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Vol. 18.

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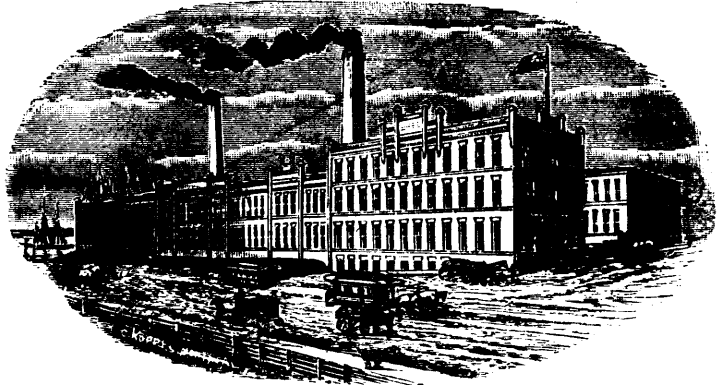
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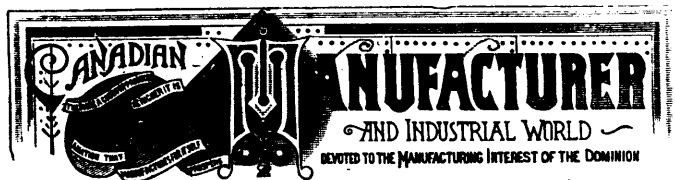
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THE HOME MARKET.

SPEAKING of Congressman Butterworth and the tenacity with which he clings to "Protection" as the distinguishing feature of the Republican party, the *Montreal Witness* says:

"What Mr. Butterworth does not grasp is, that if an individual American can procure an article at a smaller cost by producing another and exchanging it for what he wants than by making it himself, he is benefited, and the community is benefited, no matter who makes the desired article. Whether the manufacturer be an Englishman, a Russian or an American, it is all one to the consumer, who is enabled to supply his wants by a smaller expenditure of energy, and has, therefore, more of it to devote to the accumulation of capital; and the good of the nation is merely the aggregate good of the individuals who form it."

These sentiments are also applied to Canada; and we examine the working thereof. It is to be presumed of course that whenever a Canadian desires to procure any article he expects to give value therefor, and that this value is obtained through his own exertion—that he has worked for it. Money is the usual medium of exchange of values; and when our Canadian has something that he has earned or created by his labor, he exchanges it for money, and he then uses this money to purchase whatever he may desire. The value of money arises from its use as a means of exchange; and it is because it is difficult to acquire it it is valuable. If money could be picked up in the streets whenever it was wanted it would be of no value, and no one would want it. The money, then, that our Canadian must have in hand before he can purchase what he wants, he must obtain by selling something that he has worked for, or which he has created by his labor.

If our Canadian is a farmer and raises or produces vegetables, fruits, poultry, eggs, butter, cheese, etc., he takes these things to the nearest market where there is a demand for them,

and exchanges them for money; and with this money he purchases what he wants. It is evident that if our farmer's products are of a perishable character, liable to rapid deterioration and destruction, he must dispose of them as quickly as possible. This may be done if there is a near-by home market for them; but if there is no such market, then they will have to be taken to a more distant one if the articles will bear the transportation; and if they will not bear it, then the products are valueless and the farmer's labors are in vain. He cannot afford to grow crops or produce articles for which he can find no sale. It is evident, then, that if our farmer desires to get money from the sale of his products he must have a near-by or home market for them.

What is a "home market?" Our contemporary, the *Witness*, lives and has its being in the city of Montreal; and in that city are thousands and thousands of men and women and boys and girls who work in factories employed in the production of just such things as our Canadian farmer requires for his welfare and comfort. That is the way these people make their living. They all require just such things as our farmer produces, and they require them constantly—every day. There are a great many farmers around the city of Montreal who find it a profitable business to produce just such articles as these employees of Montreal factories require; and to them Montreal is their "home market." And there are thousands of just such "home markets" scattered all over Canada, as the *Witness* well knows. Given a desirable and cheap water power, or other peculiar advantage, and there will be found a mill or factory or workshop of some sort wherein hundreds of men and women find employment. The establishment of such industries does not add to the fertility of the neighboring farms; and these farms could have produced quite as prolifically fifty or a hundred years ago as they do now; but fifty or a hundred years ago they were utterly valueless simply because there was no home market for anything that might have been produced on them, while now, in the presence of these factories, every bushel of potatoes, carrots and turnips; every basket of strawberries; every box of peaches and cherries; every chicken and egg; every pound of butter and cheese and every gallon of milk has a money value, because these factory and mill employees are consumers of them. This constitutes the farmer's "home market."

Our farmer has occasion to load up his wagon with his produce and carry it to his home market for sale. When he arrives there he finds plenty of customers hungry for whatever he has, and he soon converts what he has produced by his labor into a gratifying amount of good hard cash. He then exchanges some of this money for articles necessary for his comfort, and returns home. Unwrapping his packages he discovers a copy of the *Witness* that had been used to enclose some article, in which he reads the sentiment: "If an individual can procure an article at a smaller cost by producing another and exchanging it for what he wants than by making it himself, he is benefited, no matter who makes the desired article. Whether the manufacturer be an Englishman, a Russian or an American it is all one to the consumer, who is enabled to supply his wants by a smaller expenditure of energy, and has, therefore, more of it to devote to the accumulation of capital; and the good of the nation is merely the

aggregate good of the individuals who form it." This sets him to thinking and to enquiring if this sentiment is true. The *Witness* had been wrapped around a pair of shoes he had bought for one of the children, for which he had paid a dollar and a quarter. These shoes had been made in Canada, and those who had been employed in their construction were among those who had purchased the truck he had just sold. The duty on shoes, he knew, was 25 per cent., and he also knew that without this duty similar shoes, manufactured by an Englishman, Russian or American, might have been sold to him for one dollar. He also knew that without this duty—without the ægis of the National Policy—there would have been no factories and mills and workshops in his home market town—in fact there would have been no such market. Perhaps there would have been a store there at which he could have bought a pair of foreign made shoes for a dollar; but where would that dollar have come from? No factories, thought he, no employees; no employees, no consumers of farm truck; no consumers of farm truck, no dollars; no dollars no shoes for the little one.

"But, Mr. Farmer," says the *Witness*, "in the absence of a home market, you might send your vegetables, fruits, poultry, eggs, butter, etc., to the English, or Russian, or American towns where shoes etc. are manufactured, and sell them there for what you could obtain." Our farmer drops the paper and sighs to think that the Longue Pointe Asylum had been destroyed, for, full of imbeciles and lunatics as that institution was, there should have been room made for any one who could offer such a suggestion. He remembers that up to the time of the inauguration of the N.P., only a few years ago, there was no market town in his vicinity where he could find sale for such truck as had that day brought him in so many dollars, and that, therefore, he had never raised any such truck. He had raised some wheat, but this had to be sold to speculators at whatever they might be willing to pay for it; and he knew that when it reached Liverpool, the world's market, it entered into competition with the world's supply of wheat sent there for sale, and that a bushel of Canada wheat, cost what it might to produce it, was worth no more than a bushel of similar wheat grown in India, where labor could be had for less than ten cents a day. He remembered that there had been no profit in growing this wheat, but that it was the best he could do. There was no other way open to him to get any money, and what little he did get had to be paid out at extravagant prices for supplies manufactured in England, Russia and America. He remembered that even as recently as ten years ago, before Canadian manufacturing industries had been fully established, he had paid over \$300 for a reaper and binder with which to harvest his grain, while the new one he had just bought had cost him less than half as much; and that the cost of all other farm implements and machinery, and all other farm and household supplies had been reduced in similar proportion.

Yes, yes; concluded our farmer, theory is one thing and hard facts another. The theory of Free Trade is beautiful, but it should be kept in a conservatory under glass and carefully guarded and nurtured until the arrival of the millenium, when self preservation ceases to be the first law of nature, for it can never be made to work harmoniously as long as a man

loves his own family more than he loves any other man's family, and as long as Canadians love Canada better than they do England, Russia or America.

CANADIAN CHEESEMAKING.

TWENTY years ago the cheesemaking industry in Ontario was an insignificant affair. To-day it is one of the greatest industries in the Province. The value of the cheese made in Ontario in 1888 was \$6,202,333. The quantity made was 64,387,059 pounds; the quantity of milk used was 665 350,835 pounds. The growth of this industry is largely due to the Ontario Government. The Government has not "fostered" it by putting a tax on the consumers of cheese. It has, by aiding the dairy associations, by printing their reports, by the instruction given at the Model Farm and at farmers' institutes, encouraged improved methods of cheesemaking, and enabled the people of Ontario to hold their own in the markets of the world. By this means they have taken possession of the English market, where Canada last year sold cheese to the value of \$8,871,205. This is more than twice the value of our entire export of manufactures. And the Federal Government has been "fostering" manufactures for eleven years.—*Toronto Globe*.

This Journal would not in the least detract from the credit due to the Ontario Government for what it has done towards fostering the cheese industry, but it is but too apparent that the *Globe* desires to make the fact of the success of that industry redound to the political glory of its political friends, the Ontario Government, at the expense of what has been done for it by that paper's political enemies, the Dominion Government. Of course the Ontario Government never placed any duty on cheese simply because they cannot levy any duty whatever on cheese or anything else: but the cheese industry is "fostered" nevertheless by a protective duty of three cents a pound levied by the Dominion Government, and without which this infant industry would never have attained the robustness that now characterizes it. Credulous persons might be led to think from what the *Globe* says that the only governmental assistance rendered to our cheese makers is that afforded by the Ontario Government, while in fact quite as important assistance, and of the same character, is rendered by the Dominion Government. The Dominion Department of Agriculture maintains a system of experimental farms which are under the management of a dairy commissioner, who regularly issues bulletins for the dissemination of useful information bearing upon dairying in the Dominion for the benefit of Canadian farmers. The best theoretical and practical skill is employed on these farms; and the bulletins issued by the commissioner are prepared with a view to the education of the average farmer and those whose occupations are associated with his, rather than the furnishing of data of only scientific interest. As the experiments in dairying on the Dominion experimental farms bring to light knowledge of the most economical and serviceable practices in the production of milk, the manufacture of butter and cheese, and the use of the by-products of the dairy, the Commissioner's bulletins carry these conclusions to the farmers and the butter and cheese makers for their instruction and guidance; and the reports from the Ontario Model Farm can go no further than this. How exceedingly ridiculous is it then for the *Globe* to pretend that it is only by and through the

information given out from the Ontario Model Farm that Canadian cheesemakers "have taken possession of the English market." And how ridiculous it is to compare the value of Canadian exports of cheese with our exports of manufactures. Under our National Policy of Protection Canadian cheesemakers have possessed themselves entirely of the home market, and their industry is in a most flourishing condition, protected as it is by a specific duty of three cents a pound, the equivalent of about 40 per cent. ad valorem—twice as much as the average protection afforded to many other classes of manufactures. It is true that the Dominion Government have been "fostering" manufactures for eleven years, as the *Globe* says, but the manufacture of cheese is included in this; and it is more than probable that if all other classes of manufactures had been "fostered" by a duty to the extent of about forty per cent. as cheese has been, Canadian manufacturers generally would now be in as undisputed possession of the Canadian market as Canadian cheesemakers are.

IS PROTECTION A BENEFIT?

In a recent issue of a Canadian trade journal the following editorial remarks were made:

Canada is sadly in need of some manufacturers who can compete in a foreign market. The conflicting arrangements of a rascally tariff system, in which the protection of one industry is a tax upon the raw material of another, makes production at export prices a simple impossibility in nineteen out of twenty of these protected industries. It is pleasing to note such exceptions as the Massey Manufacturing Company.

The tone and style of this screed clearly indicates that the writer was an ignoramus actuated more by venom against Protection than by good sense in his argument in favor of Free Trade. But he endeavored to give importance to his tirade by mentioning the name of one of Toronto's large concerns engaged in the manufacture of agricultural implements, seeking thereby to create the impression that this company was about the only concern in Canada able to "compete in a foreign market." Desiring to have the views of this company, we enclosed the clipping to the Massey Manufacturing Company, with the request that they would indicate to us how this matter of Canadian foreign trade impressed them. Their reply will be found in another page.

There are a number of concerns in Canada engaged in the manufacture of agricultural implements who export largely; and we are aware that no better machinery is made in any country, as is evidenced by the award recently made to the Massey Company at the Paris Exhibition: and when it is remembered that the industry is quite new in Canada, specially as compared with that of the United States, Canadian manufacturers have just reason to be proud of what they are doing. Before the industry was ever established in Canada American manufacturers were striving to build up an export trade in agricultural implements; yet, during last year, the exports from Canada aggregated nearly ten per cent. of the exports from the United States; the American exports being valued at \$3,623,769 against \$321,341 for Canada. The exports from Canada were as follows:

Great Britain.....	\$ 45,379
United States.....	9,730
France.....	16,352
Germany.....	11,306
Holland.....	121
Argentine Republic.....	81,039
Newfoundland.....	312
Australia.....	109,364
New Zealand.....	47,738
Total.....	\$ 321,841

And of this amount \$311,662 was produced in Ontario, and but \$9,679 elsewhere in Canada. The imports of such goods into Canada, however, were exceedingly small, there having been but thirty-five harvesters, with and without binding attachments, imported, the value of which aggregated \$3,815, and upon which a duty of \$1,335 only was collected. The distribution of this machinery was as follows:

	MACHINES.	VALUE.
Ontario.....	4	\$ 510
Manitoba.....	21	2,745
P. E. Island,.....	10	560
Total.....	35	\$3,815

It is clearly evident, then, that, considering wealth, population and investments in manufacturing agricultural implements, Canada compares most favorably with the United States. With less than a twelfth of the population, Canada exports ten per cent. as much as the United States, nearly ten thousand dollars worth of which goes to that country, while Canada takes from there less than four thousand dollars worth.

