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Vol. 38.

TORONTO, MARCH 3, 1899.

No. 5.

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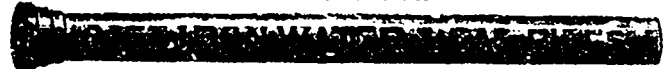
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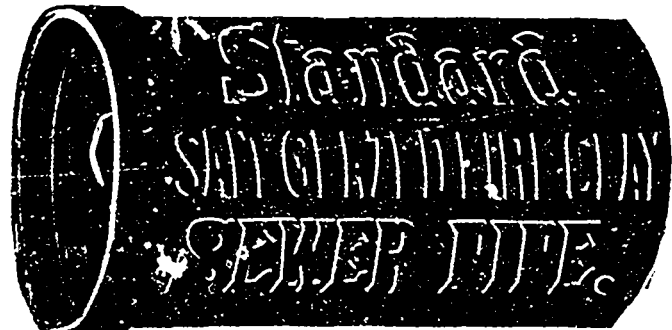
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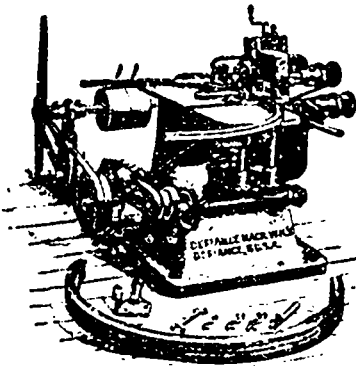
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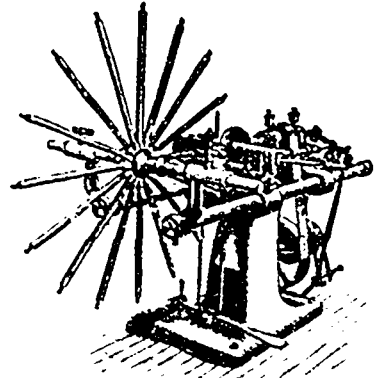
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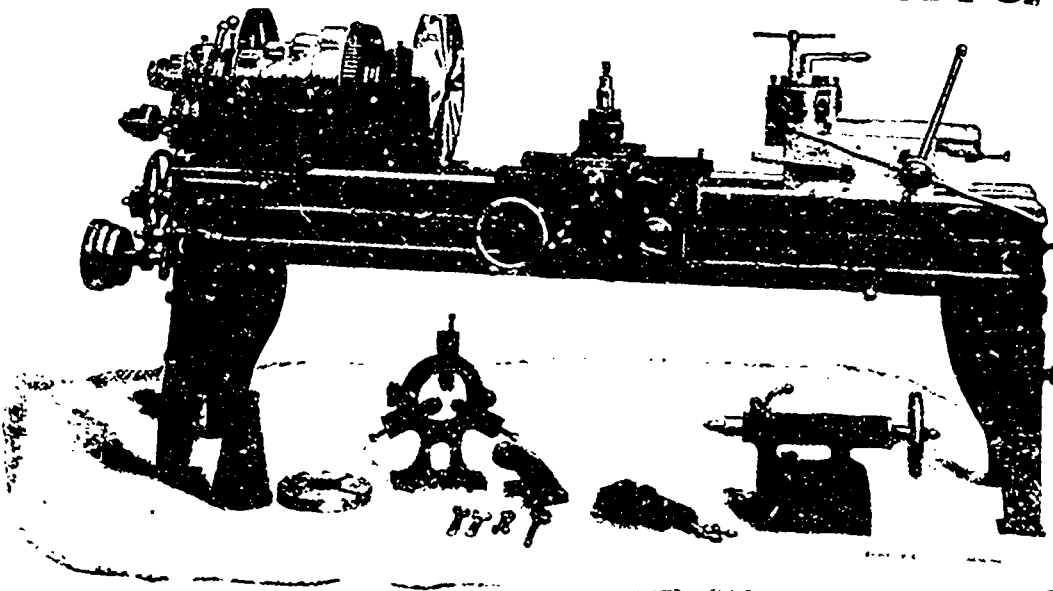
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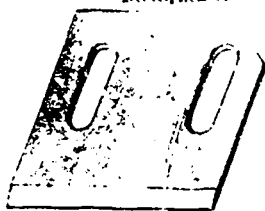


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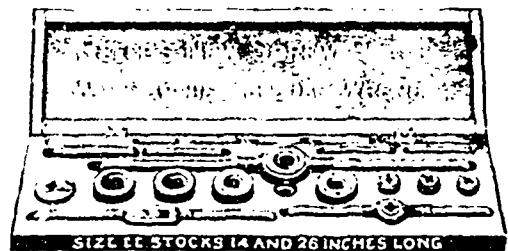
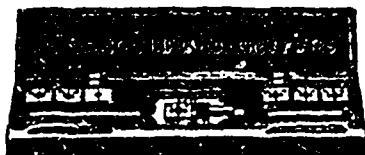
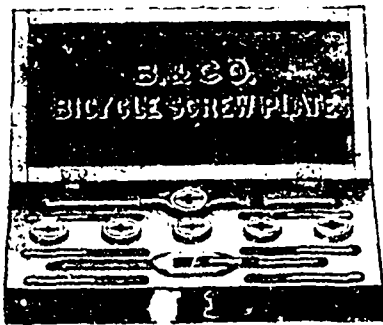
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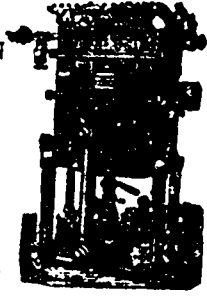
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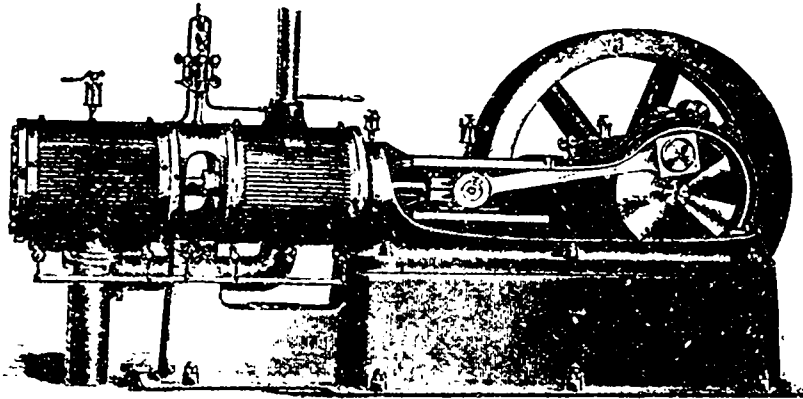
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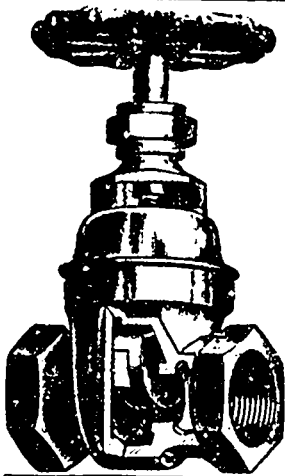
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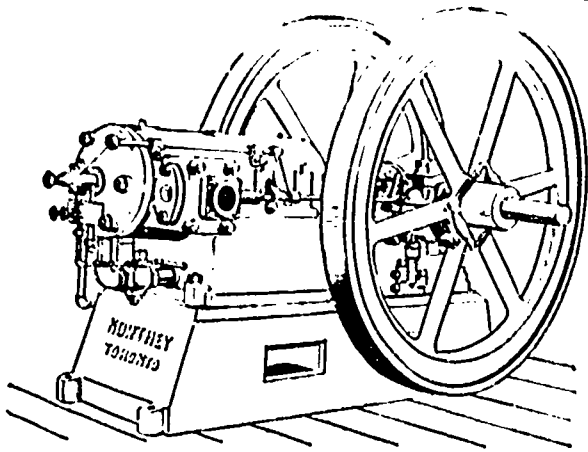
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RAIL AND WATER TRANSPORTATION.

In our last issue it was shown that much of the lack of confidence in the efficacy and economy of canal transportation, as compared with that by rail, arises from an unfair comparison of old and inferior canals with modern and splendidly equipped railways. By this method of comparison in contrasting the operation of the yet incomplete canal system of Canada with that of its great trunk railways, much unwarrantable distrust as to the value and future success of the former has been created, and there is a disposition to embark rather rashly in new enterprises which their advocates allege will supplant or supersede the use of canals. There is good reason for believing that the improvements and extensions on the St. Lawrence river and canals will be completed early in the coming summer, by means of which a through route, with fourteen feet depth of water, will be available from the head of Lake Superior to Montreal, which will admit of the passage of vessels carrying about 2,000 long tons of freight. In a previous article on this subject, reference was made to a proposed system of transportation suggested by some very competent authorities, by which it is expected that wheat can be profitably carried from Chicago to Montreal for three cents per bushel. Ordinary caution would demand that there should be sufficient delay in order to ascertain with some certainty the capabilities and deficiencies (if any) of our improved canal system, and whether these deficiencies can be met by any new enterprises at such moderate cost as the advantages would justify.

Of the many new projects now under consideration may be mentioned:—(1) The enlargement and improvement of the present canal system to such dimensions of locks and of such

depth of water in the whole channel, as would admit of the passage of the largest class of vessels now employed on the Upper Lakes. (2) A ship canal from Georgian Bay to Toronto. (3) A Government air line railway from some port on Georgian Bay to Toronto, including the necessary elevators and harbor improvements at the terminals; (4) River, lake and canal channel from the mouth of French river, via Lake Nipissing, Ottawa river and Lachine canal to Montreal. In discussing the value of any of these projects as a means of cheapening transportation and otherwise promoting the prosperity of the Dominion, it must be shown that they assure greater efficacy than any of the existing routes, or that they are necessary as a supplement thereto.

(1) Enlargement of present canal and river route. Owing to the immense expense which would be involved in the dismantling of existing canals and the very serious disturbance, and indeed stoppage of traffic during years of alteration, it would probably be more economical to construct entirely new canals of the large dimensions proposed. The most sanguine advocates of proposed enlargement have never been able to show that the cost of transportation would be reduced by 25 per cent. The interest on the expenditure involved would amount to much more than the annual saving in freight on the largest traffic which even a vivid imagination could anticipate. The greater part of this saving would inure to the benefit of the producers of the Western States, Canada's greatest competitors in the markets of Europe. The number of those who favor this immense enterprise is constantly decreasing, and this project may be dismissed as being for the present, impracticable and inadvisable.

(2) Ship canal from Georgian Bay to Toronto. If such a canal is to be fed by the waters of Georgian Bay, the cost of excavation would be enormous, and the annual interest on the cost of the canal would far exceed any benefit to be derived from its construction. If it is proposed that the canal would be fed both ways from the waters of Lake Simcoe, the cost would be much less, but it is extremely doubtful whether all the waters at the summit are sufficient to feed such a canal. Many years ago Mr. Keefer was employed to survey a canal route from Georgian Bay through the counties of Simcoe and Ontario to Lake Ontario. He reported that there were no very serious engineering difficulties to be overcome, but he feared that the head waters to be depended upon for feeding the canal would prove insufficient for any extensive traffic. On that route there was a considerably greater supply of water than there is now on the proposed Georgian Bay and Toronto route. Thirty years ago, when the rate of freight on wheat from Chicago to New York, by lake and canal, averaged about 25 cents per bushel, and when most of the lake traffic was done by sail vessels, the short route via Georgian Bay canal to Montreal might have commanded a large business, but with the present rate of freight, averaging between four to five cents per bushel from Chicago to New York, the small saving in cost of transportation, if any, by proposed canal would not justify the cost of construction.

Before discussing the practicability or probable efficiency of projects Nos. three and four, it may be well to consider the existing lines of transportation, and the conditions with which these new projects will have to compete, and to which they must prove superior. First of all, there is the present

canal system when completed, under which it is predicted that wheat can be carried at a profit from Chicago to Montreal for three cents per bushel; and there is the long established route from the Upper Lakes, via Buffalo to New York. The average rate of freight on wheat from Chicago to New York, via Buffalo, during the seasons 1897 and 1898 was between four and 4.25 cents per bushel. During part of the season of 1898, the through rate, including elevating at Buffalo, was as low as 3.12½ cents per bushel on corn. In this condition, it may be well to note that the rate of freight on wheat from Chicago to Kingston between May and October, 1898, varied from two to three cents per bushel, and that during that period the rate on corn was as low as 1½ and 1¾ cents per bushel.

