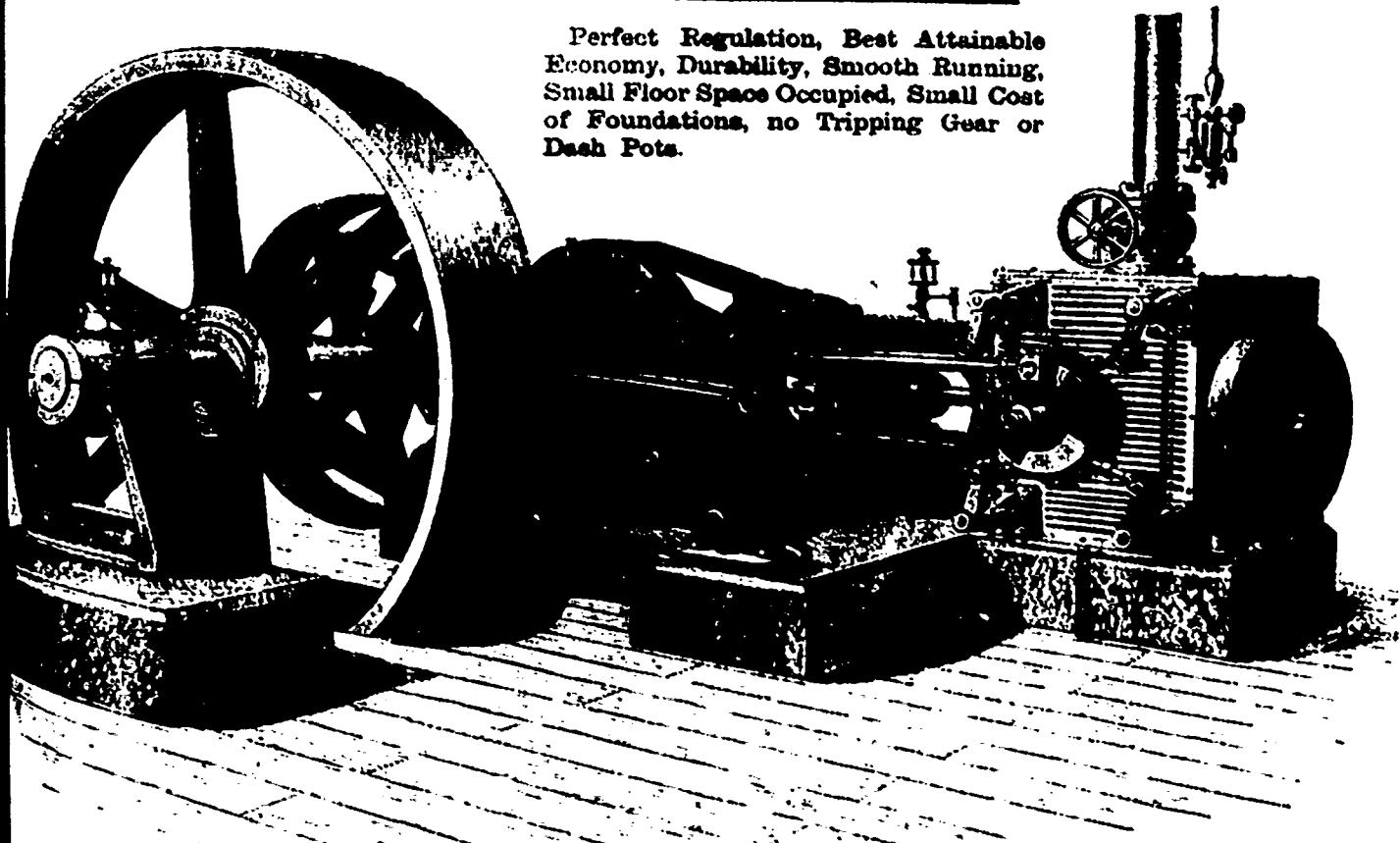
The French syndicate which recently purchased the St. John Stone Chinaware Co.'s potteries at St. Johns, Que., has completed its organization in Paris, and Messrs. Graves, Aube and Vannier, the promoters, sailed for Canada on August 15th. Mr. Adrian Vannier has been appointed manager.

Iver Johnston Arms and Cycle Works, of Fitchburg, Mass., has made a proposal to the town of Carlton Place, Ont., which is that a stock company be organized there with a capital stock of \$100,000 to be made up as follows: \$5,000 cash bonus from the town of Carlton Place, \$15,000 subscribed stock from the town, \$30,000 subscribed by citizens, \$25,000 by the Gillies Co., and \$25,000 by the Iver Johnston Co. The present works of the Gillies Co. would be turned over to the new concern, and the Johnston Co. would put in their share in plant and such stock as would not be manufactured here. The people of Carlton Place look very favorably on the matter.

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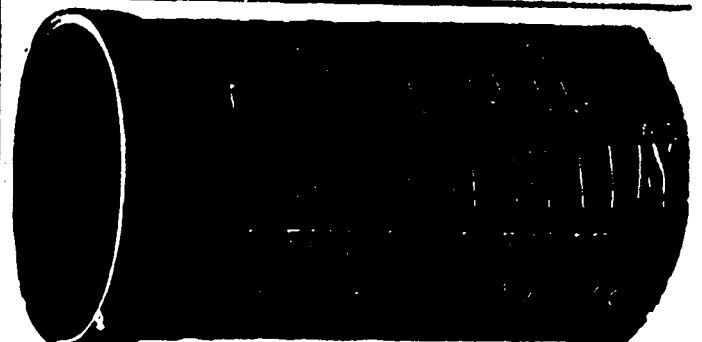
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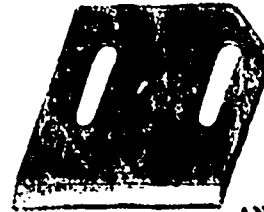
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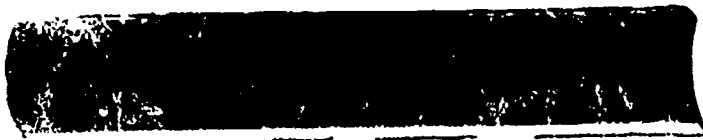


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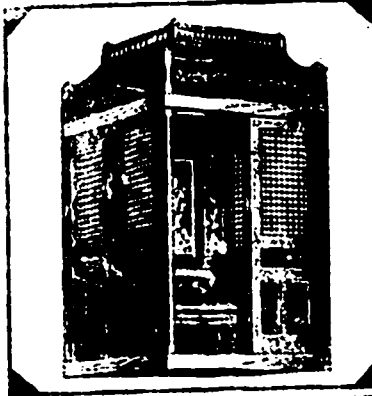
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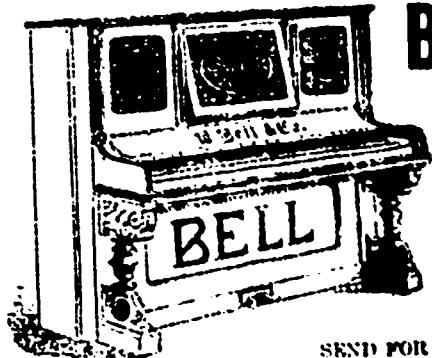
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