Mr. Massey suggests some valuable facts as regards the success of certain Canadian manufactures. He tells us what we all know, that screws, nails, rivets, etc. are made in Canada in every respect as good as American or English productions. He calls these "raw materials," and to him in his business that is what they are; but he seems oblivious to the fact that to the manufacturers of them they are the finished product. He speaks with pride of the excellence of the machinery made by his Company, and in this that Company is entitled to all that can be claimed for it, the evidence lying in the fact that it has built up a large foreign trade in the presence of the competition of the long established foreign trades of the largest English and American manufacturers. He tells us that but three years ago his Company sent a consignment of a couple of dozen reapers to Australia. At that time a celebrated English manufacturer, who builds first-class machines, had an annual trade there of some four hundred such machines, and that several American manufacturers also enjoyed large trade there. It seems that the trade of the English and American manufacturers has increased but very little since then, while the trade of the Canadian company last year demanded over two hundred machines, which, this year, was increased to nearly six hundred. As we have shown, the demand in Europe last year for Canadian machines amounted to nearly \$75,000; while this year the demand on the Massey Company from there already amounts to 450 machines. Mr. Massey says, however, that it costs more to manufacture in Canada than in the United States; and that this fact makes an inroad upon their profits in their foreign trade, considering the competition they have to meet from foreign manufacturers. As we have shown, Canada in proportion to population, and in the face of other disadvantages, actually does a much larger export business in agricultural implements than the United States; and, according to these

circumstances, exports more than thirty times more of these products to that country than is imported from there into Canada. The exports of agricultural implements from the United States to Canada, in 1889, were but \$603.58 to the million of population, while the exports from Canada to the United States in that year were \$1,946 to the million.

These are facts that Canadian manufacturers of agricultural implements who want reciprocity with the United States should carefully study. They have the virtual control of the Canadian market; they export largely to the United States, and their exports to the Australian and New Zealand markets are increasing with wonderful rapidity, while the exports there from the United States and Great Britain are at a standstill. Mr. Massey says that his Company's export trade this season will constitute twenty per cent. of their entire business; and that during the current week they made large shipments to foreign markets. But in his selfishness he seems to forget that while his company's foreign business amounts to one-fifth of all that it does, with the other four-fifths he supplies his home market, which he could not possibly do under either free trade or reciprocity with the United States. His idea probably is that under such political change he could obtain his "screws, nails, rivets and other classes of raw materials" from abroad cheaper than what he now has to pay for such articles of home production; but he should remember that, as he admits, there is no great difference in the quality of Canadian and foreign made machinery, and that in seeking to enlarge his smaller foreign market, he would meet a formidable foreign competition in his own home market that might possibly drive him to the wall.

The tendency of such political views as these expressed by Mr. Massey is to produce trusts, pools, corners and other objectionable combinations whereby the small and weak are crushed and absorbed by the big and strong. The Massey Company is neither small nor weak; but the life and activity of thousands of Canadian manufacturers who are building up their country and establishing its industrial independence, under the benign influence of the National Policy, would become swallowed up by syndicates or frozen out of existence were that policy abandoned.

AMERICAN SHIPBUILDING.

THE shipbuilding industry in the United States has undergone some strange changes since 1857. In that year the total tonnage of vessels built in that country aggregated 378,805 tons, distributed as follows:—On the New England coast, 183,625 tons; on the entire seaboard, 285,453 tons; on the Mississippi River and its tributaries, 41,854 tons, and on the Great Lakes, 51,498 tons. The largest production was in 1874, when the entire tonnage amounted to 432,725 tons; but the largest production of the New England coast was in 1857, with the tonnage as above stated, the production for 1889 being but 30,983 tons. On the entire seaboard the maximum was reached in 1865 with 291,306 tons, 1889 being credited with but 111,852 tons. On the Mississippi River and its tributaries the maximum was reached in 1881 with 81,189 tons, the industry rapidly dwindling down to 12,202 tons in 1889.

These figures show that great and constantly increasing depression characterized the industry in the sections named, but the facts as applied to the Great Lakes show a remarkable activity; for the greatest production within the period alluded to was in 1889, with an aggregate output of 107,080 tons. In 1857 the output of the New England coast amounted to about one-half of that of the whole country, while in 1889 it was only about one-ninth of the total of 1857. The falling off of the total production of the country is also remarkable—from 378,805 tons in 1857, to 231,134 tons in 1889—a decrease of nearly one-third. But the showing is not so bad for New England as it is for the entire seaboard including that section; for while the entire seaboard produced 285,453 tons in 1857, the maximum in 1865 was but 4,047 tons greater, since which time the retrogression has been steady until it reached but 111,852 tons in 1889. On the Mississippi River and its tributaries the advance in the industry was steady until the maximum was reached in 1881, when the production was 81,189 tons; but from that year the decadence was phenomenally rapid, the output in 1889 being only about one-third of what it was in 1857.

In 1857 the American merchant marine was in the zenith of its glory. It consisted principally of fast sailing clipper ships, and these were mostly built in New England. The war of the Rebellion caused these ships to disappear from the ocean, and when the war was over the advances made in shipbuilding had substituted iron hulls for wood, and steam instead of canvas as the propelling power, and America found her prestige gone; and the vessels now being built on the entire seaboard may be classed as those employed in the fisheries and those employed in the coastwise trade, into which no foreign vessel is allowed to enter.

The average tonnage of the vessels built in the United States last year afford some indication of their character. The average tonnage of all the vessels built was but 220 tons, which is slightly less than the average of New England vessels, which was 230 tons; but the average of all the vessels built on the entire seaboard, including New England, was but 145 tons. Of the 769 vessels built on the entire seaboard elsewhere than in New England, the average is less than 95 tons; and when it is considered that among these are the passenger and excursion steamers doing business in and around the principal cities, some of which are very large indeed, the average of 95 tons for the balance would be greatly reduced.

It is not surprising that the number of vessels built on the Mississippi River and its tributaries, and the average tonnage of them should have decreased so rapidly since 1881. In that year there were 182 vessels built in that section, the average tonnage of which was about 450 tons; while in 1889 there were but eighty-three vessels built, with an average tonnage of but 145 tons. For many years previous to 1881 a very large proportion of the traffic in and among the States west of the Allegheny Mountains, and extending to the Gulf of Mexico, was done in steamers, many of which were of very large dimensions. At date last mentioned, the great Eads steel bridge across the Mississippi River at St Louis had been but recently finished, besides which, we believe, there were no other railroad bridges thrown across any of the principal western rivers. But the Eads bridge demonstrated the feasibility of such structures, and the

rapidly growing interstate commerce of the country demanded them and as these were built, and as lines of railroads were extended reaching in all directions, the importance of these rivers as arteries of trade decreased, with the results as herein shown. It was found that it was cheaper to send western produce to Atlantic shipping ports by rail, than to New Orleans by water.

The conditions that obtain on the Great Lakes are entirely different from those of the rest of the country. In 1857 there were 182 vessels built in this section, the same number that characterized the zenith year of the industry on the Mississippi River; but while the average size of the vessels built in this latter section was 450 tons, that on the Lakes was but 280 tons; and these were employed chiefly in carrying grain. The growth of the shipbuilding industry in this section since 1857 has been phenomenal, keeping pace with the general advancement of the Western States. As the crops increased in volume, although the railroads reached out their iron arms to move them, vessel men entered keenly into the competition; and the largest number of vessels built in any one year on the Lakes was 476 in 1863. It is true that these were not large vessels, the average size being less than 150 tons; and there was no great variation either in the number of vessels built or the size of them until the development of the Lake Superior iron mines, and the immense shipments of ore demanded not only the large multiplication of vessels but much larger carrying capacity than had previously obtained. In 1889 there were 225 vessels built in this section with an aggregate tonnage of 107,080 tons, an average of 475 tons each.

While the ocean commerce of the United States is exceedingly large, but a very small portion of it is carried in American vessels. Of course, about all the trade participated in by foreign vessels is done through seaboard ports; and as small as is the business done between these ports, confined by law to American vessels only, it would disappear entirely, and no American vessel would be afloat to-day in that trade, were it not for this law. This would also apply to the carrying trade of the Great Lakes; and it is only the protection afforded by the American maritime laws that makes it possible to maintain and operate extensive shipbuilding yards in so many of the ports on these lakes.

INDUSTRIAL DEPRESSION IN GREAT BRITAIN.

THE industrial depression in Great Britain in the cotton trade is exciting much interest there, and many facts are being brought out indicating that the movement for Fair Trade there is deep seated and widening constantly. A recent issue of the Manchester Chamber of Commerce *Monthly Record* contains an article by H. F. Hibbert, Esq., F.S.S. (a gentleman not unknown to the readers of this journal), in which it is shown that among other causes of this depression is the excessive competition of British manufacturers against Europe and America in their own markets; against Europe and America in neutral markets, and among themselves, caused by a constantly increasing productive power at home on the one hand, and on the other a demand from foreign countries which does not absorb a proportionate share of their increased output.

In order to accurately determine the nature of this competition Mr. Hibbert had compiled from Government returns

tables showing the amount of raw cotton imported, re-exported and retained for home consumption by European countries and by the United Kingdom, by which he shows that, whereas the Continent in 1870 retained for home consumption 3,270,547 cwts. less raw cotton than the United Kingdom in 1887, the year regarding which the latest returns from all countries were available, the Continent retained 758,247 cwts more than the United Kingdom; or, while Britain retained imports of raw cotton during the last eighteen years, increased from 9,832,065 cwts. to 13,382,342 cwts, the demand on the Continent increased from 6,561,051 cwts to 14,140,589 cwts.

A tabulated statement shows that within the period from 1870 to 1887, there was an increase of exports of British cotton piece goods to foreign countries aggregating 450,585,889 yards, nearly all of which was absorbed by the demand from non-producing countries, and other countries where there was the minimum of home competition; against an increase to British Possessions of 1,186,427,745 yards, an exceedingly large proportion of which—1,127,036,700 yards—was accounted for by increase of shipments to India.

The export of piece goods to Eastern markets, including Hong Kong, India, Straits Settlements, Ceylon, China and Japan, increased from 1,345,680,988 yards in 1870 to 2,591,596,000 yards in 1887—nearly double—while the export to United States and European markets increased only from 394,462,712 yards in 1870 to 435,241,500 yards in 1887—an increase of only 40,778,788 yards, the increase being in the trade with Holland, Belgium, France, Portugal, Spain and Italy; while there was large reduction in the volume of trade with United States, Russia, Germany, Austro-Hungary, Sweden and Norway, that with the United States showing a decrease of 61,763,475 yards.

Recapitulation makes the following unfavorable showing for Great Britain: Within the period alluded to she increased her consumption of raw cotton but 36 per cent.—Europe, 115 per cent.

She increased her export of cotton piece goods in yards 50 per cent., 13 per cent. of which went to the credit of foreign countries, and 37 per cent. to that of British Possessions, while her European trade was increased barely 1½ per cent.

Bearing these facts in mind Mr. Hibbert thinks there is but one of two conclusions to be arrived at: (1) That British manufacturers have either too many looms in operation; or (2) that their customers are not taking from them that proportionate increase of goods which they ought to expect. Regarding the first he does not believe that the increase in looms is greater than the demand of the people for work. On the contrary there is constant emigration from the cotton manufacturing districts, and his conclusion is that foreign nations—Europe and the United States in particular—are, by their tariffs, gradually but surely destroying British trade with them in cotton piece goods, thus forcing a surplus of British production, which he says would, under natural laws, be consumed by them, into the Eastern markets. These latter markets, glutted with their own natural consumption, to which is added a surplus which cannot be disposed of elsewhere, become masters of the situation, and dictate prices which British manufacturers are forced to accept in order to avoid stoppage of machinery, whether profitable or otherwise.

It sounds queer to hear Mr. Hibbert advance the claim that the United States and the tariff nations of Europe should be "under natural laws" the consumers of British cotton goods of course. No doubt the impression prevails in Britain that the markets of these nations belong of right to British manufacturers, but the manufacturers of these nations think differently.

Meanwhile great depression prevails in the British cotton industry, and the great question with the manufacturers is "What is to be done about it?"

THE CONTRACT LABOR LAW.

THE mendacity of the Toronto *Globe* is exemplified in the following editorial published by it a few days ago:

The profits of Pittsburg glass manufacturers under the high tariff are so great that new factories have been built and foreign laborers brought over to run them. This has led to an action against the manufacturers for violating the Contract Labor Law, which has, however, resulted in an acquittal almost by default. It so happens that the leaders of the Manufacturers' Association were instrumental in giving the vote of the glass-workers almost as a body to the Republican ticket, and the Democrats now charge that the acquittal is due to the interference of "Boss" Quay on behalf of the defendants. At any rate, the hollowness of the ante election protectionist zeal for the workingmen has been pretty well shown, and the incident is likely to figure prominently in future campaigns.

The object in publishing this mendacious statement was to array the laboring element against the manufacturers, first by showing that the manufacturers had imported foreign labor because it was cheaper, while plenty of domestic labor was to be had, but for which higher wages would have to be paid; by showing that the manufacturers had it in their power to give the vote of the glass-workers over to their party friends, and that the jurymen who sat upon the case were venal, corrupt and open to the interference of their friends.

Every line of the *Globe's* article stinks with falsehood. The action at law alluded to was that of the United States against the Chambers-McKee Glass Company and others to recover \$1,000 penalty for the importation under contract of an English glass-worker named Ford. The case was tried in Pittsburg a few days ago, and the jury rendered a verdict in favor of the defendants without leaving their seats. This was a test case, and, had the verdict been in favor of the Government, similar actions would have been brought in the cases of a large number of other glass-blowers who had been brought into the country under the same circumstances and at the same time.

On the trial the Government put all these workmen on the stand to prove the facts, and it put the defendants on the stand also: and the evidence showed that the Chambers-McKee Company had recently invested \$1,000,000 in the erection of glass-works at Jeannette, a town in the suburbs of Pittsburg. When these works were ready to be put in operation, the proprietors called upon the president of the Glass Workers' Association and informed him that a certain number of glass-workers were required, asking him to supply them from the association. It was found that there was not

a sufficient number of unemployed workmen in the United States; and the President of the International Federation was notified of the fact, whereupon he sent word to England that the employment was to be had at these glass works, with the result that the men came over and accepted the situations. It was shown also that there was no contract entered into with these men, and that there was no money advanced to them for paying their passages or as inducement for them to come. Furthermore the defence neither offered any evidence in their own behalf nor made any argument whatever and, after the Government had closed its case, the presiding judge instructed the jury to return a verdict of "not guilty," which was accordingly done.

It would be difficult to condense more venom and falsehood in so short a paragraph as the *Globe* published for the sake of having a fling at the tariff, and of injuring the manufacturers.

EDITORIAL NOTES.

HALF a million dollars is to be invested in the erection of a tin plate mill near Pittsburg, Pa., if the McKinley tariff bill passes. It will be one of the largest in the world. J. Davis Lewis, formerly a tin plate manufacturer in Wales, is at the head of the projected enterprise. Free sites, coupled with cash gifts running all the way up to \$50,000, have been offered by rival localities to secure the new plant.

THE cost of manufacturing white cotton goods in Canada is only 12½ per cent. greater than the cost of manufacturing similar goods in Great Britain. The cost of manufacturing similar goods in the United States is only ten per cent. greater than in Great Britain, and 2½ per cent. less than in Canada. The Canadian duty upon such goods is fifteen per cent. ad valorem, and one cent per square yard.