Admitting that even when the Welland and St. Lawrence route of navigation is completed to present proposed capacity, its efficiency will be greatly handicapped by its inability to receive a share of the very large proportion of traffic of the Upper Lakes which is carried on by the large modern propellers; and recognizing the great desirableness of securing a larger share of the traffic than is now obtained by the Canadian Pacific, Grand Trunk and Parry Sound railways, the question arises whether this object can be attained through projects Nos. three and four. This involves the question whether the probable advantages to the general prosperity of the Dominion would justify the Government in the expenditure of the money required for their construction.

(3) Air line railway from Georgian Bay to Toronto. The average rate of freight on wheat from Chicago to Buffalo during 1898 was about 1½ cents per bushel. A serious mistake is being frequently made by advocates of the proposed railway in assuming that the rate of freight from ports on Lake Michigan or Lake Superior to Georgian Bay will be much lower than the rate to Buffalo, as the distance to the former bears to the distance to the latter port. They apparently overlook the fact that there is on the shorter trip the same delay in loading and unloading, and the same expense in shovelling, trimming, etc., at both ends of the voyage. Major Lymons, C.E., in his report to the United States Government on Transportation, shows that this expense at the Buffalo end of the trip of a large propeller is fully two-fifths of a cent per bushel. In comparison with average rate to Buffalo, a fair rate to allow for freight and insurance from Chicago to Georgian Bay ports would be 1½ cents; elevating at Georgian Bay, ½ cent; rail freight to Toronto, 1½ cents; elevating and loading at Toronto, ½ cent; altogether, three cents from Chicago to f.o.b. vessel at Toronto. The average rate per ton per mile allowed to railway is less than the average rate of freight per ton per mile received during 1898 on the New York Central railway, which was lower than the average of any preceding year. The three cents per bushel f.o.b. vessel at Toronto is equal to the highest price paid from Chicago to Kingston during the months May to October, 1898. From f.o.b. Toronto to Montreal, 1½ cents per bushel would be a very moderate rate, and this would not include marine insurance or canal tolls. This would make the rate of freight from Chicago or other Upper Lake ports to Montreal, via Toronto, higher than the rate to New York, via Buffalo. It is contended that inasmuch as the Parry Sound railway carried over 10,000,000 bushels of grain from Chicago to Duluth last season, even in competition

with the low rates, via Buffalo to New York, therefore the proposed air-line from Georgian Bay to Toronto will be able to secure all the western freight which it can handle. Without any information as to the proportion of through rate which accrued to the Parry Sound railway, or as to whether this proportion was a paying rate, it is known that this railway, through its eastern connections and splendid lake steamers, secured a large amount of return freight; and it may be assumed that the better rates obtained for this class of merchandise enabled it to take very low rates for eastward traffic. But it cannot be assumed that this westward traffic can be expanded in the same proportion to eastward traffic, if the latter should be increased to the extent anticipated by the improved canal system and the construction of an additional transportation line. The very large increase in the quantity of American grain which passed through Canadian channels to the seaboard during the season of 1898 is very gratifying, but it would be well to bear in mind that this increase is largely attributable to the peculiar position of the grain market during that year, especially in wheat and flour, the cash prices for which were so much higher than for a few days later delivery that holders preferred the short and rapid transportation through the Canadian route, even if the rate of freight was a trifle higher than via Buffalo to New York. But in the normal state of the market, a saving of ½ or even ¼ cent in the rate of freight per bushel will determine the route and destination of the grain. The proposed air-line railway from Toronto, with the elevators and harbor improvements in connection therewith, would probably cost over \$3,000,000. The annual interest on this amount together with cost of maintenance would amount to fully \$125,000. This is equal to ½ cent per bushel on 25,000,000 bushels of grain which is probably more than it would be able to secure in any one season, in competition with the other lines of transportation through Canadian routes. It does not appear that the cost of transportation by this Toronto route will be lower than by existing lines. It cannot be said to be a public work of general utility, nor in any degree the necessary complement of the canal system, such as its promoters claim for it.

(4) The lake, river and canal route from the mouth of the French river to Montreal. In discussing this important project, which an eminent United States authority pronounces to be "The first in magnitude of all the Inland Water Routes of North America," it is proposed to consider it in the light of a great public work to be undertaken by the Dominion Government, if, after a thorough survey, it is found to be practicable and can be constructed at a reasonable cost. It seems almost incredible that Parliament should have granted to any company, a charter for the construction of a work which must seriously affect every interest on both sides of the route, and which covers an almost innumerable host of minor franchises which will come under the control of the company. Even more incredible appears the fact that at last Session of Parliament the charter was renewed or extended in favor of a company which was conspicuously unable to proceed with the work. It is to be hoped that all applications from the company for Government aid of any kind will be peremptorily refused, and that Parliament will appropriate a sufficient sum for a thorough survey of the route, and a reliable estimate of its cost.

THE GREAT FIASCO

The cloud that impended over Canada for the past six months had a happy dissipation at Washington on February 20th. The High Commission to whom had been committed the task of settling certain differences and misunderstandings that were said to exist between Canada and the United States, discovered that they could not agree upon certain points, and, agreeing to disagree, they adjourned ostensibly to again assemble in the city of Quebec on the second day of August next. It is to be hoped that the day of the re-assembling of that commission will never arrive. It was unfortunate that the convention was ever proposed. It was no doubt conceived in the hope that good to Canada would result from it, and the Canadian participants in it are to be credited with having done all that honest men could possibly do in their endeavor to extract sanbeams from cucumbers, and blood from turnips. Thank God the result has been as it is. There was no solid or substantial demand in Canada for the settlement of the questions that were submitted to the Commission for adjudication. It was an unnecessary and expensive experiment, but the cost of it can well be borne if it convinces any who may have supposed to the contrary that Canada had anything to hope for in any treaty that might be made with the United States. We should let well enough alone. We should not cast our pearls before swine. We should not go hat in hand begging for favors when we had it in our power to command them. We should never have thrown away our arms and armor on the eve of battle. It would have been much better for us to have fought the devil with his own fire. We have gained wisdom by sad experience, and we should profit by it. If we think that concessions of any sort are due us from the United States we should put ourselves in position to demand them. We now know where we are at. We now know what we have to depend upon. We now know the road in which lies our duty, our self-respect and our prosperity.

In the meantime there are some things that Canada should do, and do them now.

Proceed with the development of our own resources with the greatest alacrity, extending and perfecting our routes of transportation both by land and water.

Impose an export duty on logs and pulp wood, and let that duty be heavy enough to compel the sawing of lumber and the manufacture of wood pulp in Canada.

Impose an export duty on nickel ore and matte, to the end that none of our raw material finds its way into any country that imposes a prohibitive duty upon refined nickel.

Impose an export duty on ores containing gold, copper, lead or silver to the end that all refining of them be done in Canada.

Impose an import duty on lumber equivalent to that imposed upon Canadian lumber going into any other country.

Impose an import duty on all grain coming into Canada equal to that imposed upon Canadian grain going into any other country.

Impose protective duties on all manufactures that can be produced to advantage in Canada.

Put in the free list all articles required in Canada that cannot be produced here to advantage.

Encourage and stimulate our export trade in every pos-

sible way, and make the shipping facilities at our seaports equal to those of the most prosperous of other countries.

Enforce the Canadian Alien Labor law.

Keep hands off of Premier Hardy's Ontario timber law.

Keep hands off of Premier Martin's British Columbia Alien law.

God save the Queen.

THE NEW HOME MARKET.

The proposal to build a railway from Missanabic, a station on the line of the Canadian Pacific Railway north of Lake Superior, to Moose River, which empties into James Bay, as a link in the proposed route connecting Ontario with Hudson Bay, and the great region west of that inland sea and north of Ontario and Manitoba, is arousing much attention, not only in Toronto, but throughout the province.

The attention of the Canadian Manufacturers' Association was directed to the large and valuable home market that would be opened up to our manufacturers if the proposed railway and its connections were constructed, through the report recently made to the Ontario Government by Mr. W. A. Charlton, who, with Mr. C. T. Harvey, the well-known and experienced civil engineer, had made a thorough examination of the subject. From data thus obtained and from other sources, a Bulletin having reference to the subject was compiled by order of the Association and distributed, not only to the members of the Association, but also to other manufacturers, to the members of the Ontario Legislature, to all the Boards of Trade in the province, and to many others interested in the development of the vast and valuable region indicated; and the responses that came from many of these who thus became possessed of the information contained in the Bulletin, led to the hope and belief that the Ontario Government would give the scheme all reasonable and proper assistance. Possessed with this hope, a deputation consisting of advocates of the scheme waited upon the Government a few days ago to point out how it could be best carried into effect and the great benefit that would be derived, not only to Ontario but also to the whole country by its accomplishment.

Mr. Stapleton Caldecott, of Toronto, who is very much interested in the scheme, who has given it close study, and who, as one of the delegation alluded to, explained it very thoroughly to the Ministers and members, writes:—

Owing to the extent of unexplored and entirely unurveyed area through which the railway north of the C.P.R. must be built to reach tide water, the preliminary surveys to locate a railway with precision upon the best possible line will require one or two seasons, and the actual building still more time. The idea has been received with great favor that a wagon road should be opened to the navigable section of the Moose river, to afford a base for surveys, and to be used as a colonization road and stage route, until the railway was built parallel to it, the Government to advance part of the expense and the railway company the remainder, the Government allowance to be deducted from its money grant to aid the railway with the company's consent.

The statement was made that if the Government favored this plan, commercial access could be established with Hudson Bay this year, by stage from the C.P.R. to Long Portage, on the Moose river, about 120 miles, and by steamboats thence to Moose Factory, about 120 miles further, or 240 miles in all by air line measurement.

Mr. Robert Kilgour, of Toronto, who participated in the meeting, speaking of the doubts that had been expressed

regarding the utilization of Moose river as part of the proposed route, produced a letter from Mr. F. B. Polson, of the Polson Iron Works Co., of Toronto, part of which is as follows:

I have looked over the report of the Provincial Commissioner, Mr. Charlton, appointed to examine the Missanabie and Moose river route to Hudson's Bay with great interest. Also notes made by an engineer who came from tide water to Long Portage during the lowest state of water in the river in September last. From all the statements made it seems that from the maximum of fifteen feet to a minimum of two feet is the range of the channel depth in the Moose river for its length of 100 miles or more north of Long Portage. If the channel was only two feet for its entire length a good steamboat traffic could be maintained. We have built stern wheel steamers for this service, and could guarantee to build boats from 100 to 150 feet long, with a freight capacity of from 50 to 100 tons in addition to at least 100 passengers.

I send you herewith photos of several steamers of this type which we have built, and which are giving first-class results in British Columbia. These boats are not expensive, and could do the business on the proposed new route in the interim before parallel railway transit is introduced.

These boats could be designed so they could navigate in twenty to twenty-four inches of water, and could make a speed of from ten to twelve miles per hour.

It may be well to state that no money bonus is asked except for the section of railway north of the C.P.R., the benefits of which will be generally shared throughout the province.

Also, that if the policy was adopted here that has been followed by the Federal Government of the United States, of grading the price of the lands reserved to the Crown along the new route, to represent the increased value caused by the building of the proposed railway, not only would the bonus be realized to the Government in cash before being called upon to pay the same as an annuity, but it would be proven that it had received more for its reserved lands than the entire contiguous domain could be sold for in its present inaccessible condition.

Mr. Kilgour, illustrating the necessity for opening up the proposed route, stated that flour made in Western Ontario, destined for consumption by persons living in the country contiguous to Hudson Bay, could now only reach its destination by being sent first to England and thence to the consumer, involving transportation of some 7,500 miles, and this for lack of this 240 miles of proposed railway.

The opening of these facilities means an epoch in the industrial and commercial history of Ontario, second only to that of the completion of the Canada Pacific Railway, and to have a beginning made the present year is the most interesting item of provincial progress now in prospect.

THE GROWING TIME FOR CANADIAN IRON.

A few days ago The Toronto Globe gave a three column "Growing Time" description of the new works of the Deseronto Iron Company in which the blast furnace of that concern, just blown in, was described. As far as the new furnace and the other allied works of the company goes, the description was very good, but the exuberance of the writer led him into making some ridiculous statements that should be corrected. It says: "There is but one other (charcoal furnace) of the same kind in the Dominion, that near Three Rivers, Que., which has been in operation during nearly this entire century." Mr. J. M. Swank, in his Directory of Iron and Steel Works in the United States and Canada, enumerating the charcoal furnaces in this country mentions: (1) the Pictou Charcoal Iron Company of Bridgeville, N.S., who have one

stack 55x11 feet built in 1892, with a capacity to manufacture 6,000 long tons of charcoal iron per year, product, car wheel and malleable pig iron. (2) Canada Iron Furnace Company of Montreal, furnace at Radnor Forges, Que., one stack 40x9 feet, built and blown in in 1891, product, special charcoal pig iron for car wheels, chilled rolls, armor plate and like purposes, annual capacity 10,000 gross tons, this stack taking the place of the old Radnor furnace. (3) John McDougall & Co., Montreal, furnace at Drummondville, Que., two stacks, the Grantham, 35x10 feet, built and blown in in 1880, and the St. Francis, 32x9 feet, built and blown in in 1881, product, car wheel pig iron, annual capacity 4,000 gross tons. In this connection it may be proper to state that The Globe does not give the size of the Deseronto furnace, but it places its capacity of production at sixty tons of pig iron per day. It may also be proper to state that the Canada Iron Furnace Company are about building a charcoal furnace at Midland, Ont., to have a daily capacity of sixty tons of pig iron. The Globe says:—

The one standing objection always urged against the establishment of iron smelting works in Canada has been that our home market is too limited. Probably this objection applies more strongly to iron of the ordinary process of manufacture than to charcoal iron. But little charcoal iron is made in Canada, anyway, and not much anywhere else, because of the scarcity of wood for charcoal-making. Sweden and a few places in the States now furnish the principal supply.

We have never before heard that the lack of demand for pig iron in Canada was a standing objection to the establishment of blast furnaces in this country, the objection applying to other than charcoal iron. Besides the charcoal furnaces here alluded to, there are in Canada the following furnaces which use other than charcoal for fuel: (1) The furnace at Ferrona, N.S., belonging to the Nova Scotia Steel Company, one stack 65x15 feet, built in 1892, product foundry pig, annual capacity 25,000 gross tons. (2) The furnace at Acadia Mines, N.S., belonging to the Londonderry Iron Company, Londonderry, N.S., two stacks, furnace A 75x18 feet, and furnace B, 62x18 feet, blown in in 1877, product foundry pig, annual capacity 40,000 gross tons. (These furnaces are not now in operation, the company being in liquidation). (3) The Hamilton furnace, belonging to the Hamilton Iron and Steel Company, at Hamilton, Ont., one stack, 75x16 feet, blown in in 1895, product foundry pig iron, estimated annual capacity 60,000 gross tons. The annual productive capacity of these furnaces in operation aggregates only 85,000 tons, while the imports of coke and anthracite iron into Canada in 1897 amounted to 25,729 tons, and in 1898 to 37,860 tons. Our importations of charcoal iron in 1897 amounted to 2,936 tons, and in 1898 to 2,250 tons. The production of pig iron in Canada for the calendar year 1897 was 58,007 tons, and in 1898 (estimated) 77,015 tons. These figures indicate that if this country manufactured all the iron it consumes, we would have many more furnaces in blast than what there now are.

The Globe tells us that but little charcoal iron is made in Canada, and not much anywhere else because of the scarcity of wood for charcoal making. Arrant nonsense. According to a tabulated statement published by Mr. Swank in The Bulletin of February 1st showing the production of pig iron in the United States in 1897 and 1898, the total number of charcoal furnaces in blast June 30, 1898, is

given as twenty, as against seventeen on the same date of the previous year, the production of which was 296,750 gross tons in 1898, as against 255,211 gross tons in 1897. This does not look as though the production of charcoal iron is falling off.

We are also informed by The Globe as follows:—

There have been three pretty extensive charcoal iron smelting works in Detroit for many years past, turning out from forty to sixty tons of pig iron each day. Two of these are now in operation.

According to Mr. Swank's statement there are at this time six charcoal furnaces in operation in the State of Michigan, which last year produced 147,640 gross tons of pig iron, as against 296,750 gross tons in all of the United States, or one-half of the whole. Michigan and Ontario being very similarly situated as to climate, forestry and natural products, there is no good reason why Ontario should not be a large producer of charcoal iron. Mr. Swank in his Directory published in 1896 enumerates fifteen completed charcoal stacks in Michigan, and one under construction, from which it does not appear that there is any great stampede of furnaces from that State because of scarcity of wood for charcoal making.

THE COLONIAL SYSTEMS OF THE WORLD.

In the December summary of the Commerce and Finance of the United States, issued by the Bureau of Statistics at Washington, there is a long and valuable appendix on the above subject, which contains a great deal of interesting information. It shows that the colonies, protectorates and dependencies of the world number 125; they occupy two-fifths of the land surface of the globe, and their population is one-third of the entire people of the earth; of the 500,000,000 people thus governed, over three-fourths live between the tropics of Cancer and Capricorn, or within what is known as the "Torrid Zone," and all of the governing countries lie in the North Temperate Zone. Of the 125 colonies, protectorates, dependencies, and spheres of influence, two-fifths belong to Great Britain, their area being one-half, and their population considerably more than one-half of the grand total.

Some of the figures relating to the United Kingdom and her dependencies are very striking. The area of the Mother Country is 120,973 square miles, its population, 39,824,563; the area of its forty-eight colonies, 11,250,412 square miles; their population, 344,059,122. The latter includes feudatory native states of India, whose area is 731,944 square miles, and population, 66,060,479.

The following is an abstract of the British Colonies and Dependencies:—

	Area Sq. Miles.	Population.	Miles of Railway.
India, British India.....	1,068,314	221,172,952	20,390
" Feudatory States..	731,944		
Europe, Gibraltar.....	2	20,658	
" Malta and Gozo..	119	176,231	8
Asia.....	26,977	3,876,422	297
Africa.....	394,769	4,875,520	3,014
America, incl. West Indies	3,614,338	6,882,960	17,124
Australasia.....	3,173,658	4,703,900	13,936
Total.....	9,019,012	307,849,122	54,769
Protectorates and Spheres of Influence—			
In Asia.....	120,400	1,200,000	
In Africa.....	2,120,000	35,000,000	
In the Pacific.....		10,000	
Total.....	11,250,412	344,059,122	54,769

EFFECTS OF MACHINERY ON LABOR.

The results of the thorough investigation ordered by the United States Congress now just completed, showing the effects of machinery on labor, is treated quite exhaustively in the Thirtieth Annual report of Mr. T. V. Powderly, the Commissioner of Labor. The statistics of cost reported involve only the actual labor expense. Among other things the report says:—

There would be no quarrel with the conclusion that machinery has lowered the cost of production, and when it is known that under the machine method there is an increased demand for labor as a rule, the bearing of the supply of labor becomes problematical. The statistical method, as in the effect upon wages, becomes indicative of the truth, and to those who believe machinery has, in general, lowered cost, conclusive. The statistics presented make evident that there has been a large increase in the number of persons required for the production of the articles considered, in order to meet present demands, than were necessary to meet the demands under the hand labor system.

Fertilizing ground required twenty-five hours under the earlier wagon and shovel method, and but one hour by the modern drill. In digging trees, the machine in general use reduced the time between one-eleventh and one-thirteenth of the old time, and in small grain harvesting, the self-binder has reduced the time for cutting, binding, and shocking to about one-eighth of that under the primitive system. In threshing, the ratio of time used is more than thirty-two to one in favor of the machine. In corn planting, the old method took nearly six times as long. One of the comparisons shows the manufacture of 1,000 one-pound loaves of bread is reduced in cost from \$5.59 to \$1.55, and in time from twenty-eight to eight hours; axle clips, 1,000 in quantity, from \$233.33 to \$4.27, and from 666 to 23 hours. In making 500 pounds of dairy tub butter, machinery cut the cost down from \$10.66 to \$1.78, and from 125 to 12 hours. In diamond cutting, machinery has reduced the time for four three carats from 132 to 39 hours, but increased the cost from \$14.84 to \$26.25. In lithographing the cost is cut from \$92.87 per 1,000 copies of a specified size to \$8.75, and time from 166 to 30 hours. In making matches the time is cut from 259 to 29 hours, and cost from \$24 to \$3. In printing and publishing magazines, 10,000 copies, the labor reduction cited is from 3,170 to 14 hours, and from \$302.50 to \$4.62. Cigarettes, 100,000 in number, manufactured by hand, in 1880 and by machinery in 1895, cost relatively \$97.44 and \$11.48, time 990 and 145 hours, the number of workmen also being reduced from twenty-seven to thirteen. In mining 100 tons bituminous coal, the hand cost in 1891 was \$77.60 and time consumed 342 hours; machinery reduces this in 1897 to \$43.40 and the time to 188 hours, while the number of workmen also is reduced from forty-two to thirty-two.

FUEL OIL AND THE TARIFF.

A number of Ontario manufacturers who use large quantities of fuel oil in their business, and who feel outraged at the operation of the combination between the Standard Oil Company and the Grand Trunk and the Canadian Pacific Railway Companies, held a meeting in Toronto on February 25th, at which they resolved to request the Dominion Government to remove the duty of 2½ cents per gallon on fuel oil imported into Canada.

The action of the manufacturers is based upon the claim that since the Standard Oil Company acquired control of the oil industry of Canada it has shown a disposition to cut off the supply and reduce the quality of fuel oil, and to materially advance the price, thus causing both loss and inconvenience to manufacturers, and in some instances enforcing idle-

ness upon large numbers of hands. They therefore urge that as fuel oil is not produced in Canada in any event, the action of the Standard Oil Company can be met by taking off the duty, thus enabling users to bring it in from the United States at reasonable cost.

The following official statement of the views of the meeting was unanimously passed and given out.

Fuel oil has been used by manufacturers in Canada for many years past; it has been found to be better adapted for certain purposes than coal, and is used in the United States in similar processes of manufacture. It has been sold at Petrolia or Sarnia within the last few years as low as 80 to 85 cents per barrel, and from that to \$1.15 and \$1.25 per barrel, with a desire now to further advance it to an exorbitant figure.

The control of the oil industry in Canada has passed from Canadian companies into the hands of the Standard Oil Company of the United States. Since the Standard Oil Company secured the control of the product, there has been a tendency to curtail the supply and reduce the quality, and in fact in some cases to cut it off altogether, as well as to advance the price materially.

Some of the contracts between the consumers and producers of fuel oil have not yet expired—others have expired, and at the present time, through inability to secure fuel, works are seriously handicapped, and some have been obliged to close down, causing great inconvenience as well as loss, and subjecting manufacturers to heavy actions for damages through being unable to complete contracts, and imposing idleness on a large number of hands. This unfortunate condition of affairs has been thrust upon the manufacturers without the slightest warning, thus giving them no opportunity of making other arrangements in order to keep their various businesses in operation.

It is generally conceded, and is apparent, that the Standard Oil Company have not treated the manufacturers fairly, and that they are indifferent as to whether the manufacturers suffer loss through being obliged to shut down.

In fact other users, it is said, have been found for the fuel oil which was formerly supplied to manufacturers in this country, and in the future, under no circumstances, are they prepared to supply the same class of fuel oil as has been supplied in the past, to which manufacturers have accommodated themselves, and have gone to an enormous expense in installing plants particularly adapted to this class of fuel.

When we consider the magnitude of the Standard Oil Company's operations it will easily be appreciated of how little importance this question may appear from the standpoint of this great corporation.

The statement is also made with authority that the Standard Oil Company do not mete out this kind of treatment to their patrons in the United States where they have competition.

The duty on fuel oil when imported for use by manufacturers for fuel purposes in their own works, is a prohibitive one, as it equals over 100 per cent. calculated on an ad valorem basis, being 2½ cents per imperial gallon, equalling 88 cents per barrel, while the price at the point of production at the present time, in the State of Ohio, is from 72 to 84 cents per barrel.