NOTWITHSTANDING the battering Canadian manufacturers have been subjected to recently by enemies and whilom friends, they are still smiling in the field.

"They are not driftwood on the wave;
But, like the ships that tempests brave,
Their hearts upon their voyage stand."

And they will ultimately arrive at destination with both pedal extremities. They will get there.

THE recent passage by the Dominion Parliament of an Act authorizing the payment of a bounty of \$2 per ton on all pig iron manufactured in Canada from Canadian ore, on and after July 1, 1892, for five years, does not strike THE CANADIAN MANUFACTURER favorably. The present bounty is \$1 per ton, and the duty imposed on imports of the article is \$4 per ton. The American duty on pig iron is \$6.72 per ton. Canada made last year only 30,000 tons of pig iron, while she imported 300,000 tons of iron and manufactures thereof. The point urged by the MANUFACTURER is that, if, instead of granting a bonus of \$2 per ton, the Government had added \$2 to the present Canadian tariff, making it \$6, the result would be the establishment of additional blast furnaces for the smelting of Canadian ores that now remain undeveloped. There is sound political economy in this, and we are surprised that the Canadian Government does not see it.—Cleveland, O., *Iron Trade Review*.

A MEETING of a few gentlemen who are taking an interest in the beet-sugar industry was held last week in the Board-room of the Imperial Trust Company, in this city, Sir Wm. P. Howland presiding. Mr. Wilfrid Skaife, B.A., Montreal, Manager of the Berthier Sugar Factory, was present, and explained the causes of the failures of the beet-sugar companies in the Province of Quebec, and showed that these causes are such as do not exist, or can be easily overcome in this Province. He showed that by utilizing the machinery now idle in one of the Quebec factories, a sugar factory can be constructed in Ontario so as to cost about \$70,000, all complete and in perfect running order, the factory to have a daily capacity for working 150 tons of beet roots. We are pleased to learn that steps are being taken to organize a company to carry out this proposal.

WE observe that American pig iron is coming into Ontario pretty regularly. About London and Hamilton, we understand, founders are using it. A sample of it said to be fully equal to Langloan, can be laid down in Toronto at \$22 per ton. One establishment in this city, the St. Lawrence Foundry, uses 200 tons a week of an iron produced at Tonawanda, N.Y., and we are told likes it well. The quality is equal to Carnbroe at any rate, while the foundrymen find that it is tougher than the Scotch iron, and mixes better. There is for this reason probably some Lake Superior ore mixed with it — *Monetary Times*.

The American duty on pig iron is \$6.72 per ton, yet in the face of this fact Canadian consumers find it cheaper to use American rather than English iron, made under Free Trade. We are glad to record that the *Monetary Times* "observes" this fact. That journal is an advocate of Free Trade; but the fact it records is an example worth bushels of its vague theories.

THE comparative returns of pauperism in England and Wales which have been presented to Parliament show that the total number of persons in receipt of parochial relief on New Year's Day, 1890, was 793 246, a number which is 2.73 per cent. of the population. That is to say, out of every thirty-seven people one was a pauper. This seems an alarming proportion, but is smaller than in any year of the record, which goes back to 1858. Twenty-seven years ago one person in twenty was destitute, ten years later the proportion was about one in twenty-five, and in another decade it had fallen to one in thirty-three. — *Toronto Globe*.

No such pauperism exists in Canada. England has been enjoying the benefits of Mr. Cobden's Free Trade policy for half a century, and although it was promised that the policy would greatly ameliorate the condition of the poor of that land, it has not done so to any appreciable extent. As the *Globe* remarks, pauperism in Free Trade Britain exists to an alarming extent. As we remark, no such pauperism exists in Protected Canada.

AMERICAN Protectionists are sanguine that should Senator Frye's two Bills now pending become law, the result would be the renewal of American foreign shipping interests. In one Bill provision is made for the payment of liberal bounties for mail carriage in swift American built ships, officered and manned by Americans, and liable to be called into the service of the Government in time of war. Such vessels are to be paid from one to six dollars per mile for carrying the

mails away from the United States. The other Bill provides that vessels not carrying the mails are to be paid thirty cents a ton for every thousand miles they sail, these vessels, like the others, to be of American build, and officered and manned by Americans. It is thought the passage of these measures will at once incite great activity in American shipyards, compelling the enlargement of existing ones and the establishing of many new ones, creating a large demand for iron and all other materials entering into the construction of ships.

THE British Iron and Steel Institute have accepted an invitation to hold their autumn meeting in the United States, and that meeting will take place in New York on October 1st, 2nd and 3rd, under the presidency of Sir James Kitson, Bart. The American Institute of Mining Engineers have taken the matter in hand and will see to it that the British visitors receive due and proper attention. It is proposed to have an international meeting, probably in Pittsburg, Pa., at which the members of the British Iron and Steel Institute, the American Institute of Mining Engineers and the Association of German Iron and Steel Manufacturers (*Verein Deutscher Eisenhüttenleute*) and other leading metallurgists and engineers will participate. The Americans are planning a number of excursions for the entertainment of their visitors, one of which will take in the Lake Superior iron mines, Detroit and Niagara Falls. It is to be hoped that a proffer of Canadian hospitality will induce these distinguished gentlemen to visit the Sudbury and other rich mineral regions in Canada, and some of our enterprising manufacturing and commercial cities.

ON one day last week the telegraph brought news of two important events occurring on British soil. In Nottingham, England, a prominent lace manufacturer refused to submit to the collection of the income tax assessed against him, and suffered a quantity of his goods to be seized and sold by the authorities, the object being to raise a case contesting the liability of manufacturers under the law, and a fund is being raised for this purpose. This in Free Trade Britain; but such things do not occur under tariff Protection. The other event occurred in Newfoundland, where a French war ship destroyed the nets of the native fishermen, and drove the fishermen away from the waters to which they had always had access. This fishery was the sole means of livelihood of 12,000 people; and their rights have been ruthlessly trampled upon by the armed force of a foreign nation. The people have declared that they will no longer submit to taxation unless they are protected in their natural and inalienable rights. This on British territory, where the floating of the British flag should, but does not mean protection to those who live under it. We are familiar with the situation in Behring Sea, where American war ships capture and confiscate Canadian ships and cargoes found under the British flag, while British ironclads lie rusting and inactive in adjacent harbors.

THE repeal of the duty on raisins, proposed by the Chancellor of the Exchequer, would bring Great Britain one step nearer to absolute Free Trade. The only remaining articles on which the British Government levies duties are wines and liquors, coffee, cocoa and chicory, figs and currants, tea, tobacco, plate

(gold and silver), playing cards and a few articles of manufacture which contain alcohol.—*Toronto Globe*.

The strike contagion is spreading even to the guardians of the peace. In England the members of the London Police Force are taking advantage of the apprehensions of trouble on May Day to press their claims for shorter hours and more pay, and are threatening to go on strike if their demands are not acceded to. The policemen certainly seem to have justice on their side, their pay ranging only from \$4.50 to \$6.75 a week, according to length of service—amounts that seem ridiculously small for the world's metropolis to pay the men who maintain order on her streets.—*Toronto Globe*.

The above are contiguous items in a recent issue of our Free Trade contemporary, and are suggestive of some of the blessings of Free Trade. It is true that there are but few articles imported into Great Britain upon which duties are levied, but the income from these duties is enormous. Most of these articles are of prime necessity to the poorer classes, but the following duties were collected upon them in the year 1889:

Tea.....	£ 4,629,901
Coffee.....	184,292
Tobacco and snuff.....	8,858,781
Dried fruit.....	579,429
Total.....	£14,252,403

Here is considerably more than \$70,000,000 taken out of the pockets of the poor—"for revenue only"—as none of the articles are produced in Britain. On the other hand the imported wines that only the wealthy classes can afford, paid duty to the extent of only £1,210,537, say \$6,000,000. But everything an Englishman uses is taxed, the total receipts from Excise last year aggregated £25,474,403, say \$127,000,000, and yet with all the blessings of Free Trade and taxation a British policeman's pay is only \$4.50 a week.

FISCAL duties have an evil effect on various branches of our export trade, but there appears to be a prospect of a new outlet for engineers shortly. It is announced that Messrs. H. H. Vivian & Co., of Swansea and Birmingham, having recently purchased a number of mines in the neighborhood of Sudbury, Ontario, are seeking incorporations from the Canadian Parliament for the purpose of acquiring, holding and working them. Should their operations prove successful—and in view of the rich nickel and iron deposits which abound in the district this seems probable—Messrs. Vivian intend to erect smelting works. The great obstacle in the way of the development of this industry in Canada, however, is the prohibitive duty levied upon all kinds of mining machinery, and urgent representations have been made to the Government to abolish the impost. From latest advices this appears to be quite within the range of possibility, and if the Canadian Minister of Finance provides for the abolition of the tax in his forthcoming budget, there can be no doubt whatever that a considerable impetus will be given to mining operations. It is therefore advisable, in view of the possibility of such an alteration, that makers of mining machinery should be prepared to seize the opportunity. The United States are close at hand, but our own makers would have a good chance, and it is evident that once the new mines are in operation there will be room for further machinery and plant in connection with resulting industries. Since the above was written we have received a letter from a Canadian correspondent stating that it has been decided to admit mining machinery duty free.—*London Machinery Market, May 1st.*

Now that mining machinery is to be admitted duty free it is to be hoped that Messrs. Vivian & Co. will lose no time in establishing their smelting works at Sudbury. We recently alluded to the fact that Mr. S. J. Ritchie and other American capitalists, who also own extensive deposits of nickel and copper in the Sudbury region, contemplated, now that the American duty upon nickel ore is to be removed, removing their smelting works, recently erected at Sudbury, to Ohio, although they are privileged, as Messrs. Vivian are, to import their machinery free. In this instance it is better that the Atlantic ocean stands between Canada and Britain, seeing we are to have the Vivian Works, than to have Lakes Huron and Erie between us and the United States, admitting the easy removal of Mr Ritchie's works from Ontario to Ohio.

In the May number of *The United Service Magazine* is an article anent "Imperial Federation in Australia" that intimates that Imperial Federation is not a practical issue in that country. Discussing this article the *Toronto Globe* says:

The opposition to Imperial Federation is ascribed to the indifference to British affairs arising from the great distance that separates Great Britain from Australia, to the immense political power wielded by the working classes, who are strongly imbued with republican ideas and disposed to copy the institutions of the United States, and to the irritation occasioned by the frequent interference of the Imperial authorities with Australian legislation. As regards the latter point, the Home Government appear to still exercise in Australia a control over questions of internal policy that has long been abandoned in Canada.

There are some features of Imperial Federation that commend themselves to Canadians, and that create a desire that such a political event might become realized. But if there is irritation existing in Australia, occasioned by the frequent interference of the Imperial authorities with the legislation of that country, the *Globe* is mistaken in supposing that the Home Government has long since abandoned such interference in Canada, or that it even contemplates doing so; and it is this knowledge that operates to deter Canadians from praying very fervently for what some of them term a "fad." Canada is now a republic in all but the name and a few minor particulars and a larger particular, by which latter we mean that Canada winces under a yoke whereby we are not permitted to do certain things that we feel and know should be left to the discretion of the Dominion Government. Among these things that are forbidden to us are to make a copyright law to suit ourselves, and to give Canadian vessels the entire control of our interprovincial marine trade to the exclusion of British or any other vessels. The sooner the Home Government realizes the fact that the Canada of to-day is not the helpless and dependent country it was a hundred years ago, and that she will not always be a suppliant for rights that are now unjustly denied her, the greater hope there will be for Imperial Federation, if Britain desires it. Canada is progressive and she will not forever tolerate shackles that obstruct her progress. Canada's wish for the removal of restrictions maintained by the Home Government should be respected. It would be wise on the part of the Home Government to respect them.

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FACTORY TO LET.—Ten years lease; containing about 11,000 feet of floor space, fitted up complete with engine, boilers, shafting, steam heating, gas light and water service fixtures throughout; adjoining building can be had if desired; five floors, each 30x110, with hoist. Apply to Samuel May & Co., 111 Adelaide Street west, Toronto.

FOR SALE in Kent County, Michigan, the Buchanan Mill property consisting of a first class lumbering mill the extensive water power in connection with it including the entire power furnished by the river with real estate on both sides of sixteen acres, situate one mile from Main Street of Lowell, a rich farming country surrounding an excellent location for paper mill, furniture factory, woolen mill and the many uses that require power. Also a splendid home and farm of 87½ acres with buildings, fruit, evergreens etc. For further information all at the premises of JAS. R. BUCHANAN, Lowell, Michigan.

TO MANUFACTURERS—The Town of Thorold, Welland County, Ontario, is a splendid site for manufactures of all kinds, and reasonable encouragement will always be given for the settlement of bona fide industries. It is situated on the boundary between the Counties of Lincoln and Welland; population, 3,000; lighted by electricity (public and private circuits); electric street railway connection with the City of St. Catharines, four miles distant; nine miles from Niagara Falls; the New and Old Welland Canals, also the Welland (G.T.R.) and Niagara Central Railways, all run through the town; water power from the canal; bonded debt small; situation, on the brow of the mountain, overlooking Lake Ontario, most picturesque; public health not excelled; five churches; first-class High school, also two Public and one Separate school. Any information desired will be cheerfully given by application to JAMES LAWSON, Mayor.

MR. WM. EDGAR, general passenger agent of the Grand Trunk Railway, has sent us "A Guide to the Fishing and Hunting Resorts in the vicinity of the Grand Trunk Railway of Canada." It contains particulars of fish, game, hotels, livery and general facilities, all of which are important to know to those who contemplate taking their outing in the most picturesque portions of the Dominion and the adjacent States.

A NEW advocate for journalistic recognition in the Walkerville, Ont. *Mercury*, of which Mr. Stephenson, late of the *Chatham Planet*, is proprietor. It appreciates the importance of giving manufacturers and industrial news, and for this reason it is specially valuable.

Our Little Ones, that elegant nursery magazine, published by the Russell Publishing Company, Boston, Mass., comes to us as brimful as ever of delightful matter to interest the wee ones at home. Every page contains beautiful and suggestive pictures illustrative of the stories told in prose and verse, and all the reading is easy and suited to the comprehension of those for whom it was intended. It is only \$1 50, which places it within reach of all.

MESSRS. GEO. F. HAWORTH & Co., Toronto, have sent us a brochure having reference to the Canadian tanned leather belting manufactured by them. Included in the interesting contents are a comparison of single and double belts, from a treatise in belting by Mr. John H. Cooper; suggestions to users of power of the importance of covering pulleys and drums with leather; information concerning belting, giving rules for finding length in a roll of belting without unwinding, and for finding desired length of belt; how to select belts and how to fasten them, etc. This valuable little book will be sent free to any address on application.