The consumers using this oil for manufacturing purposes

feel that, inasmuch as the oil cannot be obtained in Canada, the Government should come to their rescue in this crisis, and put fuel oil, when used for manufacturing purposes, on the free list. This would enable our manufacturers to continue their operations without delay; and they would also expect the Government to protect them in respect to railway discrimination, in order that they may secure equally as low rates of freight, mileage considered, on this class of oil as have ruled in the past from points in Canada, such as Sarnia and Petrolia, whence it has been shipped.

They would not expect that the railways operating in Canada would be warranted in defeating the object by placing a special tax in the form of an exorbitant and extra freight tariff on the commodity as soon as it reaches Canadian territory. It is anticipated there will be no difficulty in connection with this question before it reaches Canadian territory, as the established rates of freight in the United States, upon this commodity, are fair and equitable.

Adding the cost of extra freight from Ohio, as compared with the freight from Sarnia or Petrolia, to the customs tariff equalling 88 cents per barrel, gives the Canadian producer an advantage over the oil produced in Ohio equalling about 150 per cent. ad valorem basis.

The following concerns participated in the meeting:—Lozier Bicycle Co., Toronto; Dominion Bridge Co., Montreal; Ingersoll Packing Co., Ingersoll; Verity Plough Co., and Gould Bicycle Co., Brantford; D. F. Jones Mfg. Co., Gananoque; The Massey-Harris Co., Toronto; Geo. Gillies & Co., Gananoque; Gananoque Spring and Axle Co., Gananoque; Kemp Manufacturing Co., Toronto; McClary Manufacturing Co., London; Dominion Glass Co., Hamilton and Montreal; Canadian Packing Co., London; The Wilkinson Plough Co., Toronto; F. W. Fearman & Co., Hamilton; Ottawa Porcelain and Carbon Co., Ottawa; Sydenham Glass Co., Wallaceburg.

Mr. D. M. Rennie, Canadian commercial agent in the Argentine Republic, writing us from Buenos Ayres, says that the Government of that country has, in addition to the inland revenue tax, imposed customs duties doubling the rate on all goods paying 2½ to five per cent. ad valorem, and adding ten per cent. on all duties over these rates. The rate of duty on spruce, white pine and pitch pine lumber is now \$8.44 per thousand, instead of \$3.08, the law to remain in force until December 31, 1899. Mr. Rennie informs us that a boom in the building trades is expected, which means that large quantities of lumber will be required.

LITERARY NOTES.

The March Ladies' Home Journal has a noteworthy feature in the page showing "Pope Leo XIII. as he lives in the Vatican." The pictures were made by the only photographer who has been admitted to the Vatican for a number of years, consequently they offer the first close view the public has had in a long time of the Pope and his surroundings. Mrs. S. T. Rorer continues her cooking lessons and advice upon domestic economies, and every phase and condition of home life is considered. By The Curtis Publishing Company, Philadelphia. One dollar per year; ten cents per copy.

In The Methodist Magazine for March are seven illustrated articles, all of marked interest. They describe Landor's extraordinary adventures, perils, and tortures in the heart of Tibet—"The Forbidden Land;" "The Life of Christ in Art," with reproductions of many of Tissot's remarkable pictures; a character study of Disraeli, by the Rev. W. H. Adams, with portraits; the romantic career of Elizabeth of Hungary, by Professor Wallace, illustrated; the story of the persecutions and exile of the Doukhobors, by a Russian writer; an account of the "Monasteries of the Mid Air in Greece," and the life story of Donald Drysdale, "The Merchant Evangelist of Liverpool."

CANADIAN MANUFACTURERS' ASSOCIATION.

<p>President: J. F. ELLIS.</p> <p>First Vice-President: JAMES KENDREY, M.P.</p> <p>Second Vice-President: P. W. ELLIS.</p> <p>Treasurer: GEORGE BOOTH.</p> <p>Chairman Executive Committee: R. W. ELLIOT.</p> <p>Chairman Tariff Committee: W. K. McNAUGHT.</p> <p><i>The Executive Committee meet on the Second Tuesday of each month.</i></p>	<p>OFFICES McKinnon Building, TORONTO. Tel. 1274.</p> <hr/> <p>J. J. CASSIDEY, - SECRETARY.</p> <hr/> <p>THE OBJECTS OF THIS ASSOCIATION ARE:</p> <p>To secure by all legitimate means the aid of both Public Opinion and Governmental Policy in favor of the development of home industry and the promotion of Canadian manufacturing enterprises.</p> <p>To enable those in all branches of manufacturing enterprises to act in concert, as a united body, whenever action in behalf of any particular industry, or of the whole body, is necessary.</p> <p>To maintain Canada for Canadians.</p> <p>To any person directly interested in any Canadian manufacturing industry is eligible for membership.</p>	<p>CANADIAN INDUSTRIAL LEAGUE. <i>President,</i> JAS. KENDRY, M.P.</p> <hr/> <p>WOOLEN MANUFACTURERS' ASSOCIATION, <i>President,</i> BENNETT ROBAMOND, M.P.</p> <hr/> <p>KNIT GOODS MANUFACTURERS' ASSOCIATION, <i>President,</i> JOHN PENMAN.</p> <hr/> <p>CARPET MANUFACTURERS' ASSOCIATION, <i>President,</i> J. P. MURRAY.</p> <hr/> <p>GLOVE MANUFACTURERS' ASSOCIATION, <i>President,</i> A. R. CLARKE.</p> <hr/> <p>REPRESENTATIVES TO TORONTO INDUSTRIAL EXHIBITION ASSOCIATION.</p> <p>R. W. ELLIOT. GEORGE BOOTH. W. K. McNAUGHT. A. E. KEMP. J. J. CASSIDEY.</p>
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CANADA'S COMMERCIAL AGENTS.

Following is the correct official list of Canada's Commercial Agents in Great Britain, British Possessions and foreign countries.

- J. S. Larko**, Sydney, N.S.W., agent for Australasia.
- G. Eustace Burke**, Kingston, Jamaica, agent for Jamaica.
- Robert Bryson**, St. John, Antigua, agent for Antigua, Montserrat and Dominica.
- S. L. Horsford**, St. Kitts, agent for St. Kitts, Nevis and Virgin Islands.
- Edgar Tripp**, Port of Spain, Trinidad, agent for Trinidad and Tobago.
- C. E. Sontum**, Christiania, Norway, agent for Sweden and Denmark.
- D. M. Ronnio**, Buenos Ayres, Argentine Republic, agent for Argentine Republic and Uruguay.

In addition to their other duties, the undermentioned will answer inquiries relative to trade matters, and their services are available in furthering the interests of Canadian traders.

- J. G. Colmer**, 17 Victoria Street, London, S.W., England.
- Thomas Moffat**, 16 Church Street, Cape Town, South Africa.
- G. H. Mitchell**, 15 Water Street, Liverpool, England.
- H. M. Murray**, 40 St. Enoch Square, Glasgow, Scotland.
- Harrison Watson**, Curator Imperial Institute, London, England.

IMPORTANT.—An enquiry addressed to J. J. Cassidey, Secretary Canadian Manufacturers Association, Toronto, Canada, will place you in communication with the leading Canadian Manufacturers of the articles you mention. Merchants and Importers in all parts of the world are invited to make free and full use of the facilities afforded by this Association when they desire information about anything produced in Canada. No charge whatever for answering inquiries.

THE PARIS EXHIBITION, 1900.

Hon. Sydney Fisher, Dominion Minister of Agriculture, has sent us the necessary form for application for space to be made by those who may desire to make exhibits at the Paris Exhibition in the year 1900; and copies of the form, and of the general regulations for Canadian Exhibitors can be had on application to the Secretary Canadian Commission, Paris Exhibition, Ottawa.

The general regulations are as follows:—

1. Opening and close of Exhibition.—The Exhibition will open on the 15th April and close on the 5th November, 1900.
2. Applications for space.—Forms of Application for space must be returned to the Canadian Commission, Department of Agriculture, Ottawa, as early as possible, and in any case not later than the 1st June, 1899. All applications will be considered by the Commission, but owing to the limited amount of space at their disposal, they cannot undertake to allot the whole or any part of the space applied for, their object being to secure the best possible exhibition of Canadian goods in each group. There will be no charge for space to exhibitors.
3. Date of Reception of Exhibits.—Accepted exhibits from Quebec, Ontario, and the East, packed in strong cases must be delivered, at the exhibitors' expense, at the Customs Warehouse, Montreal, or the Queen's Wharf, Quebec, not later than the 1st of November next, 1899; and exhibits from the Maritime Provinces at Halifax, N.S., not later than the 15th November, 1899, to be shipped to Paris by the Canadian Commission free of charge. Exhibitors will be free to ship their goods by other routes not later than the 1st January, 1900, but at their own personal expense.

4. Prohibition of Transfer of space or Substitution of Exhibits.—No Exhibitor will be permitted to transfer his allotment, or to allow any other than his own duly accepted exhibits to be placed thereon. All goods must be exhibited in the name of the person or firm who signed the form of application.

5. Forfeiture of allotted space.—Space not occupied thirty days previous to the opening of the Exhibition will be forfeited, and allotted at the discretion of the Commission.

EXHIBITS.

6. Position of Exhibits.—Exhibitors will be required to place their exhibits so as to contribute as much as possible to the general effect. The whole arrangements relating to show cases, signs, notices, and all similar matters, will be subject to instructions issued by the Commission.
7. Maximum Height of stands, etc.—No stand, including sign-board, may exceed twelve feet in height, without special permission.
8. Uniformity of Decoration.—In order to ensure uniformity of decoration and general effect, no Exhibitor will be allowed to put up flags, banners, or any other kind of decoration, without special permission from the Commission.
9. Railing off Exhibits.—Exhibitors may place railings round their stands, subject to approval. In every instance the railings must be within the space allotted.
10. Partitions.—No partitions may be erected between the stands without permission from the Commission, nor anything put up to interfere with the sight of adjoining stands, or to impede the general view in all directions throughout the building.
11. Sign and Name Boards.—No sign or name board may be placed in such manner as to interfere with the vista, or

otherwise than parallel with the front of the stand. All signs placed over show cases or stands must be uniform in style. Instructions upon this will be issued later, and the maximum dimensions will be specified.

12. Conveyance Expenses.—The Commission will bear the cost of transportation of all exhibits from the ports of Montreal, Quebec and Halifax to Paris.

13. Supervision of Arrival, Installation, and Departure of Exhibits.—In the absence of the exhibitor or his accredited representative the Commission will receive, unpack, and install the exhibits in Paris, provide the necessary platforms, counters, and other fixtures, free of charge, and show cases where in their opinion the nature of the exhibits requires these. The Commission will also repack, and return, free of charge, to the above mentioned ports, such exhibits as are not disposed of in Paris. Exhibitors are expected to dispose in Paris of their exhibits when these have a commercial value, only valuable collections or objects of special character being granted free return transportation.

14. Pricing goods.—Exhibitors are particularly requested to mark their goods with the home selling prices, for the information of the jury and public. Prices, weights and dimensions should be given in French equivalents, as well as in Canadian figures.

15. Placards and Handbills.—No printed or written placards, handbills or descriptions may be displayed or distributed without the permission of the Commission. Such permission may be withdrawn at any time.

16. Dangerous and Unhealthy Exhibits.—Dangerous articles, especially those of an explosive nature, are excluded. Percussion caps, fireworks, matches and similar articles will only be accepted in the form of imitations, and on condition that they contain no inflammable matter.

Exhibitors of unhealthy products, or of products which may cause inconvenience, must conform at all times to any measures which may be prescribed by the Commission in the interest of public health and safety.

Spirits of alcohols, oils and essences, corrosive substances, and such as are liable to injure other exhibits or inconvenience the public, will only be accepted provided they are contained in such vessels of convenient size, shape and material as may be approved by the Commission.

17. Unsuitable Exhibits.—The French Executive reserves the right to remove at any time any article which they may deem objectionable or unsuitable for exhibition.

18. Opening and Closing Exhibits.—All show cases, machinery, and exhibits generally, must be uncovered and properly cleaned each day previous to the hour at which the Exhibition is open to the public. They must not be again covered until the closing of the building.

19. Attendance of Exhibitors.—All exhibits must be on view on every day on which the Exhibition is open. If Exhibitors or their representatives do not wish to be in attendance at the Exhibition, the Commission will be prepared to undertake the superintendance of the exhibits, but in that event the Commission will not be responsible for any loss, damage, or accident, however occasioned.

20. Removal of Exhibits.—No exhibit may be removed before the close of the Exhibition without special permission from the French Executive. This rule does not apply to articles which exhibitors may be authorized to manufacture in the Exhibition.

21. Motive Power.—Motive power will be provided free of charge, under conditions which will be communicated to the exhibitors.

22. Foundations and Connections.—The Commission will provide at their own expense all necessary foundations, connection with the water, gas, electric and steam mains, as well as exhaust pipes, drains, etc., and also provide pulleys (which must be made in halves), or any intermediate gearing that may be necessary to convey power from the main shafting.

23. Fencing of Machinery.—All machinery in motion must

be railed off in such a way as to protect the public and the work people from injury, and to the satisfaction of the Commission.

24. Labels.—All cases containing goods for exhibition must bear special labels, inside as well as outside, which will be supplied to exhibitors in due course.

25. Unpacking of Cases.—All cases must be unpacked on arrival. Any cases remaining unpacked fifteen days prior to the opening of the Exhibition will be liable to be removed to the Custom House, but neither the French Executive nor the Commission will be responsible for any damage which may arise, or any expense which may be incurred in consequence of such removal.

26. Storage of Empties.—The Commission will make arrangements for the collection, storage, and re-delivery of cases. Cases must be distinctly marked by the Exhibitor for the purpose of identification.

GENERAL.

27. Freight and Duties.—Information regarding any reduction of freight charges, duties, etc., will be issued by the Commission from time to time.

28. Customs' Duties, Forwarding of Goods.—The buildings of the Exhibition will be treated as bonded warehouses. Exhibitors not taking advantage of the Commission's shipment may transmit their goods through any forwarding agent or direct to the Exhibition, at their own expense. Goods will be dealt with according to the ordinary regulations in force in bonded warehouses by a special customs service connected with the Exhibition. Goods for exhibition only will not be liable to duty, but on goods removed from bond the usual rates will have to be paid by the purchaser.

29. Copyright.—No work of art or object exhibited in the buildings or grounds may be drawn, copied or reproduced in any form whatsoever without the exhibitor's written permission countersigned by the French Executive.

The French Executive may, however, allow general views to be taken and reproduced.

30. Protection of Patents.—With regard to inventions, designs and trade marks, exhibitors will enjoy the rights and protection afforded by the French Law of May 23, 1868, within the periods and under the conditions specified in said Law.

31. Nature of Awards.—Awards to exhibitors will take the form of Diplomas signed by the Minister of Commerce, and by the Commissaire-General.

These diplomas will consist of—

- Grand Prize Diplomas.
- Gold Medal Diplomas.
- Silver Medal Diplomas.
- Bronze Medal Diplomas.
- Honorable Mention Diplomas.

32. Compliance with Instructions.—Exhibitors, their representatives and workmen, must comply with all instructions issued by the Commission.

33. Protection of Exhibits.—The French Executive will take all precautions for the protection of Exhibits, but neither that Executive nor the Commission are to be held responsible for loss or damage however caused. It is left to Exhibitors to ensure their goods should they desire to do so.

34. Liability of Exhibitors.—Every Exhibitor shows at his own risk as respects wear and tear, damage for exposure, breakage, accident in packing, transportation, or from any other cause, and it is a condition that he hold the Commission harmless, and indemnify it against any legal proceedings, whether in the French or the Canadian Courts, arising from any injury or accident caused or occasioned by his machinery or other article exhibited by him, or from any action which it may be necessary to take in enforcing compliance with the regulations. The above rule applies to companies and firms as well as to individual exhibitors.

35. Co-operation of Exhibitors regarding Regulations.—As the above regulations are laid down solely in the interests of the general body of exhibitors, and to ensure the satisfactory

working of the Canadian Section, the Commission trust that the exhibitors generally will co-operate in carrying them into effect.

36. Alteration of Regulations.—These Regulations are subject to alteration and amplification from time to time.

37. Infringement of Regulations.—The infringement of any of the above Regulations, or any of the Regulations of the French Executive, will subject the exhibitor to the forfeiture of his space, and to the removal of his goods from the building, without any liability attaching to the French Executive, or to the Commission or to their representative, in any way whatsoever, in consequence of such removal. The question whether any such regulations have been infringed, and whether the exhibitor's space has been forfeited, and whether his goods shall be removed, is to be determined according to the sole discretion of the Commission.

TRADE IN MUNICH.

Consul Pierie writes from Munich :

"There is a large business in the manufacturing centres of Germany in iron pipes, fittings of all kinds, valves and engineers' supplies in general. Munich is increasing in population very rapidly, having at the present time 430,000 inhabitants. It seems to be a first-class field for enterprising manufacturers. There is a good market in southern Germany for boots and shoes, labor-saving machinery of all kinds, and chairs, particularly rocking-chairs. I have not seen one of the latter in this city. Canned goods of all kinds appear to be in fair demand, and I think quite a large business could be done in this line with proper effort."

BRITISH TRADE ENQUIRIES.

Following are some of the more recent enquiries received at the office of the High Commissioner for Canada from concerns in the United Kingdom. The importance of many of these enquiries is self-evident.

Two enquiries from firms desiring to import Canadian carpet whisks, brooms and brushes have been received. Also for the names of Canadian washboard and tool manufacturers.

Enquiry has been received from a cold storage and ice company in the North of England for the names of large exporters of produce from Canada who might like to make arrangements with a cold storage to receive and distribute their goods.

A Liverpool firm wish to represent a reliable firm in Canada exporting doors, sashes, moulding, stairs, and other joinery used in the building trade.

A Sheffield firm of steel, file, saw and hammer manufacturers wish to get into touch with any Canadian firms importing mining and tool steel.

A Liverpool firm of merchants dealing in cement, stone, tiles, iron, timber, etc., desire to be placed in communication with Canadian importers of building materials, such as tiles, quarries, fire-bricks, granite, lime, etc.

A Leicester firm who manufacture elastic webs for boots would like to secure a reliable and trustworthy agent.

Paper makers in the Dominion who might be interested in a preparation for highly glazing and toughening paper, can be placed in communication with the firm manufacturing it.

The proprietor of a new patent rubber-oil enamel for refixing loose dental plates, wishes to get into correspondence with a reliable firm in Canada willing to represent him.

A house in Sheffield wish to find a few good cutlery firms in Canada to take up their goods.

These British cousins of ours are cute. They want to sell their goods in Canada, but they hope to avoid the expense incident thereto. They do not wish to send their commercial representatives here to drum up business, nor do they wish to advertise their business in Canadian trade papers. They know that Canada maintains a High Commissioner in London and they take it for granted that the duty of that eminent gentleman is to find purchasers in Canada for what they have to sell. And, funny as it may be, the High Commissioner seems to entertain the same idea, otherwise he would not,

every week, report these enquiries to his Home Office in Ottawa.

The opinion of THE CANADIAN MANUFACTURER is that the High Commissioner for Canada in London could be of substantial benefit to this country if he would find out and report the names of those in Great Britain and elsewhere who would like to purchase Canadian products. At this time we are more intent on selling than buying. Pray give us the names of possible purchasers.

THE GERMAN FRUIT MARKET.

Consul General Mason, at Frankfort, writes :—

"In view of all essential conditions, it would seem probable that the future development of the fruit trade between the United States and Germany will be more in the direction of dried and otherwise preserved, than of fresh, fruits. Just as the restriction of imports of live cattle and swine from neighboring countries has resulted in an increased demand in Germany for cured meats, in the production of which our country is pre-eminent, so the difficulties, natural and artificial which obstruct and complicate the importation of fresh fruits, have increased the popularity and use of American evaporated and otherwise preserved apples, apricots, pears, peaches and prunes, which have now acquired a hold upon popular appreciation here which nothing can dislodge. Of the 141,372 metric tons of fresh fruits which were imported to Germany in 1897, the United States supplied only 10,336 tons, a little more than seven per cent; while of the 49,122 tons of dried and preserved fruits imported during the same period, our country supplied 17,950 tons, or more than 36 per cent. of the whole. This does not take into account the imports of canned fruits, which, although burdened with an excessive import duty and therefore costly and comparatively little known, have a definite and growing importance.

"The German trade in American dried apples, apricots, peaches, pears, and prunes, is now firmly established, and it may be after all commercially wiser and more scientific to place less reliance on the export of cheap, perishable, and officially discredited freight, like fresh fruits, and devote more care and energy to the sale abroad of the more condensed and valuable products that may be derived from the same fruits when in a preserved and really merchantable condition.

"These facts should be of much interest to Canadian shippers of dried fruit."

TURF BRIQUETTES IN GERMANY.

About two years ago, experiments were commenced in Germany in manufacturing briquettes from peat or turf. It is now very evident that this new adventure will meet with success. The process of manufacturing is as follows :

After the turf has been cut from the moor, it is brought, in a wet condition, to a breaking machine, which reduces it to small pieces, whence it passes to a second machine, where it is cut and ground quite fine. The turf is then dried by passing through a large cylinder, filled with exhaust steam from the engine. The inside of the cylinder is filled with large tubes, after the style of a boiler, resting at an angle and continually revolving. This permits the mull to pass through perfectly dry. From here it is carried to the hopper which feeds the press. The press, which forms the briquettes, is operated by a seventy-five horse-power engine and finishes one briquette with each stroke.

The machinery in use at present can be improved in many respects, and can be made to press more than one briquette at a time. The capacity at present is about eighty briquettes a minute, or thirty-five tons a day, while the presses used in manufacturing briquettes from bituminous coal and anthracite (from slack and screenings) have a capacity greatly exceeding that of the turf press. Coal briquettes retail at ninety pfennigs (21 cents) per centner (112 pounds) and average ninety-eight briquettes to a centner—about 4½ briquettes for one cent—while the turf or peat briquettes retail

at the rate of 130 briquettes for fifteen cents, or more than eight briquettes for one cent, making a very cheap fuel.

In addition to cheapness, it has other merits. It is clean in handling, packs very nicely in bins, gives a good heat, and in a closed stove with only a slight draft will remain in a glowing state for ten hours. In an open fireplace or grate it naturally burns much quicker. Only a few men are required to operate the machinery. Women or small boys are employed in stacking the briquettes. The cost of material and working one ton of briquettes at Langenberg, where one plant is located, is estimated at about \$1.55. With improved machinery and better facilities, the cost could be reduced. The figures of cost of production, etc., are based on the German scale of wages—seventy-five cents a day for a man and twenty-five cents per day for a woman. The machinery is patented in Germany and England.

AGRICULTURAL MACHINERY IN MEXICO.

Consul Kindrick, at Ciudad Juarez, writes:—

"American agricultural implements are imported into Mexico, at least along the border, without competition from abroad. The manufacturers have a clear field and a market to themselves. In addition to this advantage, the demand for United States agricultural machinery is steadily increasing. In the first place these implements are thought to be better than those made in any other country. American manufacturers have the advantage of quick transportation and moderate freight rates, and all agricultural implements shipped into Mexico are entered free of duty at the custom-houses.

"President Diaz has long considered the development of agriculture the most important of the national industries. He leaves nothing undone to encourage the cultivation of the soil, which is so productive and fertile and well favored from a climatic standpoint. Already capital is interested in various states of Mexico in the cultivation of large tracts of land, and syndicates are being organized to scientifically cultivate cocoa, coffee, rubber, spices, sugar, tobacco, cotton, and other products indigenous to the country. This means the employment of modern methods and modern agricultural machinery.

"The American plow and cultivator came with the railroads, and the use of these implements is being gradually extended among the small farmers and away from the lines of communication. They are taking the place of the Egyptian wooden plow and other primitive instruments with which the Mexicans have drawn from a rich soil the source of livelihood. As these implements are substituted for the antiquated instruments heretofore employed, their use and value is appreciated.

"Agricultural development means much to Mexico. It is more important to the people than the exploitation of mines and the erection of smelters. This fact is realized in Mexico and the result is a liberal treatment of agricultural machinery—indeed, its free admission to the Republic.

"The manufacturers should not conclude that because the implements are purchased abroad it is unnecessary to canvass Mexico with the hope of increasing the demand. Sales might be extensively increased by dispatching to the agricultural districts intelligent representatives who understand the habits and customs of their prospective patrons and the Spanish language. He must adapt his methods to those of the Mexicans if he hopes to gain their favor and fill his order book.