ONE of the most interesting Canadian publications that reaches our exchange table is *The Colonist*, published at Winnipeg, Man. The proprietors have caught onto and carry out the idea of telling what sort of a country Western Canada is, by which we mean Ontario, Manitoba, Assiniboia, Alberta, Athabasca, Saskatchewan and British Columbia; and he who reads the *Colonist* acquires a good general idea of the character of these portions of this great Dominion. One of the most entertaining and valuable features of the *Colonist* is the descriptions it gives of manufacturing and industrial enterprises. It is published monthly at \$1.00 a year by Mr. J. A. Carman.

ROBERT LOUIS STEVENSON writes to Robert Bonner's Sons from Sydney, New South Wales, that his health has greatly improved, that he is in good writing condition, and that he is at work on his story for the *New York Ledger*, which he hopes to complete within a reasonable time. Mr. Stevenson likes the story very much himself, and has become deeply interested in the fascinating plot which he is weaving. He says: "It has something of a Monte Cristo flavor, being the tale of an abominable crime and a singular vengeance. I have great hopes of the tale; the incidents are strange, and so are the characters." This has the true Stevenson flavor and smacks of "Hyde and Jekyll." The public will await the appearance of this story with eagerness and great expectations.

MR. J. S. JEANS, secretary, has sent us his Annual Statistical Report to the British Iron Trade Association on the Home and Foreign Iron and Steel Industries in 1889. The contents include facts relating to the production and consumption of iron ores; the coal and coke trades; the pig iron, manufactured iron, Bessemer and open hearth steel, and the tin plate industries in 1889; exports and imports of iron and steel; iron and steel shipbuilding and railway requirements. A large section of the book is given to discussing the foreign iron and steel industries of foreign countries; and the appendices have reference to the details of the iron and steel business in Great Britain and other countries. This Report is specially valuable as showing the condition of the iron and steel industry of Great Britain and its prospects; and, when compared with Mr. Swank's Report of the American Iron and Steel Association, as disclosing the remarkable nearness in many particulars affecting the industry in Great Britain and the United States.

Good Housekeeping for May 24th contains an unusual variety of matter, including several especially valuable articles, the first of which opens a new series of practical household papers on "The Head, the Hands, the Feet." The present essay treats of the eyes and ears, giving many interesting facts and suggestions regarding their uses and abuses, which if read and heeded must be of great benefit. There are an abundance of papers pertaining to household economy, work in the kitchen, treatment of children, and the preparation of food, with something relating to the garden. Mrs. Campbell's department of "Woman's Work and Wages" is always interesting and valuable, in the light it throws upon this important phase of our industrial situation. *Good Housekeeping* is issued fortnightly at \$2.50 per year, by Messrs. C. W. Bryan & Co., publishers, Springfield, Mass.

"MODERN SCIENCE AND MODERN THOUGHT." With a supplemental chapter on Gladstone's "Dawn of Creation" and "Proem to Genesis," and on Drummond's "Natural Law in the Spiritual World." By S. Laing. Illustrated. The Humboldt Publishing Company, 28 Lafayette Place, New York.—We are not surprised to learn of the success of this book in England, where a sixth edition was

demand within a month from the date of first publication, for a more readable book we have not seen in a long time. The principal results of Modern Science, and the revolutions they have effected in Modern Thought, are concisely presented. Here are displayed the results of recent inquiries into the composition and constitution of the earth and of the universe, into the nature and laws of matter, the development of organized and animated existences, the history of man, the myths of all races and the religions of all peoples; discussions of the nature of force, motion, electricity, light and heat. The display is brilliant and instructive. The work is in two numbers—117 and 118—of The Humboldt Library of Science.

THE June *Wide Awake* opens with a beautiful frontispiece by E. H. Garrett which illustrates a story as beautiful, by Annie Bronson King, entitled "Little Sir Lionel." The number is almost entirely given to short stories; among them are "Spot the Mustang," by D. B. Waggener; "Martha's Travels," by Katharine B. Foot; "Ickery Ann," an unusually impressive story, by Mrs. Elia W. Peattie; "Missmilly," by Mrs. Jessie Benton Fremont; "The Rubber Boy," by Florence E. Weld; "Blossom," by Mrs. Kate Upson Clark, and "The Indian Guardian," by Grace Dean McLeod. Two serials are begun: "The Quest of the Whipping Boy," by Georgiana Washington, an amusing school room extravaganza, and "The New Senior at Andover," by Herbert D. Ward. Alexander Black continues his illustrated "Confessions of an Amateur Photographer," the present chapter concerning "Forbidden Fruit." Mrs. Sallie Joy White's "Business Opening" is for those girls who would become "Stenographers and Typewriters." A curious prize-offer is made, the subject-matter of which is entitled "The Perplexities of a Crymangle." The poems of the number are by Mrs. M. F. Butts, Eli Sheppard, Emilie Poulsson and C. E. Whiton-Stone. "Men and Things" as usual abounds with interesting original anecdote and reminiscence. *Wide Awake* is \$2.40 a year. D. Lothrop Company, publishers, Boston.

Outing for June breathes from first to last the breath of its opening page, which is conceived in the very spirit of *Outing*. This number opens with an article of unusual interest to all athletes in "America's Place in Athletic History," and "The History of the Manhattan Athletic Club." It also contains an article on the almost primitive fishing grounds of the Lakes of Wisconsin; a short but comprehensive article on Lawn Tennis as developed at St. Augustine; another of Prof. Sumichrast's yachting series, dealing with "Ladies at the Helm;" one on certain "Trout Streams in Pennsylvania;" and a description of Epsom and Ascot, the great English racing centres; and of The National Guard of Vermont—"the Green Mountain boys"—"The Canoeing of To-Day," which concludes the story of the Meet of 1889, and a Kennel article treating of the popular Great Dane or German Mastiff; "A Morning in the Country A-Wheel"—one of the many pleasures to be derived from Cycling, and "A Revolution in the Cricket Field," recording the proposals made to bring the game into consonance with the American temperament; "A Canadian Ramble with Rod and Tent"—a charming phase of Canadian summer life—make altogether a series of papers excellent and seasonable, and *Outing* for June should double the circulation of this popular periodical. The fiction—"Wrecked on Carr's Reef"—is from the powerful pen of President Bates. Published by the Outing Company, 239 Fifth Avenue, New York, and for sale at all news stands.

THE engineering corps of the Union Pacific, working on the projected line from Vancouver, Wash., to Tacoma, on the Sound, has made a rich discovery in the Cascade Mountains, between the Cowlitz and Natchez Passes. In exploring for a route, the surveyors went over Coal Mountain, at the base of which a great deal of coal had been previously found. They found by borings that the mountain was like one huge block of coal, of a good quality. When this discovery was reported to the officers of the road, it was decided to build straight through the mountain and through a tunnel of coal. The coal excavated in the work will more than pay for the building of the tunnel. Not only that, but the road will then have its coal deposits at its terminus, like the Northern Pacific.

WHEN the winter now ending set in, it was hardly expected that the mildness of the season would permit a very great activity in electric street railway work. But it may be doubted whether at any one time the companies putting in roads were able to catch up with the contracts, and now, as spring opens, it finds them not only with heavy orders in hand, but with a promise of new work that must far transcend the most sanguine forecasts of everyone concerned. While there are a large number of new roads to be built,

of moderate size, attention and interest naturally centre in some of the leading cities. St. Louis, for example, will have at least eight or nine electric roads building this spring, the city authorities having been liberal in their concession of franchises. The work in St. Paul and Minneapolis is alone enough to occupy the energies of nearly all the men in the country familiar with details, as engineers or laborers. In Rochester a contract has just been closed for fifty miles of track and 100 cars. In Pittsburg several of the roads intend to adopt electric traction, and the Duquesne Company has already contracted for 100 Pullman cars. Among other cities that may be mentioned as adopting the new mode of urban travel are Memphis, Atlanta and Chattanooga.—*Electrical Engineer*.

ELECTRICITY has been the means of creating a variety of new and beautiful illuminating bodies. A completely new ornamental principle has been brought into application. The ductile conducting-wire can be turned and wound in all directions, so that the most fantastic formations are possible. Thus, there may be fitted in the corners and centres of ceilings, garlands and floral ornaments, in colored bronze or in gilded and painted stucco, from the open flowers of which streams the electric light, or to such garlands, colored glass lamps to contain the light are added, by which the effect of colored precious stones is produced. The light hangs down in glowing clusters, or swings from the walls in festoons of flowers, or glitters in the hands of charming bronze boys, or, like a galaxy of stars, it hovers over that magnificent life-size female form, cast in bronze, from Eberlein's model. Free and unrestricted can the light be disposed of. Small wonder that the naturalistic creations receive the preference. The things at present created in such illuminating bodies are really magnificent. Here a wall-bracket in the form of a pine apple, on the crown of which are the lamps, like stamens with glittering nodules. There a lamp of colored majolica, with rays of light glimmering with fairy-like beauty between colored metallic leaves and entwining plants. Countless is the variety, each more beautiful than the other. All the large establishments for illuminating articles hold similar charming work in stock. In numerous places of public assembly in the city many have already come into application. The impression created is one of such enchanting character that it may with justice be claimed that in this wonder of loveliness the marvels depicted in the "Thousand and One Nights" seem again to be realized. In this beautiful work there is a hint for our artistic trades; new ornamental creations are not originated by the everlasting imitation of the ornamental forms of past periods of style, but by inventive skill and new necessities.—*Kuhlow's German Trade Review*.

A PLEA FOR PROTECTION.

THE report on the Mineral Resources of Ontario, recently published by the Ontario Government, contains the following strong plea for Protection:—

"Not only is it reasonable to suppose that with the present protection afforded by duties and bonus, amounting together to \$5.50 per net ton, we should be able to supply almost our entire consumption of charcoal and coke pig iron, but their seems to exist no good reason why a considerable part, if not the greater part, of the iron and steel now imported and subject to the payment of duty should not be manufactured in Canada from pig iron produced in this country. The tariff upon manufactures of iron and steel is in the main protective in its character and should secure the manufacture in Canada, of much of the iron and steel now imported. The equivalent in pig iron of iron and steel entered for consumption in 1887, without including cutlery, instruments, tools, machinery and engines, amounted to at least 275,000 short tons. If we could supply ourselves with iron and steel equivalent to 175,000 tons of this amount and also supply the present consumption of 75,000 tons of imported and domestic pig iron, it would not be in excess of a reasonable development of our iron industries under present conditions. The production of 250,000 short tons of pig iron, equally divided between charcoal and coke iron, would require at least eight days' labor for each ton of charcoal iron, and six and a half days' labor for each ton of coke iron, or a total of 1,800,000 days' labor in mining coal, making coke and charcoal, mining ore, quarrying limestone for flux and smelting the ore. This amount of labor would not include the transportation and handling of material, the erection of works, construction of machinery and many other items which are contingent upon the manufacture of pig iron. A large additional amount of labor would be employed in converting pig iron into iron and steel. About 500,000 tons of ore would be used, about 450,000 tons of coke and charcoal would be required for the smelt-

ing of the ore, besides a large amount of coal for iron and steel manufacture. The value of 250,000 short tons of coke and charcoal iron would be at least \$5,000,000 at the point of production in Canada, coming within the cost of importing an article equal in quality and value to an extent sufficient to command the market."

IRON CONSUMPTION AND PROTECTION.

FEW are aware of the increase in consumption of iron under protection in this country, and fewer still realize how much the protective policy has done to render possible such an increase in consumption. The consumption of pig iron alone has more than doubled within the last ten years, for it was 7,748,817 tons last year, and only 3,409,211 in 1879, but it also nearly doubled in the previous decade, and more than doubled in the decade beginning with 1859, when it was only 827,609 tons. In 1860, the last year of a Democratic revenue tariff, the entire consumption of raw iron, including domestic and imported pig and imported scrap iron and steel, was only 64½ pounds per capita; now, it is 267½ pounds. Then, nearly a tenth of the raw iron was imported and now less than a fortieth, or about six pounds per capita.

The total importation of manufactured iron of all kinds was last year only 19½ pounds per capita, but more than half, 11½ pounds per capita, was in the form of tin plates alone. In 1860 nearly 16 pounds per capita of other imported iron was used, but in 1889 less than 8 pounds. The imports of tin plates have steadily increased, more than 50 per cent. in the last decade and nearly 90 per cent. in the decade preceding. The imports of rails have been very variable, rising to 28½ pounds per capita in 1871, falling to practically nothing in 1877, rising again to 13½ pounds in 1880, and falling again in 1889 to only a fifth of a pound per capita. In the following statement of consumption per capita, the "imports for consumption" are included for years except the last, but as that official statement is not published for the last calendar year, the imports for that year are used:

	1889.	1879.	1869.	1859.
Consumption, domestic pig.....	261.40	126.06	102.43	54.61
Consumption, imported pig and scrap...	6.20	51.59	19.63	5.88
Consumption, total raw iron.....	267.60	177.65	122.06	60.49
Consumption, imported rails.....	.21	4.86	17.28	8.03
Consumption, imported tin plates.....	11.38	7.58	3.99	2.37
Consumption, imported, other manufactured.....	7.69	6.56	7.43	14.50
Total consumption.....	286.89	196.64	150.76	86.29
Per cent. foreign.....	8.9	37.5	32.1	36.7

To appreciate how improbable it is that consumption could thus have grown, had this country been as dependent upon foreign works as it once was, it is only necessary to remember that the American production has increased 4,900,000 tons in ten years, but the British production, "with all the markets of the world open," as Free Traders are wont to say, has increased but 4,600,000 tons in thirty years. Of that increase, moreover, no less than 330,000 tons were shipped to this country in the form of tin plates, and was therefore caused by failure to put an adequate duty on that product.

Thirty years ago more than a quarter of all the iron and steel consumed in this country was in the form of rails, 21½ pounds per capita, and only 64½ pounds in all other forms. Now, the consumption of rails has, indeed, more than doubled, having been 50½ pounds per capita in the year 1889, and still larger in several previous years, but the consumption of other iron has risen in far greater proportion, amounting to 236½ pounds per capita in the year 1889. This latter increase has been 85 pounds during the last decade, or nearly 60 per cent.; 50 pounds in the decade preceding, or about 50 per cent., and 37 pounds during the decade ending with 1869, or nearly 60 per cent. It is because the American manufacture has been so encouraged that it is able to furnish beams and bars, plates, tanks, pipes and materials of every kind for buildings and bridges that the consumption in this country has so greatly increased. Out of the entire increase in consumption per capita during the last thirty years, which has been 200 pounds per capita, about 170 pounds, or nearly seven-eighths, has been neither in rails, domestic or foreign, nor in other forms of manufactured iron and steel imported, but in forms other than rails; much the greater part of it has been in those special forms of iron and steel which are produced either upon specification and orders to meet contracts in this country, or to satisfy the ascertained local demand in other departments of industry.—*New York Tribune.*

CANADIAN RAILWAYS.