"In the northern section of Mexico agriculture is limited to the valleys where irrigation is possible. But here the returns are excellent, experience proving that irrigation brings better results than are realized in the zones where the supply of moisture is left to the vagaries of the season.

"The Morrones, who are colonizing the northern and western sections of the State of Chihuahua, follow agriculture almost exclusively. They are intelligent and scientific cultivators of the soil. They realize satisfactory returns on their crops, and the earth is made to yield abundantly as a

result of modern methods and modern devices which they apply. They now use American plows, binders and reapers and other necessary implements.

"The principal articles imported are rakes, mowers, harrows, cultivators, plows, shovels and hoes. Hay tedders are seldom used, as the dry atmosphere and perpetual sunshine, at least in this section, cure hay very quickly after it is cut. There is scarcely a demand for lawn mowers, except in the seacoast cities and Mexico City. Agricultural implements imported for use in Mexico are the same as those used in the United States."

HARDWARE IN BRITISH GUIANA.

Consul Moulton sends from Demerara the following information in regard to the import of certain articles into British Guiana:

"Vises for engineers and blacksmiths, tongs, anvils, chisels, and hammers are the tools chiefly imported. England sends most of them. They are packed in casks and the transportation charges are 30s (\$7.29) per ton weight, or forty cubic feet. The duty is ten per cent. The manufacturers' prices are: Parallel vises, wrought iron, to screw on top of bench, weighing 2½ and four pounds, \$3.36 to \$3.84 each; best quality, with adjustable head to fix at any angle, weighing four pounds, \$7.68 each; combined parallel vise and anvil weighing 3½ pounds and seven pounds, \$6.96 and \$10.56 each (fifty per cent. discount is allowed); parallel vises with strong cast iron bodies and steel jaw plates, jaws from 2½ to 5½ inches, opening from 3½ to six inches, weighing 10½ to seventy pounds, prices \$3.36 to \$13, less 47½ per cent. discount; tongs, close and hollow mouthed, twenty cents per pound; side and flat, round and square, twenty-six cents per pound; paper rake and shovel, six ty-four cents each, or \$1.92 per set; anvils, single, from \$4.68 to \$5.76 per cwt., net, according to quality; double, from \$4.92 to \$6; chisels, cast steel, flat cross, cut half round, or diamond point, twenty-four cents per pound; boiler makers' hammers, thirty cents per pound. Forty per cent. discount granted on chisels and hammers. Retail prices, about 100 per cent. on landed cost."

TRADE IN GERMANY.

Consul Monaghan, at Chemnitz, Germany, writes:—

"Excellent opportunities are being offered here for the importation of American tools, electric appliances, and all kinds of articles used in the construction and equipment of railroads, etc. Everywhere, from one end of the Empire to the other, lines are being opened, extended, or improved, and it seems to me we might sell millions of marks' worth of the wooden parts of cars, as well as rails, wires, apparatus, etc.

"If the manufacturer or inventor in America neglected patent rights here, he has no good cause to complain; but I think his sales in this Empire will be at an end as soon as the manufacturer here can fill orders. I can not too strongly counsel care in patenting inventions. Nor can I help calling attention to the fact that there are 52,000,000 pretty well paid people in the cities and on the farms of this Empire, who live very much as we live. Their dress, food, homes, factories, farm life, etc., are not very unlike that of the seventy-odd millions in the United States. Energetic and enterprising efforts must make markets in Europe for many of our manufacturers and products. 'Knockdown' furniture for offices and homes must sell, if the right effort is made. I saw a simple oak rocking-chair advertised for twenty-seven marks (\$6.42) that would cost with us possibly \$2 retail. Wood-working machinery, especially for small shops, gas engines, the thousand and one tools and contrivances to sell which agents travel all over the United States, would certainly sell here, once live agents, speaking German or the language of the country in which they travel come to push them.

"The German has no hesitation in taking American machines apart for the purpose of imitation. Besides, his patent laws put it out of the power of outsiders to import into

the Empire for a very long time. If the thing is patented here it must be made or manufactured here; if it is not patented, it will be imitated. In either case, unless provided with enormous capital, the American is compelled to give up a large part of his profits.

"American shoes have put in an appearance in the shoe-shop windows of every city. I am sure that shoes retailing in the United States for \$3 to \$5 would sell here at the same, or even better prices. Among the masses (so called) one can hardly count on long-continued sales in these lines, for imitations and cheap goods will wipe out competition.

"Among the many articles that will certainly sell are office fixtures and furniture. I saw an imitation Shannon register sold for 420 marks (\$100). It stood about five or six feet high, was a little more than a yard wide, and had about eighteen to twenty-five drawers or compartments. The price seemed absurd; but the prices of furniture here are high. Plaques for oak, pitch pine, or other hard-wood flooring should pay; for hardly a house goes up now—certainly none of any size or pretensions—that does not put in hard-wood floors in the form of square or oblong tiles.

Silver and plated ware would sell if properly pushed; and many other articles of hardware that lighten labor to carpenters, smiths, and mechanics. Hammers, handsaws, and vises would sell if properly advertised and pushed.

"I can only repeat that a large market, not only in this Empire, but all over Europe, awaits intelligent and energetic measures to introduce American shoes. Our \$2.50, \$3, \$4, and \$5 shoes are better by far than anything made here at the same price. The only country in which competition will be hard is Austria."

ELECTRIC LIGHTING AT SPEZIA, ITALY.

The municipality of Spezia has under consideration a project for lighting the principal streets of the town by electricity, and for laying down the requisite plant. The naval dockyard, its buildings and establishments, are lighted by electricity, and so are a few private houses in the immediate vicinity of two private stations, fitted with "Otto" gas engines; but the town itself is lighted by gas.

STATUS OF UNITED STATES COMMERCIAL AGENTS.

The United States Bureau of Foreign Commerce has received several inquiries from foreign sources as to the status and duties of commercial agents in the consular service of the United States. It is thought that these inquiries have been prompted by the activity of the consular officers in obtaining commercial information, and also by the marked development in the exports of manufactured goods from the United States.

In view of the fact that these inquiries indicate the impression that the commercial agents have special functions in the collection of information for American manufacturers and exporters, it is thought to be desirable to explain that they have no other status than that of ordinary consular officers, and are not more particularly engaged in the work of securing commercial information than are the other members of the consular corps.

The following synopsis of the Consular regulations on the subject will show the slight differences, mainly of a technical character, between the commercial agents and the consuls:—

"Consuls general and consuls are appointed by the President, by and with the advice and consent of the Senate. Commercial agents are appointed directly by the Secretary of State acting for the President.

"Commercial agents are by the laws of the United States full, principal, and permanent consular officers. No distinction is made by statute between them and a consul. They differ from consuls only in rank or grade. The order of official precedence is (1) consuls-general, (2) consuls, (3) commercial agents, (4) vice-consular officers, (5) deputy consular officers, etc. Consuls and commercial agents rank with captains in the navy or brigadier-generals in the army.

"Commercial agents derive their functions from the same statutes as consuls-general and consuls, and are entitled to enjoy all the powers, immunities, and privileges that under public law or otherwise are accorded to the consular office. The title of the office as representing a distinct grade in the consular service is peculiar to the service of the United States. It is usual to ask formal recognition and an exequatur for a commercial agent from the Government to which he is accredited, as in the case of other principal officers.

"Commercial agents in the consular service of the United States are to be distinguished from certain officers described in international law by the same title, who are not usually regarded by other powers as entitled to the full rank and privileges of a consular officer. The exigencies of the public service of the Government have from time to time made necessary the appointment of commercial agents of the character and with the restricted functions and privileges of such officers as known to international law, and this right is at all times reserved. In those instances, however, in which officers of this title and character have been appointed, the appointments have usually been made to countries the Government of which had not been recognized by the United States or into which it was desired to send a confidential agent whose recognition need not be asked from the Local Government. Commercial agents appointed previous to August 1, 1856, were of this limited character. An act of Congress of that date established their rank as consular officers and superadded to their former powers the functions that appertain to the office of consul."

Transfer Ornaments, AMERICAN MADE.

TRADE MARKS, DECORATIONS, NAME PLATES, ETC. Guaranteed Quality.

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When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

CAPTAINS OF INDUSTRY.

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

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

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

The Port Perry Electric Light & Power Co., Port Perry, Ont., have given the Royal Electric Company an order for one of their 2½ k.w., four pole exciters, to replace the exciter at present installed there.

The works of the Toronto Rubber Co., at Port Dalhousie, Ont., recently destroyed by fire, are to be rebuilt immediately.

It is stated that the Canadian Pacific Railway Co., having made satisfactory tests, will light some of their express and baggage cars with acetylene gas, some of such cars in the Toronto-Owen Sound route being now thus lighted.

The Eclipse Whitewear Co., of Toronto, have been changing their motive power and increasing the capacity of their factory. They have placed their order with the Royal Electric Company for one of their ten k.w., four pole, 250 volt motors.

The Eagle Knitting Mills, of Hamilton, Ont., are now operating their factories throughout by electricity. They have installed one of the Royal Electric Company's forty h.p. S.K.C. two-phase motors, and have found the result very satisfactory, the power being very steady and the minimum attention required.

A bill has been introduced in the Nova Scotia House of Assembly to give effect to a big enterprise. It is a measure to incorporate the Dominion Steel and Iron Co. Its capital is fixed at \$10,000,000, with power to increase to \$20,000,000. Before the company can commence operations it must have \$1,000,000 of its capital subscribed, and twenty-five per cent. of this paid up. The men who are in this new company are practically the same as those who compose the Dominion Coal Company. The charter gives the company almost

unlimited power in carrying on iron manufacturing operations. They have already bonded extensive iron areas in Belle Isle, Newfoundland, for \$1,000,000 and it is their intention to erect blast furnaces and smelting works in Cape Breton. If the company do all they propose, it will revolutionize business in Cape Breton. The blast furnaces and iron manufacturing will be conducted on a grand scale. The Dominion Coal Company and the new concern, having interests almost identical, will work together, and the result will probably be a largely increased output of coal for the use of the iron people. The iron areas at Belle Isle, for which \$1,000,000 will be paid to the Nova Scotia Steel and Iron Company, who now own them, are estimated to contain 20,000,000 tons of ore.

The Nova Scotia Steel Co. has a capital of \$5,000,000, of which \$2,000,000 is issued. It employs 685 men. The iron mine at Belle Isle, Newfoundland, was secured in 1894. The company own thirteen miles of railway connecting its local mines, a blast furnace and limestone quarries with the I.C.R. It has a coal washing plant and fifty-four retort coke ovens. The steel works at New Glasgow produce 150 tons of steel ingots per day. This company, doing business largely with the west, was the first of our industries to feel the throb of reviving trade. Just now it is doing a business unparalleled in its history, and its directors' hearts are being made glad by tempting offers for part of its immense property.—C. B. Record.

A few days ago there was an enthusiastic meeting in Mattawa, Ont., on the Ottawa river, to hear the Georgian Bay and Ottawa Valley Canal scheme discussed. All the people along the line of the proposed highway are warm supporters of the scheme. In his

speech upon it Mr Pourpore, M.P., strongly advocated the waterway for many reasons, one being for its sure effect to develop the resources of raw materials lying in abundance along the route. To the pulp industry, especially, the canal would be of enormous benefit in making accessible vast supplies of spruce and furnishing power at numerous points to drive pulp mills of the largest class. Ex-Mayor McLeod Stewart, of Ottawa, had much to say of the same tenor. The meeting unanimously pronounced in favor of the canal.

Messrs. Lawry, Sons & Co., pork packers, of Hamilton, Ont., are changing from steam to electricity for power, and have placed an order with the Royal Electric Company for a thirty h.p., two-phase S.K.C. induction motor. They are also lighting their factory throughout by electricity.