THE railway statistics of Canada for 1889, issued by the Department of Railways and Canals, show that there are 13,325 miles of completed road in the Dominion and 416 miles under construction. These railways represent a paid-up capital of \$760,576,446. The working expenses for 1889 were \$31,038,045, and the earnings, \$42,149,615, leaving a net income of \$11,111,570. Over the 12,628 miles in operation, 12,151,051 passengers and 17,928,626 tons of freight were carried. Of the passengers thirty-seven, or one in 328,407, were killed. Besides the passengers, eighty-nine employees and eighty-four others were killed, bringing the total number of fatalities up to 210. The greatest mileage under one system is that of the Canadian Pacific Railway. This road owns or leases in Canada 4,973 miles, the Grand Trunk coming next with 3,114. The shortest road is that owned by the Fredericton & St. Mary's Railway Bridge Company, which connects the Fredericton Railway at Fredericton, N.B., with the Northern & Western at St. Mary's, and is 1½ miles in length. The Honor of bringing up the rear is, however, closely contested by the line connecting the Intercolonial and New Brunswick Railways at Portland, the length of which is 1½ miles. Of the total railway mileage of the Dominion, Ontario can claim more than two-fifths, there being 5,857 miles of completed road in this Province.

On the whole, Canadians can view with pride their progress in railway-building. Forty six years ago, there were only sixteen miles of railway in operation in all British North America. The total mileage has doubled in the last ten years. Estimating our population at 5,000,000, we have one mile of railway to every 375 inhabitants, a proportion greater than in any other country in the world, except, perhaps, the Australian Colonies. These Colonies, exclusive of New Zealand, have about 9,000 miles of railway and a population of more than 3,000,000. In the United States there are more than 154,000 miles of railway, or one mile to every 420 inhabitants.

DOES PROTECTION PROTECT?

Editor, THE CANADIAN MANUFACTURER,

DEAR SIR,— Your letter of the 28th inst., with clipping from the *Winnipeg Commercial*, was duly received.*

The paragraph must have been written by some grossly ignorant person to say the least of it, as there certainly are in Canada manufacturers in other lines who have made a success in their particular business which would be commensurate with the success we have made in our own line. Screws, nails, rivets and other classes of raw material are now made in Canada in every respect as good as American or English productions. Of course the success of our own Company is exceptional, and we cannot but reflect with pride upon the progress we have made, and more especially upon the fact that we are now enabled to compete against the world with the greatest success. There could be no more positive evidence of the superiority of the goods we manufacture than the rapidity with which we have been enabled to build up a large trade, in the face of the long established trades of the largest English and American manufacturers, in foreign countries. Take for example the self-binder trade: In the Colony of Victoria we, three years ago, introduced as samples about two dozen machines. At that time the English maker, Hornsby, (who builds a first-class machine), had an annual trade of some 400 self-binders in that particular Colony. McCormick, of Chicago, had about the same, and Deering, of Chicago, a somewhat less trade, all other leading makers being represented also. The trades of these particular companies, and of other competitors in that section have increased little, if any, as nearly as we can find out, during the past two or three years; whereas a year ago we sold over 200 self-binders in Victoria, and this year sold more than any one concern has been known to do yet in that country, namely, 572 self-binders. We have been doing this same thing in other countries, and have, in the face of the long established trade of the best American makers, built up a large and flourishing trade in South America and New Zealand, and we have already received orders for 450 Self-Binders for Europe for the coming season.

*Canada is sadly in need of some manufacturers who can compete in a foreign market. The conflicting arrangements of a rascally tariff system, in which the protection of one industry is a tax upon the raw material of another, makes production at export prices a simple impossibility in nineteen out of twenty of those protected industries. It is pleasing to note such exceptions as the Massey Manufacturing Company.—*Winnipeg Commercial.*

We must say this, however, that beyond question it costs us considerably more to produce our goods in Canada than it would, for instance, in the United States; that is to say, we estimate that it costs us not less than ten dollars more to build our binder here in Canada than it would in the United States. The reasons for this could easily be given if you so desire. This, of course, makes a serious inroad upon our profits in foreign trade when we have to compete against foreign manufacturers but the superior merits of our machine have enabled us in a measure to overcome this. This coming season our export trade will be about one-fifth of our business.

As to the question of tariff, our views may not coincide with yours; and we naturally look at it from a selfish standpoint. We firmly believe that the time has come when Reciprocity, (though we do not want it), or Free Trade, (which we would much prefer), would not be detrimental to our business; in fact, we are of the opinion that the latter would give it a greater impetus. We are almost daily receiving applications from various parts of the United States for prices or agencies, which are positive evidence that we would have little difficulty in opening a trade there in spite of the competition we would have to face, and we have even sent a few machines there paying 45 per cent. duty. The views of the writer on this question are, that a young country certainly requires a protective tariff to build up manufacturing interests, but that there is a time when such tariff could be successfully done away with. As to whether or not Canada has reached a time when such manufacturing institutions as can be advantageously and wisely conducted have been built up, is a question. It seems to the writer, at least, that such is the case to a very large extent—that is, it may not be impossible that a continuation of the tariff would bring in other manufacturing industries merely because of the existence of the tariff, not because such manufacturing institutions would be particularly advantageous to the country. The Canadian market, for a great many classes of manufacture, can never be large enough to require a sufficient production of certain classes of articles to cause their production to become as cheap as those of similar institutions in other countries making for markets ten to twenty times as great.

You express it as your opinion that the present high condition of excellence in the production of Canadian harvesting machinery would be greatly retarded or would be impossible if it had not been for the protection afforded. To a certain extent this is perhaps true. The importation of foreign farm machinery into Canada is, as you say, largely due to local causes, but certainly not because of the superiority of the goods. In many cases it is an individual's notion or whim, as we have known of clumsy English machines being brought into the country by some farmer who believed that nothing this side of the "old sod" could be made good for anything.

As to the questions you raise in your letter, first, as to whether agricultural implements and harvesting machinery could be purchased cheaper under free trade, we must frankly answer that we believe they could. Whether or not they could under reciprocity with the United States, is a question. You may think it a strange notion, but the writer has an idea that if we had free trade with England, and could get some classes of raw material upon which we now pay a large duty, (or the equivalent of the duty to some home manufacturer), free of duty, we could almost produce goods enough cheaper to enable us to sell them in the United States. We refer now to our own particular line.

As to the second question, whether under such conditions the Canadian industry could prosper, we can simply say as regards our own that we believe it would. We know, however, that there are many industries now flourishing in Canada solely because of the tariff. We refer more particularly to branches of manufactures in the United States.

The third question you raise is one that depends upon several conditions, but we must frankly say that we do not think the consumer would in the end pay more, but on the contrary it would probably be competition that would kill the original Canadian industry, if it was to die, and such competition would no doubt reduce the price. This is an age of combines, and it is hard to say what the result would be. You say that the discussion of this question should not be influenced by the fact that any particular manufacturer owned or controlled a patent right which could prevent competition. In our own case certainly there is nothing of this sort. While we own many patents on special features, still in this present age so many self-binders are as so many sewing machines. True, there is a difference in merit as regards quality of workmanship, as well as quality of work done but the difference is not great when the goods of first-class makers are compared.

Our President, who is absent, we think, coincides pretty fully with the views herein expressed.

Yours truly,

W. E. H. MASSEY.

Manufacturing.

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

MESSRS. G. A. & H. S. FLETT, brick manufacturers, Upper Nelson, N.S., have started a sash and door factory.

THE Standard Drain Pipe Company, of St. Johns, Que., request us to state that Mr. William Maguire is their Toronto agent.

MESSRS. C. R. CASEY & SONS, Amherst, N.S., are building a large and well equipped tannery on the site of the one they recently lost by fire.

MESSRS. JAMES HAY & Co., furniture manufacturers, Woodstock, Ont., have purchased and will operate the furniture factory at Aylmer, Ont.

THE Kerr Vegetable Evaporating Company has been incorporated at Kentville, N.S., with \$20,000 capital stock for the purpose indicated by its name.

THE Safety Barb Wire Company, Toronto, will erect an extensive steel and wire mill plant, which, it is expected, will be in operation in September.

THE Hercules Manufacturing Company, of Petrolea, Ont., manufacturers of milling machinery, are negotiating for the removal of their works to St. Thomas, Ont.

THE Menasha Wood Split Pulley Company, Menasha, Wis., have recently supplied an outfit of their hardwood pulleys to the Yarmouth Duck and Yarn Company, Yarmouth, N.S.

THE Nanaimo Brewing Company, Nanaimo, B.C., has been incorporated with \$75,000 capital stock and will take over and greatly enlarge the Nanaimo Brewery, previously owned by Mr. John Maher.

THE Ball Electric Light Company, Toronto, finding their old quarters on Adelaide Street too small for their rapidly increasing business, have moved into a large and well-arranged building at 70 Pearl Street.

THE St. Thomas Electric Light and Power Company is being organized at St. Thomas, Ont., with a capital stock of \$40,000 for the purpose of taking over the plant, etc., of the First Wayne Electric Company.

MESSRS. JOHN A. and George Bain, late of the Bain Wagon Company, Woodstock, Ont., are forming what will be the Bain Brothers manufacturing Company of Woodstock, also for the manufacture of wagons.

THE Canadian Rand Drill Company, with headquarters at Sherbrooke, Que., has been incorporated with a capital stock of \$18,000 for the manufacture of Rand drills, air compressors, mining machinery, etc.

MESSRS. DOUGLASS & Co., foundrymen, Halifax, N.S., have recently been making some important additions to their machinery and appliances. They are manufacturers of stoves, hollow ware, fencing, cresting, etc.

THE Hamilton Powder Company, of Hamilton, Ont., and Montreal, are erecting powder works at Northfield, B.C., near Nanaimo. All the necessary machinery is being sent forward, and the works will be in operation at an early day.

It was recently stated in these columns that last year the market price of aluminum was \$4 a pound. It is now being offered for sale at \$2 a pound in lots of 1,000 pounds or more, and 100 pound lots are sold at \$2.50 a pound.

THE Canada Veneer Company have recently acquired a factory at Sherbrooke, Que., and will manufacture wood toothpicks, butcher's skewers, veneers, etc. The Company have already contracted for delivery of several car-load lots of their products.

THE Nelson City Improvement Company, Nelson City, B.C., are erecting a saw mill at that place with capacity to cut 50,000 feet of lumber a day, the machinery for which is being manufactured by the Waterous Engine Works Company of Brantford, Ont.

THE Ontario Rolling Mills Company of Hamilton, Ont., and the Ontario Bolt Company of Toronto, will supply 250 tons of fish plates, spikes, bolts, etc., to be used in the construction of the Westminster Southern Railway from Brownsville, B.C., to the American boundary.

MESSRS. DALGLISH & BRADLEY have purchased the woolen mill machinery and plant of Messrs. Scott & McLean, at Pakenham, Ont., and transferred it to Ottawa, where it is to be operated. This plant includes one set of custom cards and one set manufacturing cards, four looms and 480 spindles.

MR. KETCHUM, of the Chignecto Ship Railway, was in Ottawa last week. It is said that he has arranged for the building of six one thousand ton steamers to carry produce from the gulf into the Bay of Fundy over his railway. Contracts are to be made at once with Kingston locomotive works for an engine to draw the ships.—Halifax, N.S., *Critic*.

At the recent session of the Dominion Parliament, a Bill was passed authorizing the renewal of the patent of the George T. Smith Middling Purifier Co., which, through a mistake on the part of their clerk to enclose the requisite sum of \$20, had expired. This is the first case in Canada where a patent has been renewed by an Act of Parliament.

At the recent session of the Canadian Packers' Association in Hamilton, Ont., the members visited the can manufacturing establishment of Messrs. Norton Bros., where they saw tin cans made at the rate of 5,000 per hour. This is a branch of a Chicago concern, and its establishment in Hamilton is another evidence of the benefit of Canada's National Policy.

MR. JAMES LAWSON, Mayor of Thorold, Ont., is using advertising space in our columns, calling attention to the advantages possessed by that town as a site for manufactures of all kinds, giving the assurance that all reasonable encouragement will always be given for the location of bona fide industries there. The attention of these interested is directed to Mr. Lawson's card.

THE Rogers Typograph Company of Windsor, Ont., have obtained a factory building suitable for their purposes, and will begin the manufacture of the Rogers Type-setting machine, giving employment to about fifty hands. They expect to be in operation in July. This is an offshoot of a company, of the same name in Detroit, Mich. Without the N.P. there would be no Canadian branch of this American concern.

It is the intention hereafter, to manufacture and print at the Government bureau at Ottawa, all envelopes required for the public service, the necessary order having been placed for machinery and plant for that purpose. The envelopes printed at the bureau last year numbered 3,898,750, of which 2,624,000 were for the Post-office Department. The superintendent of printing also recommends the purchase of machinery and plant for lithographing.

ON Saturday of last week Messrs. A. Harris, Son & Co., manufacturers of agricultural implements, Brantford, Ont., shipped twelve car-loads of binders to go to Australia, and on Wednesday following they shipped five car-loads of binders for New Zealand, their total shipments for the season thus far aggregating thirty-five car-loads, with many orders yet to fill. Their shipments thus far this season to Manitoba and the North-West aggregate eighty-six car-loads.

ONE of British Columbia's mammoth Douglas firs was cut down and made into cordwood by two workmen. The tree was not very thick, only measuring seven feet in diameter, but it was very high and clear of limbs almost to the top. Only the clear wood was used, and when the tree had been sawed, split and piled, the result was found to be 33½ cords of prime wood, and not a limb in the pile. The time occupied in reducing this tree to cordwood was four days.—*Winnipeg Colonist*.

MESSRS. W. H. STOREY & SON, glove manufacturers, Acton, Ont., have issued a caution to the trade in which they state that, owing to certain dealers attempting to palm off on the public the products of other makers, representing them to be made by them, to the injury of the reputation of their goods, they request merchants to be advised that hereafter all gloves of their manufacture will be stamped or bear a woven label showing their name and place of business. We refer to their card on inside of our front cover.

JOHN P. CHETWYND, in addition to his commission business, is engaged in the lobster packing business in Newfoundland, and last year made a new departure in the canning of venison. Having tested the article we can say that it is a real delicacy, and as deer abound in Newfoundland there is no reason why the canning of venison should not prove a large and profitable business. Mr. Chetwynd's brands of canned mackerel and spiced salmon

are also A 1, and his enterprise in branching out in new lines of canned goods should command success.—*Halifax, N.S., Critic*.

ON May 24th, the Queen's birthday, the John Doty Engine Company launched from their ship-yards in this city a fine double-ender ferry steamer which was called the *Mayflower*. She is built of steel, her length over all being 140 feet, with 28 feet breadth of beam, 44 feet over guards and 7 feet 9 inches deep. Her engines, built by the Doty Company, are 400 horse power. The main saloon is 100 feet long by 44 feet wide, and will accommodate 1,000 passengers. A sister ship is now on the stocks in the Company's yards nearing completion. These steamers are intended for the Toronto Island service.

A NUMBER of leading farmers in the Whitewood district met Comte de Raffanac at the Commercial Hotel, Whitewood, on the 26th ult., with regard to the proposed beet sugar factory. The Count distributed three different varieties of beet root seed which had been sent from France, and requested the farmers to sow the same. In July next he will inspect the results in conjunction with the chief mover of the proposed company, who will arrive from France about the time this edible matures. If results are favorable, operations will commence in the near future. We understand the plant has been purchased and proper buildings will be erected.—*Moosomin, Man. Courier*.

THE flouring mill of the Lake of the Woods Milling Company, a Kewatin, Ont., is a massive granite structure, and probably the most important addition made to Canadian mills of recent years. The fall of water from the Lake of the Woods to the Winnipeg River is over twenty feet, and produces over 60,000 horse-power. A natural dam of stone some two miles long separates the lake from the river, and through this dam the company have cut a canal, the flowing water through which supplies the power for the mill. The mill is located on this dam and the Canadian Pacific Railway crosses it. The mill has six floors, and its capacity is now 1,500 barrels of flour a day, soon to be increased to 2,000 barrels.

THE Burrell-Johnson Iron Company are now busily employed in every department. They have an especially large demand for pumps, and are turning them out for all parts of the Provinces at a rapid rate. Among those shipped to Halifax recently was a large combined air and circulating pump for the Halifax Electric Lighting and Motor Co. It weighs about three tons and is a handsome well finished piece of machinery. The boiler, machinery, shaft and propeller for the new steamer Weymouth are completed, the turn tables for bridges on the new part of the W.C.R. are being made, wharf-raising gear for the Annapolis Steam Packet Co's. wharf at Annapolis is finished, and a large amount of other work is on hand.—*Yarmouth, N.S., Times*.

MESSRS. DENNY & Co., engineers, Dumbarton, Scotland, have the tools in their pattern shop driven by a 20 h. p. electromotor. The dynamo is placed in the machine shop, and driven from the ordinary shafting. From the generator to the motor in the pattern shop the current is conveyed through two cables about 3/8 in. diameter. If this had not been done, a separate small engine and steam piping of great length would have been required. In the boiler shop of the same firm, says *Industries*, there is a still more interesting example of the application of electricity as a motive power. This is Rowan's patent electric boring machine, for drilling the rivet holes through boiler shells in situ. Anyone who has watched drilling tackle at work, especially in shipyards, must have noticed how much time was absorbed in fixing the clamp into position. Rowan's electric borer not only has a small motor to drive the drill, but holds itself up against the plate by means of a pair of powerful electromagnets. Messrs. Denny are about to put electromotors to other uses in their yard, amongst the earliest of which will be the driving of all the sewing machines in their large upholstering department, at present driven by the feet of the female operators.

AN interesting test was made at the new Board of Trade buildings, this city, a few days ago. The Rathbun Co., Deseronto, Ont., manufacturers of terra cotta fire-proof flooring, made a test in the presence of Mr. E. A. Kent, Buffalo, architect of the building; Mr. W. Phillips, Superintendent of works; Mr. Wills, Secretary; Mr. J. I. Davidson, President of the Board of Trade; and Mr. G. D. Morris, representing the Rathbun Company. An arch which was thought to be defective was selected for the test. The arch, composed only of terra cotta fire proof, is held between iron beams. A slab of iron about a foot square was placed in the centre of the arch, the span being 4ft.x3ft. Over 5,000 pounds of iron was piled on the piece of iron. More iron was piled on the arch in the afternoon, so as to ascertain the breaking weight of the arch. It finally broke under a pressure of 6,981 pounds, or 5,800 pounds to the square foot.

THAT the celebrated harvesting machines of the Massey Manu-

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facturing Company have attained a phenomenal success in foreign lands is proved by the numerous train-loads already despatched by them this season. One day this week they despatched another solid train-load of twenty cars, handsomely decorated, from their works, which will go via Hamilton and Suspension Bridge over the Grand Trunk, thence by the Lehigh Valley Road to New York for foreign shipment. Handsome and commodious cars were placed at the disposal of the Company; also to Mr. D. D. E. Cooper, the Canadian agent of the Lehigh Valley Road, promised to run the Massey train over that road from Suspension Bridge to New York in the short space of thirty-six hours. Yesterday morning the Massey Company despatched a solid train-load of over twenty cars to Winnipeg, which will be followed by several other train loads, to supply the constantly increasing demand for their machines in Manitoba and the North-West Territories.

The sugar pines of the Sierras is the most superb of all the pines, and the territory it occupies, from an elevation of 3,000 feet to one of 8,000 is, beyond doubt, the most interesting portion of the mountains for campers, tourists or botanists. Specimens have been measured that were forty feet in circumference and 300 feet in height. This pine has a smooth, round and columnar trunk, rising without limbs for two-thirds of its height. It is the most valuable timber tree of the Sierras, is rapidly disappearing, and is not well represented among the younger growth of the forest. A few large trees growing on private estates will remain to be famous generations hence over whole counties. David Douglas, the discoverer of this species, measured a fallen tree whose circumference at three feet from the base was nearly fifty-eight feet. Trees of 250 feet in height can be found still standing near some of the old towns of the upper Sierra region. In wonderful contrast to these giants of the California forest are the dwarf pines that grow from the limits of the third climatic zone of the Sierras to the very base of the glaciers. James Muir once cut a dwarf pine whose trunk was three and a half inches through, and counted 420 rings. The little tree was tough as a whip cord, as it had need to be in the Alps of California, on the very limits of eternal snow.—*Vick's Magazine*.

The Ontario Basket Company, Walkerville, Ont., will make

considerable enlargement of their plant. This company was organized only last year to take over the business of Mr. A. C. Rice, who had previously conducted it at Sarnia, Ont., but which was removed to Walkerville, where a fine two-storey factory was erected, 140x80 feet, well equipped with best machinery, consisting of veneer and planing machinery, re-saw, cut-off saws, jointers, heading turners, and an automatic grinding machine; a large guillotine, with a knife blade of six feet six inches long, used for cutting up all wood-work to the widths required. There are also two tanks, one 24x12 feet and the other 20x8 feet, for steeping and steaming logs preparatory to cutting up into basket material, etc., and there are six stapling machines for making berry boxes, with a capacity of 30,000 boxes per day. Included in the machinery are forty machines for making baskets, and axle grease box machinery with capacity to turn out 5,000 boxes a day. These works give employment to about eighty hands. Included in the products of this company are light and strong panniers, baskets and packages principally used by fruit growers, berry boxes, berry crates, gardener's plant and picking baskets, peach baskets, wire bail baskets, diamond market baskets, covered satchel baskets, honey bands, axle grease boxes, climax baskets, stave baskets, grape boxes, etc. The power driving this establishment is derived from an eighty h p. steam engine, with 24x16 inch cylinder, built by Messrs. Goldie & McCulloch, of Galt, Ont. The entire works are lighted by incandescent electric lamps, and cover nearly two acres of ground.

Some consternation was caused in the works of the Barber & Ellis Manufacturing Company, on Bay Street, yesterday morning, by the break down of the engine. As the break was rather serious it was thought that the fifty or so hands which the firm employ would have to remain idle for three or four days until repairs were made. Luckily, however, an "Eddy" electric motor stationed on the third flat, which has done service for a section of the works on night shifts, was brought into use. The experiment of driving all the machinery on the three flats of the building by this motor occurred to the superintendent, Mr. L. P. Bouvier, and its application was attended with the most successful results. Although the motor develops only 220 volts, or five-horse power, it did the work

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equally as well as the seventeen horse-power engine with its cumbersome gearing, and the entire staff continued to work the whole day. The current was got from the Toronto Incandescent Electric Light Works on Terauley Street. The only stoppage was that of the elevator, it being feared that this would overtax the little "hummer." An idea of the serious loss that would be sustained by the firm if the works had been stopped may be had when it is said that the turn out of envelopes alone is 900,000 per day. A large number of patent machines are used in the manufacture, and they are attended by girls. The machinery driven by the motor on the three flats yesterday included fifteen envelope machines, three cutting presses, eight glueing machines, two box-covering machines, two scorers, three cutters, one embossing press, one corner cutter and five ruling machines. The connections included 500 feet of shafting. Operations in the building yesterday were so satisfactory that it is likely electricity will be adopted as the motive power in the future.—*Toronto Empire, May 29th.*

Messrs. McARTHUR, CORNEILLE & Co., Montreal, importers and dealers in aniline and other dye stuffs, extracts and chemicals, and sole agents for the St. Dennis Dyestuff and Chemical Co., formerly Poirier & Dalsace, of Paris, introduce under the name of Fast Malta Blue a new product of the St. Dennis Co., in three brands, M R., M.R.B., M.R.B.B., for dyeing and printing cotton by the aid of tannin and tartar emetic. The colors thus obtained are very fast to light and soap. For dyeing the cotton is mordanted, as usual, with 2-5 per cent. tannin, 10-20 per cent. sumac extract, according to the depth of shade and degree of fastness required at 75° C., and lodged in the bath until cold; then it is well wrung, and for fifteen minutes treated with 1-3 per cent. tartar emetic at the same temperature, washed, entered a cold bath containing 1½ per cent. dyestuff for a good medium shade, and the temperature raised to 75° C., while diligently working, until the bath is completely exhausted. For printing, the manufacturers give the following directions: prepare the cloth with Turkey red oil as usual, and print a color consisting in one gall. thickening, ½ gall. acetic acid seventy-eight Be, 1½ lbs. tannin (or equivalent in sumac), one quart glycerine, ½ pint oil, ¾ lb. tartaric acid dissolved into ¾ pint water, and ¼ lb. dyestuff. After printing steam and pass through tartar emetic. The three samples shown in the firms monthly sample sheet are done with the three brands of Fast Malta Blue after the recipe. Another recipe for printing given by Dr. C. Boetsch is as follows: Mordant with fifty grms. Turkey red oil per lit. water. Prepare a color as follows: 1. dissolve thirty grms. Fast Malta Blue in 250 grms. acetic acid 70 Be, 2. rub together into a paste 100 grms. tartaric acid, 100 grms. glycerine, 1½ kil. grms. (powdered), sixty grms. oil, and 900 grms. water; boil until perfectly dissolved, stir until lukewarm; when the two solutions are mixed, add the solution of 150 grms. tannin in 100 lit water, print, steam, fix in bath containing 5 grms. tartar emetic, per one lit. water, wash and dry.

The Waterous Engine Works Company, Brantford, Ont., have recently shipped one of the largest sawmill carriages ever built in Canada, to the Brunette Sawmill Company, New Westminster, B.C., for their new mills at that place. It consisted of six girder log seats, extending seventy-six feet from centre of first to centre of last block. Each block was formed of two ten-inch steel girders, with a heavy steel plate riveted on top of each girder, surmounted by a very heavy knee piece, which was set forward by three inch screws made of steel. Under each log seat were two three-inch steel axles with heavy steel wheels on the front and flat wheels with a flange on the back. These ran on a heavy steel track. This immense carriage was built to take in logs seven feet in diameter, eighty feet long, weighing eighty to 100 tons each. The carriage itself, without any woodwork, weighed over twelve tons. The setting and receding device on this carriage is a new departure. The company also shipped at the same time, a king edger, made to take in lumber fifty inches wide, using six saws. This edger, with its appurtenances, weighed in the vicinity of five tons. Such heavy lumber cutting machinery as this, the company inform us, is unknown to the Canadian trade, but it is the only sort that will cut the immense timber of the Pacific coast. We understand the same firm has received an order from the Northern Pacific Lumber Co., for the engines, boilers and burner required in their new mill at Port Moody. They are also building a large boiler for the Globe Printing Co., Toronto, sixteen feet long, sixty-six inches in diameter, with one sheet only on the bottom of the boiler; and two similar boilers for the British American Starch Co. of Brantford, a fifty h.p. saw mill with gang edger, planer and shingle machine to John Lineham, Calgary, and another similar outfit over the Northern Pacific to Kootenay, Idaho, and thence by team to the Mining district of Nelson City, B.C., and two sets of sawmill machinery, slab saw and shingle machine to St. John, Newfoundland.