A statement of the lumber cut of the firms in the Ottawa district last season shows that the output reached a total of over 500,000,000 feet. On the Parry Sound railway the Gilmours, at Canoe Lake, cut 40,000,000 feet, while the St. Anthony Lumber Company, at Whitney, cut 45,000,000 feet. The following is a statement of the cut of the Ottawa valley firms:—

	Feet.
Pembroke Lumber Co.	17,000,000
A. and P. White, Pembroke	15,000,000
Gillies Brothers	25,000,000
McLaughlin Brothers	65,000,000
J. R. Booth	118,000,000
Bronsens and Weston	12,000,000
Hull Lumber Co	55,000,000
Gilmour and Hughson	35,000,000
W. C. Edwards & Co., Rockland	60,000,000
W. C. Edwards & Co., New Edin-	
burgh	15,000,000
Hawkesbury Lumber Co.	52,000,000
A. Fraser, Deschene	7,000,000
Ross Bros., Buckingham	10,000,000
McLaren and McLaurin	7,000,000
McLaren Bros	15,000,000
or a total for the Ottawa valley of	508,000,000 feet.

When the Hamilton, Ont., blast furnace was established it was contemplated that a steel plant would be added. The time has arrived when the directors can see their way clear to add the new plant, which will give employment to an increased number of men. Speaking about the matter, Mr. John H. Tilden, president of the company, said, "Yes, it has been decided to install a steel plant in connection with the blast furnace. There is a demand for steel product, and we think we can get this business in addition to the big iron business. You can say that the matter is under consideration by a committee and that the plant will be added. This will mean that an increased number of men will be employed."

INGERSOLL-SERGEANT Rock Drills

FOR MINES, TUNNELS AND QUARRIES

PISTON INLET Air Compressors

STRAIGHT LINE
 DUPLEX and
 COMPOUND.

FOR ALL DUTIES.

... COMPLETE MINE EQUIPMENT ...

JAMES COOPER MANUF'G CO., Limited, - 299 St. James St., Montreal.

Other Offices - - - ROSSLAND, B.O. RAT PORTAGE, ONT. HALIFAX, N.S.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

A. W. Hepburn, of Picton, Ont., is fitting out his steamer with electricity. The order for a 12½ k.w. generator has been placed with the Royal Electric Company, and is to be installed at once.

Mr. W. Y. Soper, of Ottawa, is president of the Dunlop Tire Company of Canada, recently incorporated. In addition to acquiring the business formerly owned by the American Dunlop Tire Company in the Dominion, the new company will acquire patents which include all inventions covered by letters patent relating to the Dunlop detachable tires, for use on bicycles and other vehicles. The validity of these patents has been upheld in the Canadian courts, and a valid and subsisting title to them has been guaranteed to the company by the Dunlop Pneumatic Tire Company, Limited, of England. The business done by the American Dunlop Tire Company of Canada has grown rapidly. In 1897 the net profits were \$35,514, and for the year ending August 31, 1898, the net profits amounted to \$50,929. The shipments for the current year, so far, are almost 100 per cent. greater than for the corresponding period of last year, and the further deliveries contracted for are more than double those secured during the whole of the last fiscal year of the company. A conservative estimate places the net profits for 1899 at \$75,000.

The People's Heat & Light Company, of Halifax, N.S., is a new concern, having a capital of \$700,000. The company has ten semet-solvay bi-product coke ovens, and is co'ing fifty-eight tons of Cape Breton coal every twenty-four hours. This produces about forty tons of hard, grey metallurgical coke each day of twenty-four hours, and about 525,000 feet of coal gas, fifty-five per cent. of which is used in heating the coke ovens, and the balance is distributed for illuminating and heating purposes throughout the city. The

company produces about ten imperial gallons of coal tar per ton of coal and about six pounds of ammonia per ton of coal. A factory has been started on the work by another company, whereby the coal tar is pumped immediately from the company's tanks into the vats of the manufacturing company and utilized by a particular process in manufacturing tarred paper. This tar paper industry is a new one in the Maritime Provinces and practically controls the supply from the cheapness of the tar product. The ammonia is concentrated to about twenty per cent. and shipped to Philadelphia in tank cars. The company has machinery and capacity for manufacturing cyanide of potassium, sulphate of ammonia and benzol, but this part of the works has not yet been put into operation. The pay roll of the company is about \$2,500 a month, exclusive of the tar paper works. The works of the People's Heat and Light Company are the pioneer works of this kind in Canada. The only works of the same character in the United States are at Syracuse, Buffalo, and the large works, consisting of 400 coke ovens, now being started at Everett, Mass., by the capitalists interested in the Dominion Coal Company. The same capitalists who constructed the works at Halifax are interested in the Boston works. The Boston works have a consumption of about one million tons per year of the coal of the Dominion Coal Company exported to Boston from Cape Breton. The contract is now in operation, and shipments will commence early in the spring. About \$800,000 have been expended on the Halifax works. —The Globe.

On account of the prevailing activity among cotton, woolen and leather manufacturers, Messrs. F. E. Atteaux & Co., dyestuff, chemicals, etc., have again been obliged to considerably increase the staff of their Toronto office to enable them to cope with orders now coming in.

In this age of electrically driven machinery, the electric fan is taking its place as an important factor in ventilation and heating, mechanical draft and many other applications. The possibilities in the way of design and construction to suit special conditions are very clearly shown in Bulletin II. recently issued by the B. F. Sturtevant Co., of Boston, Mass.

Messrs. Brown & Boggs, Hamilton, Ont., have decided to operate their factory by electricity, and are installing a thirty h.p. two-phase S.K.C. motor, power for the same being furnished by the Cataract Power Co., of Hamilton.

A sawmill is being built at Springhill, York Co., N.B., by John Campbell, Jr. He has ordered a 100 h.p. engine and boiler and other machinery from the Robb Engineering Co., of Amherst, N.S.

The recent enlargement of the works of the B. F. Sturtevant Co., at Jamaica Plain, Mass., necessitated the removal of the boiler plant to a new location, and the abandonment of the existing chimney. Instead of building another chimney a mechanical draft fan with attached engine was installed on top of the boilers, and a short stack carried just through the roof. The entire cost of the mechanical draft plant was less than half of that of the proposed chimney, and the fuel expense has been materially reduced. Bulletin E., published by the above-named company, tells all about it, and will be sent upon application.

The Royal Electric Co., of Montreal, have just completed the installation of a 100 h.p., S.K.C. Synchronous motor in the Iron Mask mine at Rossland, B.C., to operate the hoisting machinery and air compressors.

The Robb Engineering Co., Amherst, N.S. has received an order from J. E. and G. Lake Fortune Bay, Nfld., for a forty h.p. engine and boiler.

SADLER & HAWORTH

Manufacturers of

OAK-TANNED LEATHER BELTING

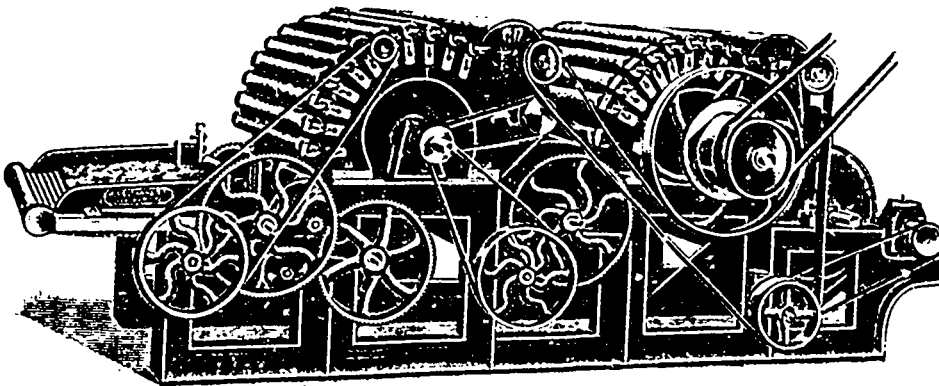
MONTREAL AND TORONTO.

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

P. & C. GARNETT, Limited

CLECKHEATON, YORKS, ENG.

TELEGRAMS, - GARNETT, CLECKHEATON.



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

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

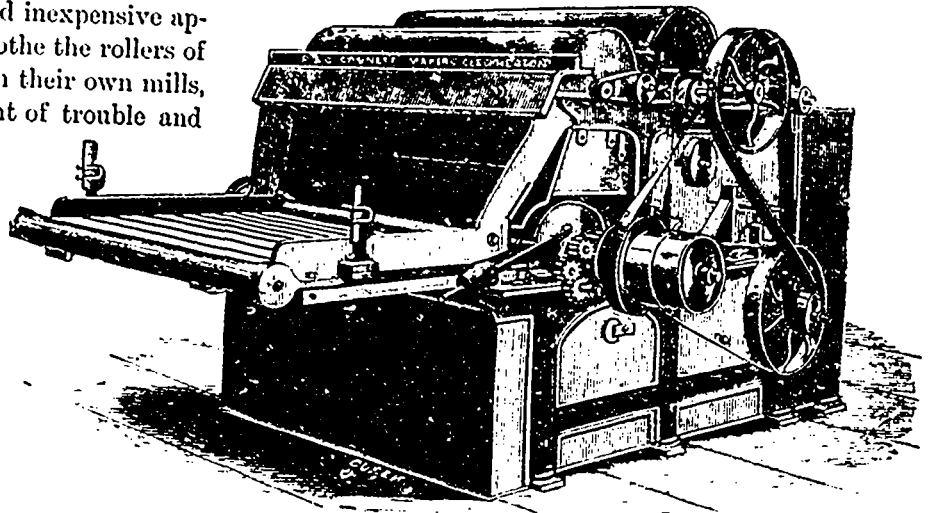


Garnett Wire.

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

Patent Garnett Clothing Apparatus

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

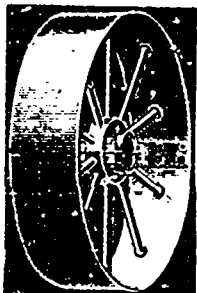


Improved Wool Cleaning or Burring Machine.

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

WROUGHT IRON PULLEYS

Light, True and Unbreakable.



Cast Iron Pulleys.

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

The Canadian Development Company, of Victoria, B.C., have been building a steamer on Lake Bennett, Yukon Territory, and expect to have it ready for its trial trip by April 1st. The boat is lighted throughout by electricity, the plant being furnished by the Royal Electric Company, of Montreal, consisting of one of their C.W. multipolar dynamos, direct connected to a horizontal Ideal engine, making a very compact and complete plant.

Rhodes, Curry & Co., Amherst, N.S., have established a branch of their works at Halifax. This consists of planing mills, lath mills, saw-mills, shingle mills, brick works, car works, machine works and foundry. During the past year they made large additions to their car works, both in the way of buildings and machinery. They have orders on hand for about \$250,000 worth of rolling stock, including box and flat cars, postal and express and baggage cars, and snow ploughs. They employ on an average 250 men at Amherst, thirty-five on their sawmill property at Little Forks, and 100 on building contracts in Nova Scotia and New Brunswick.

The corporation of the town of Barrie, Ont., have been advertising for tenders for alternating current apparatus. The contract for 120 k.w., S.K.C., two-phase alternating current generator for power and lighting apparatus, was awarded to the Royal Electric Company, of Montreal. The entire lighting and steam plant, which has been

taken over by the corporation from the Barrie Gas & Electric Company, is being rebuilt and the capacity enlarged.

Gaspard Rochette's tannery at city of Quebec, was destroyed by fire Feb. 9th. Loss about \$60,000.

The Grand Trunk Railway Company announces that an extensive order has been placed with their mechanical department for the construction of locomotives. Twelve new locomotives are to be built in the Grand Trunk shops, six of them being 10-wheel passenger engines and six Moguls for freight service. The driving wheels of the passenger engines are seventy-two inches, and the total weight of each is 166,000 pounds, making the total weight of engine and tender 268,000 pounds. Forty-three inch wheels are used under the tender, and the tank capacity of these engines is 4,500 gallons. The weight of the tender alone is 55,000 pounds. The Mogul locomotives are being constructed with all the modern improvements and the latest devices known to mechanical skill, and these will be some of the most desirable engines that have been placed on any modern railway. They will be used exclusively for freight service, and will be distributed over the different divisions of the system. The driving wheels of these Mogul locomotives are sixty-two inches in diameter, the total weight of engine and tender being 253,000 pounds. Some idea of the hauling capacity of these locomotives

may be gathered from the fact that the weight of these locomotives that rests on the driver alone is in the neighborhood of 130,000 pounds.

The Hawthorn Woolen Mills, of Carleton Place, Ont., are increasing their incandescent lighting plant and have placed an order for a 200-light machine with the Royal Electric Company, of Montreal.