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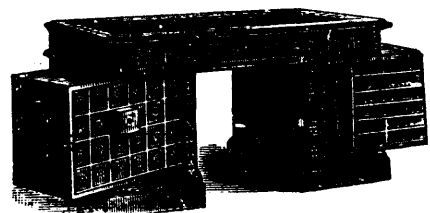
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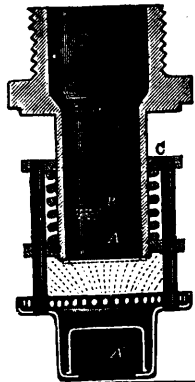
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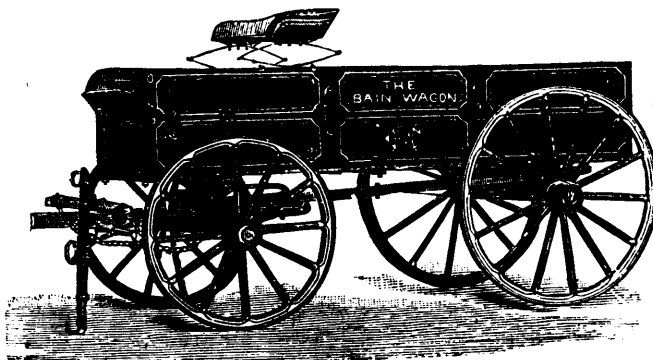
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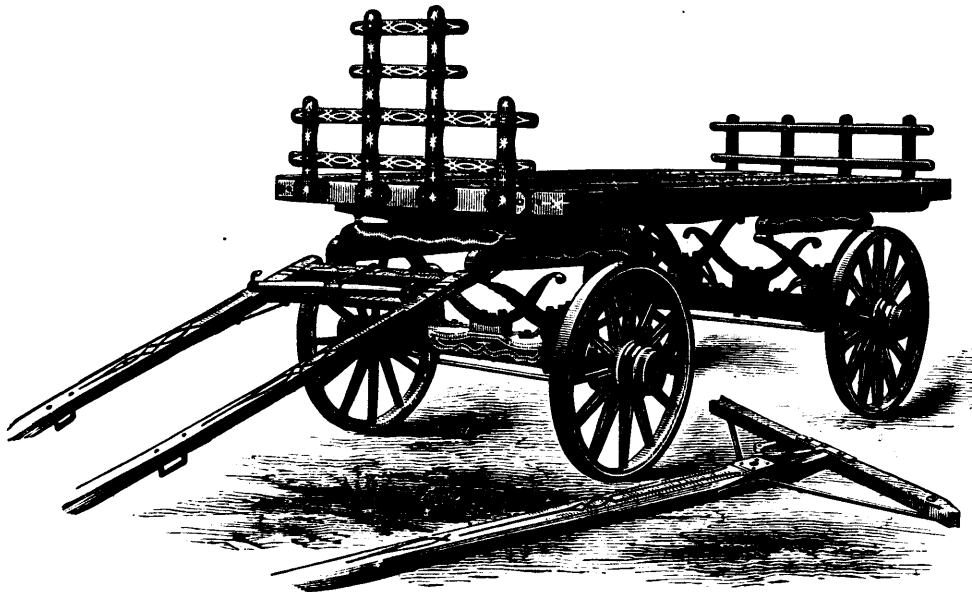
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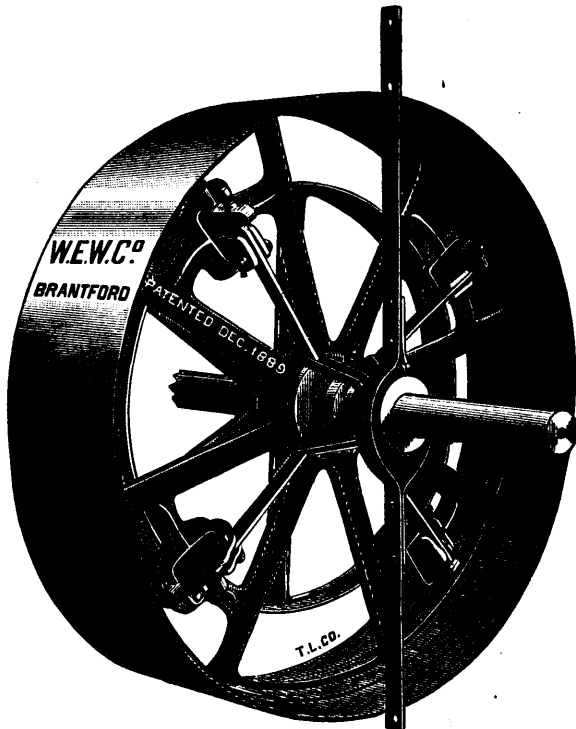
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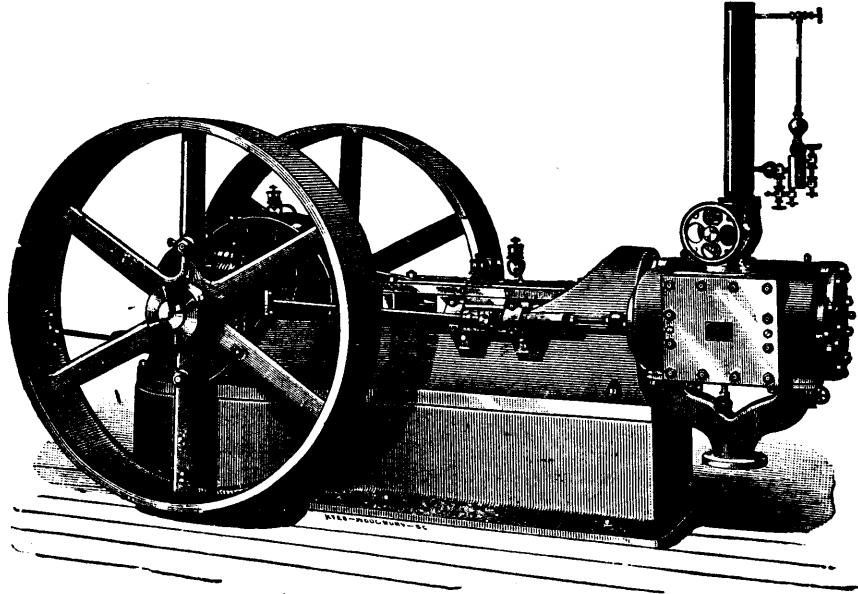
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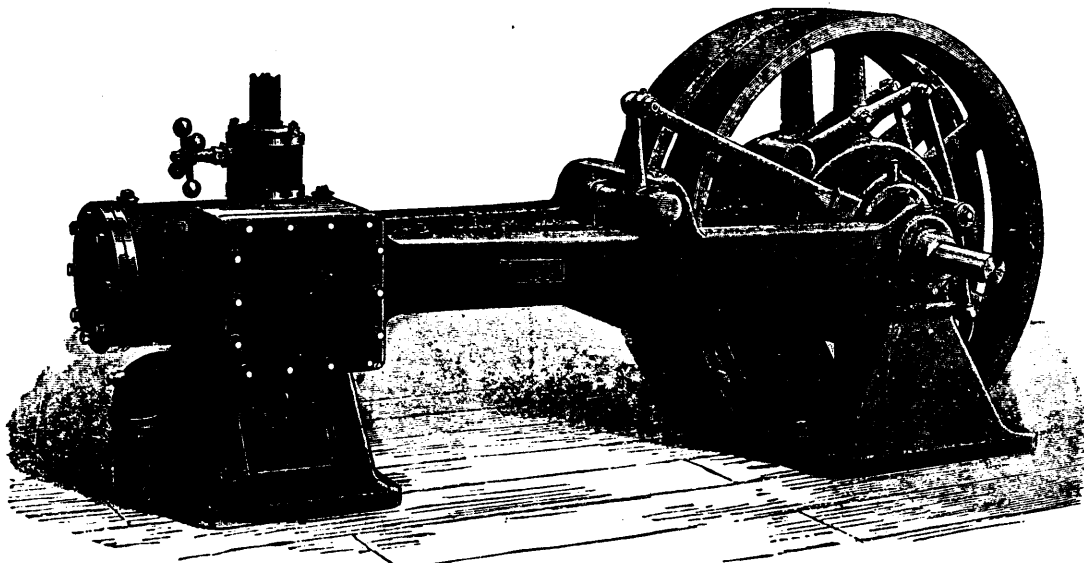
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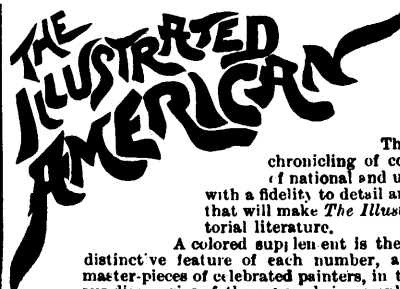
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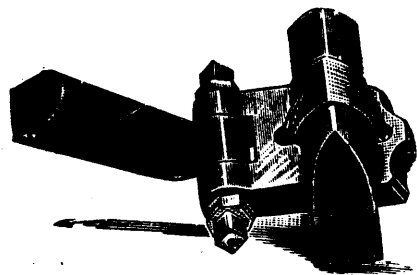
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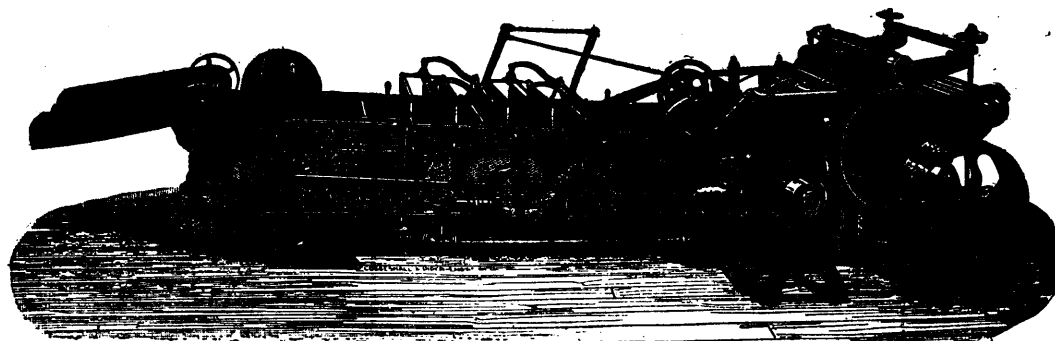
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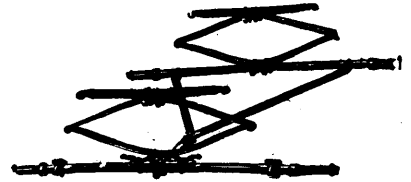
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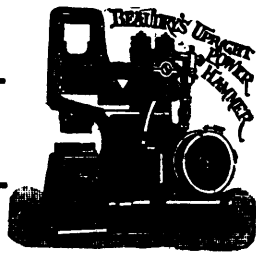
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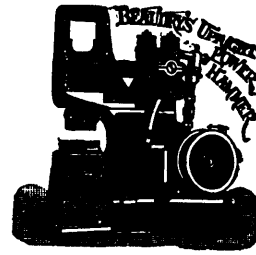
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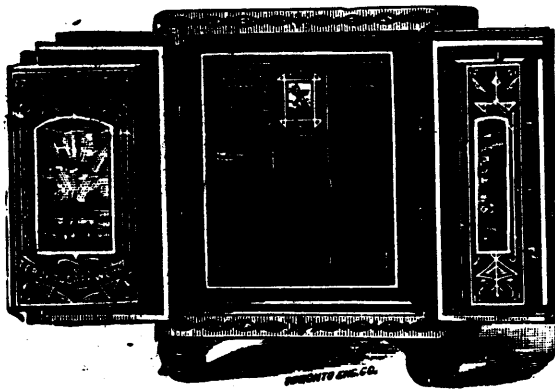


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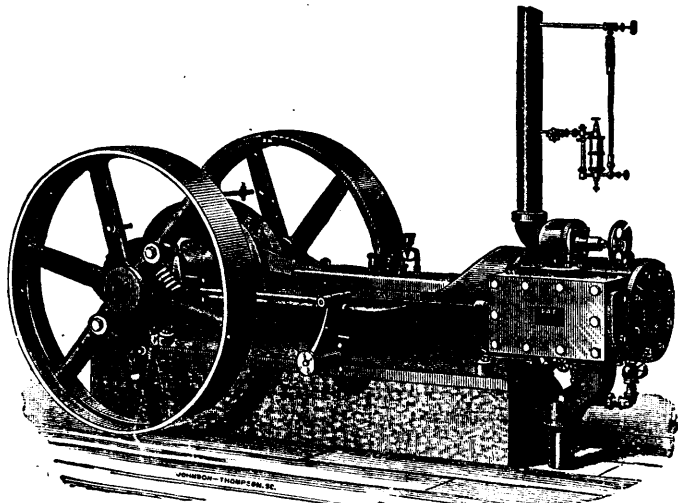
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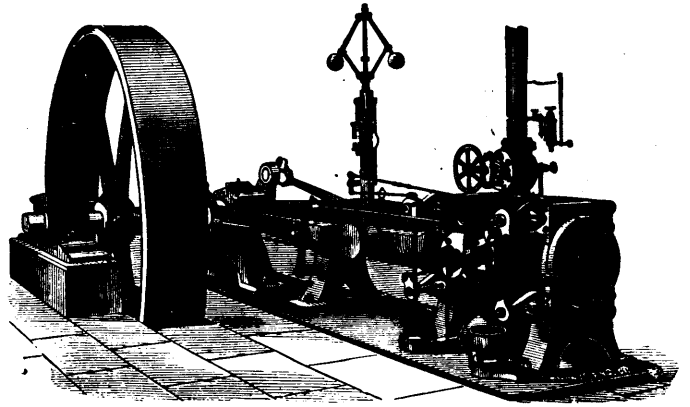
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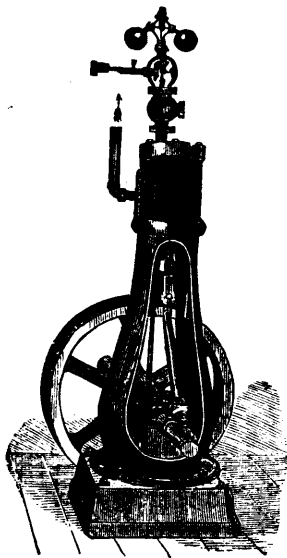
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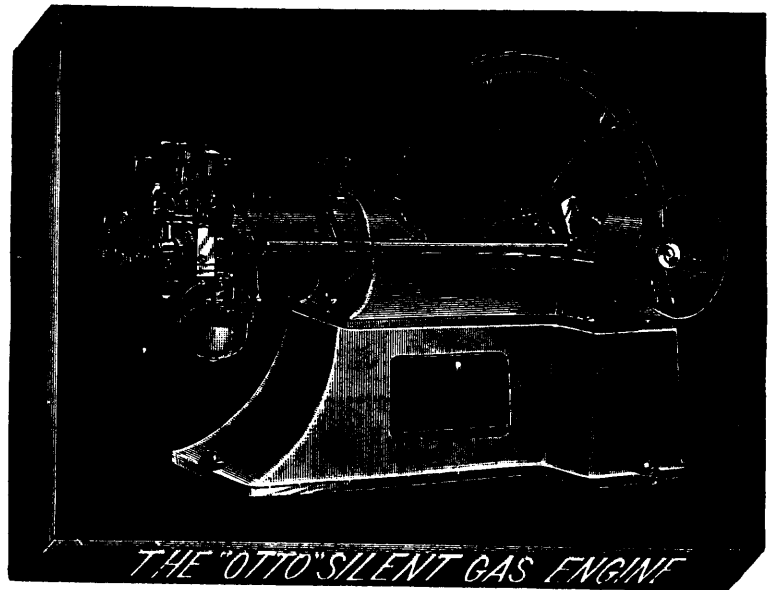
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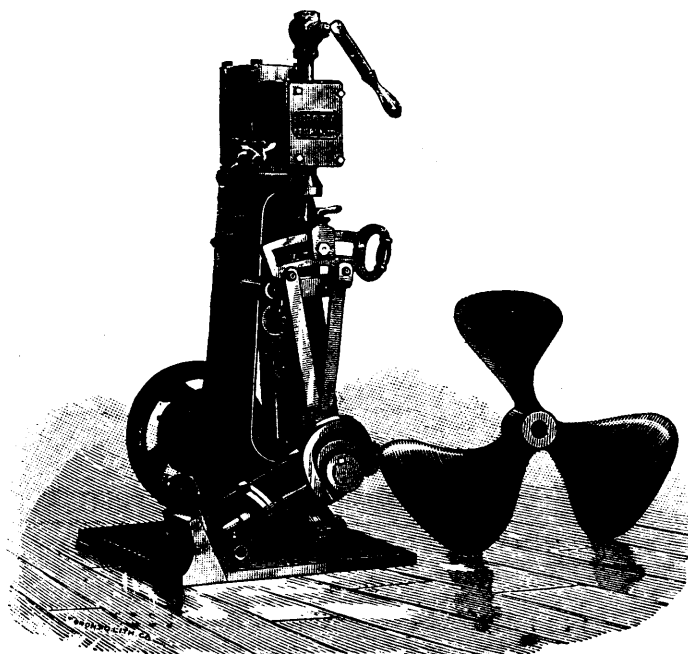
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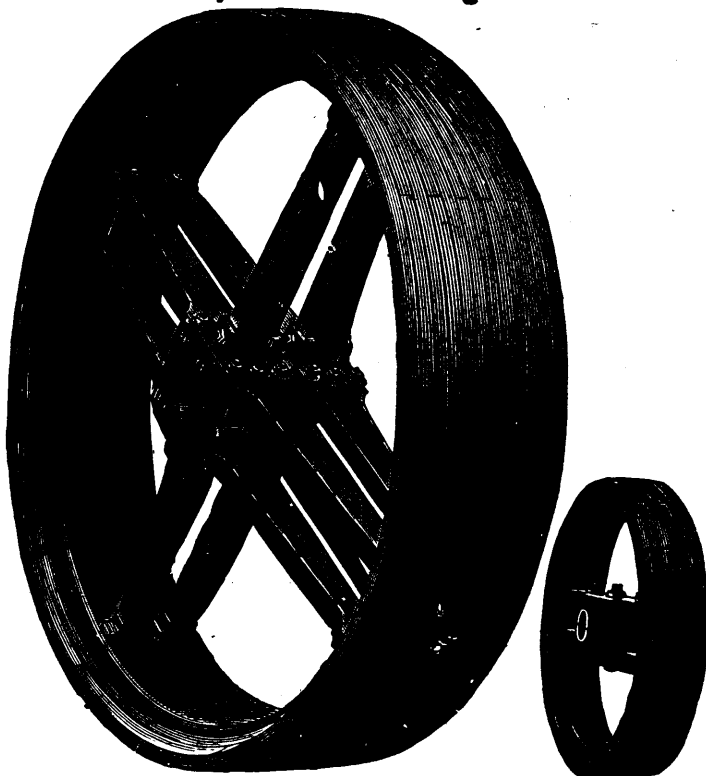
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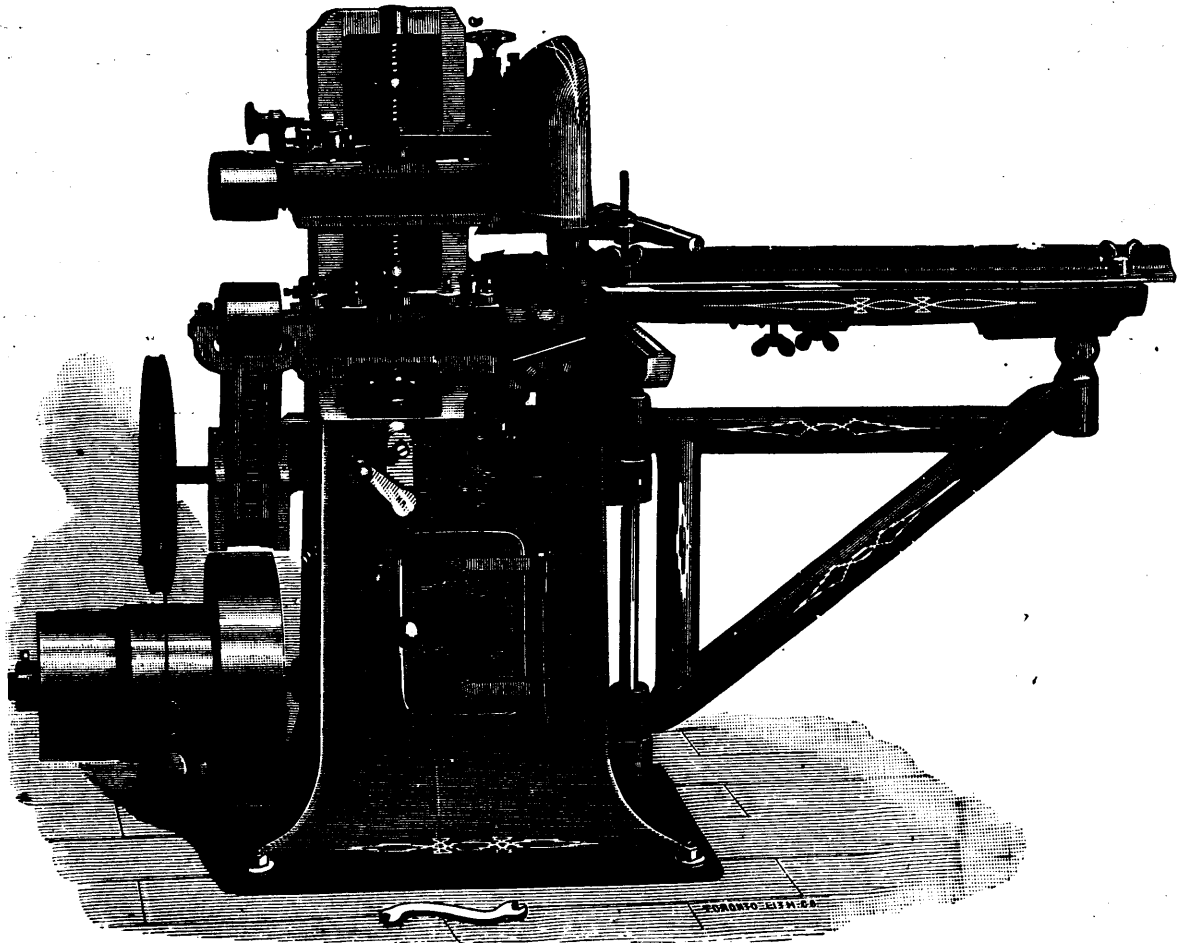
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We beg you will note this fact when comparing our List with others which are for SOLID RIM, and NOT for Pulleys in HALVES.



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This is an entirely new style of Tenon Machine. The frame is cast in one piece, and the working parts stand solidly on a pedestal, avoiding all vibration.

The Cutter and Cope Heads are connected and are moved all together, or separately, as required. The Upper Head and Boxes also adjust horizontally to suit shoulder of tenon, the Cope Knives moving with the Heads to prevent re-adjustment.

A special feature in this machine is the Bed, or Carriage, which is at once light and strong. The outer end works on rollers and is moved very easily.

In cutting the tenon the Bed and Carriage move entirely past the Heads and Cutters, the operator having full control of the work. It has also the advantage of leaving the Heads and Cope Knives clear, and of ready access by the operator.

The Carriage is so arranged that it cannot tip over the Slides nor be thrown into the Cutters, and is also supplied with extension bar for long stuff, as in all Tenoning Machines.

This Machine is supplied with single or double Copes, as ordered, and for furniture work it is without Copes, and with an adjustable cut-off saw.

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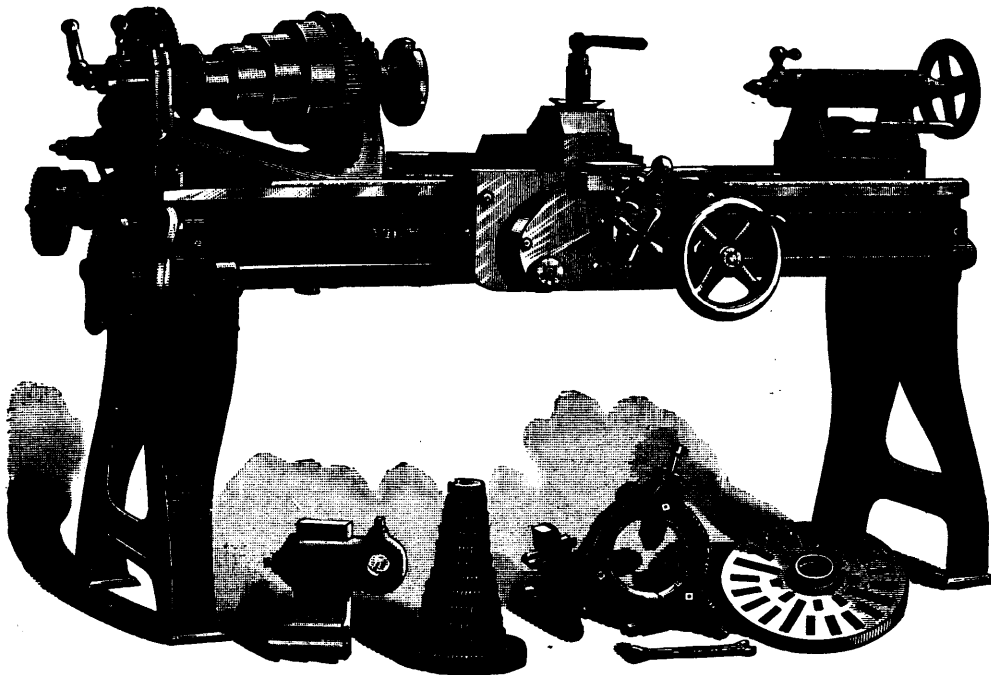
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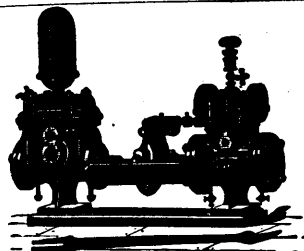
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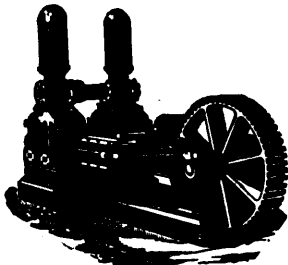
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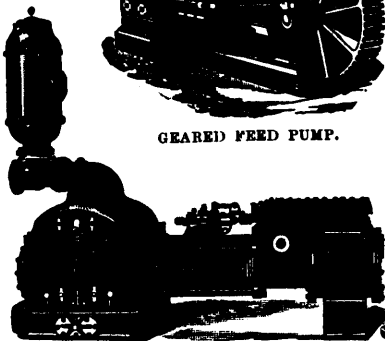
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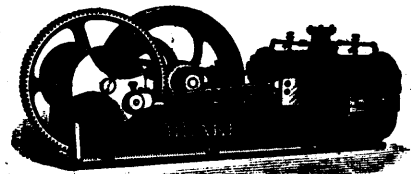
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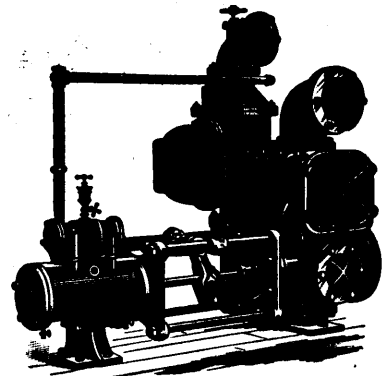
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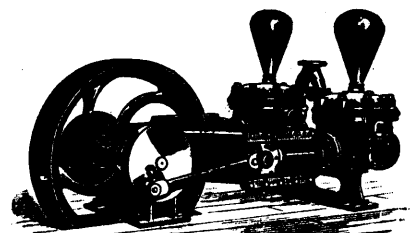
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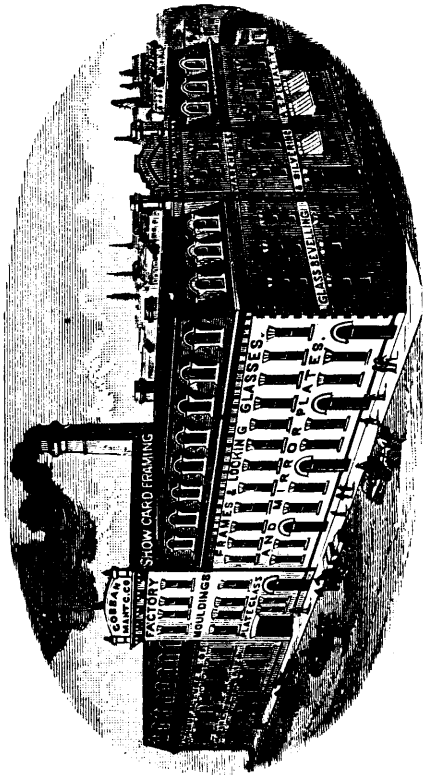
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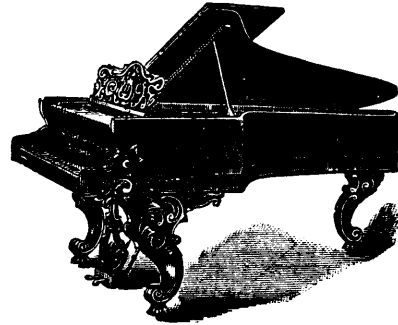


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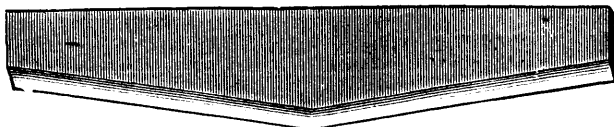
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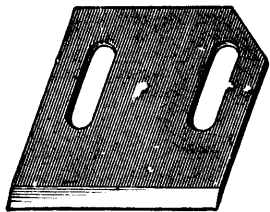
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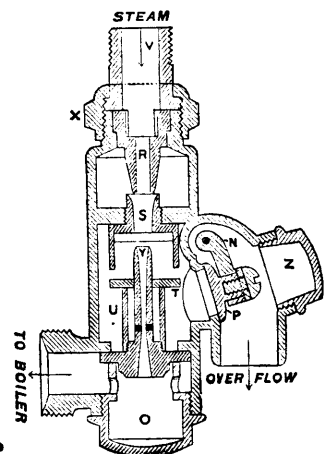
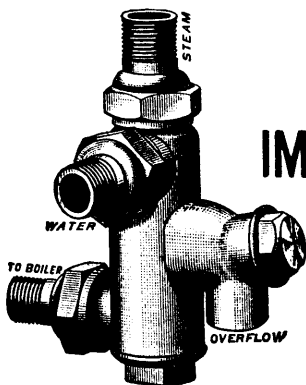
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