The works of the Montreal Cotton Co., at Valleyfield, Que., consist of a group of mills all connected by gangways, etc., containing the 150,000 spindles and 3,300 looms, aforesaid, a bleachery, dyeing and finishing works, capable of handling 120 tons of cloth per week, warehousing sufficiently large to store 15,000 bales of cotton, necessary finished goods warehouses, a sawmill, box, window and sash factory. The company does all its own construction work. The mills are driven by water power, the water being obtained from the river St. Lawrence with a fall of thirteen feet through twenty-one vertical turbines. Part of this power, 2,200 h.p., is converted into electricity for electrical driving. This power house was erected under the personal supervision of Mr. Louis Simpson, the manager of the company.

Mr. H. D. Symmes, of St. Catharines, Ont., has recently installed one of the Royal Electric Company's thirty-five light, four pole, direct current dynamos.

The KAY Electrical Manufacturing Co.

HAMILTON, ONT.

Begs to announce that in future it will conduct its business under the name of

The T. & H. Electric Co.

HAMILTON, ONT.,
255-257 James St.

Phono 938.

TORONTO, ONT.,
58 Adelaide St. W.

Phono 1211.

To Lease.

Two Large Four-Story Factories. One

140 x 40 ft.

The other 90 x 60 ft.

RENT, \$1,500 EACH PER ANNUM.

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

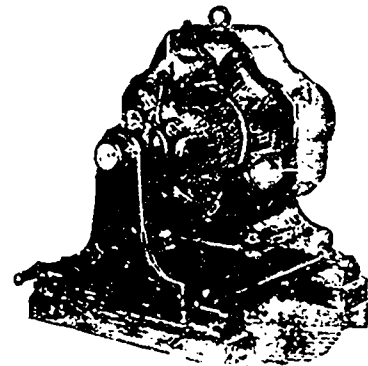
Esplanade and Jarvis Streets, TORONTO.

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TORONTO CARPET MFG. CO.
TORONTO.

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MULTIPOLAR MOTORS & DYNAMOS

And Direct Connected Plants for Isolated Lighting.

Repair Work a Specialty.

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REDDAWAY'S ORIGINAL

CAMEL BRAND HAIR BELTING

STRONGEST BELT MADE. NO STRETCHING.

NOT AFFECTED BY DAMPNESS, HEAT OR STEAM.

WRITE FOR PARTICULARS. LARGE STOCK ON HAND.

Fire Hose, Steam Hose, General Mill Supplies.



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

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

An Owen Sound, Ont., correspondent speaking of the commercial growth of that place, says:—"For fifteen years the C.P.R. found an elevator of 250,000 bushels capacity sufficient for their trade at this port. In 1897 it became necessary for them to put up an additional elevator of 850,000 bushels capacity, with a new marine leg of 10,000 bushels capacity per hour. Also, the largest flour sheds on the Canadian side of the great lakes were erected. During the first year of the operation of the new elevator 2,264,247 bushels of grain were handled, and in the season of navigation lately closed this amount was increased to 3,184,102 bushels. In addition to this, during the past season the company handled through its sheds 103,161 tons of western flour, etc., and had return freights westward amounting to 67,004 tons. A largely increased amount of local freights was also handled by the C.P.R. during the past year. In the spring of 1897 the company opened up a new trade at Owen Sound by establishing a line of steamers with Gladstone, Mich., and Chicago. The steamer Alice Stafford has run regularly upon this route and has from

time to time been assisted by other steamers. During the past season of navigation the Stafford alone brought to this port the phenomenal quantity of 31,648 tons of merchandise, principally American flour, sugar and gluten meal, for export."

Messrs. E. G. Reid & Sons, Montreal, have organized a company under the name of the Newfoundland Bleached Pulp Co., with a capital of \$2,000,000. The scheme also includes the formation of a Newfoundland Pyrites Co., with a capital of \$1,500,000. Mills are to be erected at Grand Lake, Newfoundland. Another important venture under the immediate direction of this firm is the Western Newfoundland Oil Co., which has recently purchased two extensive oil plants, which will be shipped to Newfoundland in a few days. This company is made up of several wealthy Montrealers. The capital is also fixed at \$2,000,000.

Messrs. F. A. Mitchell and John Mitchell, of Norwich, Conn.; Wm. Abbott, of Montreal; Samuel Lazier, of Belleville, Ont., and associates, have been incorporated as the

Abbott-Mitchell Iron and Steel Co., to erect works at Belleville, Ont., and to manufacture iron and steel rails, and all kinds and classes of muck, bar and refined rolled bar iron, pig iron, and puddled bars, bessemer and other kinds and descriptions of steel.

The Crow's Nest Coal Company have made preparations for the building of 150, and, if possible, 200 more coke ovens during the present year. The development of the coking works has progressed rapidly recently and the whole of the fifty ovens erected are now shipping coke to the smelters in West Kootenay and at Great Falls, N.D. The first consignments of coke have been tested at the smelters and the actual quality ascertained. The reports received are to the effect that the quality is equal to what was represented in the first instance from laboratory tests. The ash does not exceed 6 per cent., sulphur .70, moisture .30, and fixed carbon 93 per cent.

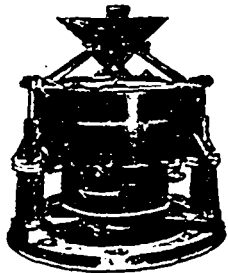
Messrs. I. Matheson & Co., New Glasgow, N.S., have sent us an illustrated description of the Matheson Vertical Engine and Boiler, built by them, regarding which they say that

THE TORONTO PATENT AGENCY, (LIMITED),
TORONTO, CAN.
Head Office, 79, 80, 81 Confederation Life Building.
CAPITAL, \$25,000.00.

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

Pipe and Boiler Coverings, Engine Packings,
LUBRICATING OILS, GREASES, AND BOILER COMPOUND, COTTON WASTE, ETC.

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



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CRUSHERS

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MILLS
AND
MILLSTONES.

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

STURTEVANT MILL CO.
BOSTON, MASS.

The Crocker Patent Turbine

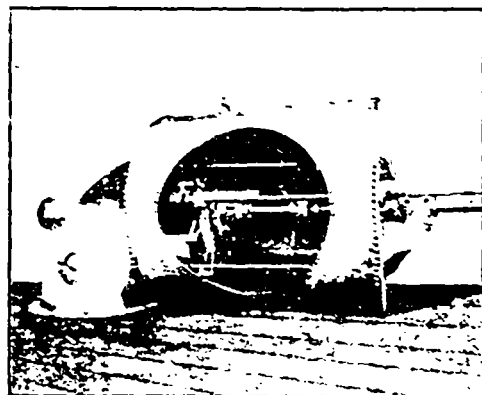
WE MAKE A SPECIALTY OF SUPPLYING

**COMPLETE
WATER POWER
PLANTS**

Designed to meet the working conditions in each instance, and to yield the highest efficiency obtainable thereunder. Every detail constructed in a thorough and substantial manner, and the whole equipment installed on the site by our own workmen, especially skilled in this class of work.

If you are interested in water power in any way, we should take pleasure in supplying you with information regarding our work in the above line.

Catalogue Free on Request. Correspondence Invited.



33-inch Crocker Wheel in Horizontal Setting, for Shipton Electric Light and Power Co., Danville, Que.

The JENCKES MACHINE CO.
42 Lansdowne St., Sherbrooke Que.

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they find there exists a demand for small steam power plants ranging in capacity of from four to fifteen horse power. This demand comes chiefly from the owners of printing offices, creamery and cheese factories, canneries, carriage, wood-working and repair shops, small electric light plants, and other users of small powers. To meet this demand they have designed a vertical engine and boiler mounted on a single cast iron base, the whole being furnished completely piped and ready for immediate service. Being vertical there is no other form of engine and boiler which occupies so little room, and which can be as quickly and cheaply erected. The weight of engine, boiler and contents on the combined base gives sufficient stability to make other foundations unnecessary. The design of each and every part, as well as the material used, has been carefully considered, the workmanship honestly and conscientiously performed, and the general appearance of the whole outfit is as neat and symmetrical as any made. The brochure contains a full description in detail of this most convenient arrangement.

Mr. Charles Fergie, vice-president and general manager of the Intercolonial Coal Company, while in Montreal a few days ago, in speaking of the mines of the company, which are located at Westville, Pictou County, N.S., said that the outlook in the coal trade was a good deal better than it had been for some years. Manufacturing industries were continually springing up, and all

these contributed to the increased demand for coal, which had been of late so very marked, at the different mines of Nova Scotia, and this, in addition to the demand created this winter by a good number of steamers coming to Halifax, had brought about a very considerable gain of prosperity to the several districts in which these mining camps were located. The sales of the Intercolonial Company last year amounted to 210,000 tons, an increase of 20,000 tons over 1897, while those of the Acadia Company, which was doing a better business than for years past, reached 170,000 tons. He added that the Pictou mines exported 434,000 tons in 1880, but this was before the Cape Breton mines had reached so great a degree of development as to-day. At that time, Cape Breton only sold 380,000 tons, against 1,100,000 tons for 1898.

A serious problem is confronting the Lachine Hydraulic Company, of Montreal, whose power works are situated at the Lachine Rapids, and some interesting experiments for solving it are being tested. A potent obstacle suggested by winter conditions of Canadian water power is the frazil, or anchor ice. This, it has been declared, would interfere with the Lachine water power, would collect in the dam above the water wheels and would choke them, and thus destroy the ingress of the water to the wheels more securely than if it were solid material. Frazil does not form in still water, but in swiftly running currents and rapids, and then is forced into the eddies and still water, and becomes the dread ob-

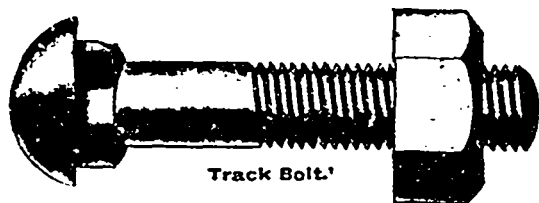
struction that has defied engineering effort. To meet this difficulty the engineers boomed the river from the outer end of the dam to the river bank, with the idea that the floating solid and anchor ice would strike the boom in a slanting manner and be carried gradually off to the outer edge of the boom into the channel of the rapids.

QUEBEC'S SPRUCE LANDS IN HUDSON BAY REGION.

Hon. S. N. Parent, Commissioner of Lands, Forests and Fisheries for the Province of Quebec, in his report to the Quebec Legislature, speaking of the spruce lands belonging to that Province in the Hudson Bay region, refers with hope to the future, and expects great results to flow from the immense addition to the Province of Quebec of the James Bay and Labrador districts, regarding which he says :-

"New horizons have been opened up, and the demands created by the manufacture of pulp and one of its derivatives, paper, give value to-day to woods that were formerly regarded as of very secondary worth. Consequently this question of the development of the pulp industry interests us in the highest degree, as it transforms our spruce forests, whose unworked extent is immense, into a real treasure. It is, therefore, our

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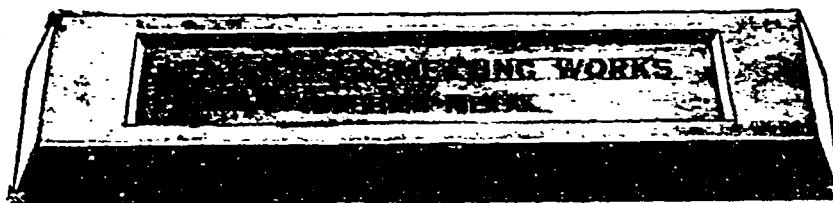
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duty to aid its development as much as possible and to scrupulously watch over the protection of these forests, which will constitute for us a constant source of revenue, while their working in this now form will contribute materially to the growth and prosperity of our population."

BRITISH CAPITAL IN CANADIAN MINES.

During the year 1898, 509 mining companies were floated in London, Eng., with a total capitalization of £55,000,000. Of these, 381 were formed to mine in British colonies and dependencies, with a capitalization of £36,000,000. Of these, 122 were organized to operate in Canada, with a total capitalization of over £11,000,000, from which it will be seen that Canada occupied a lot of attention in the British mining world, — in fact, more than any other country.

British Columbia properties were the feature of the year in London, but other parts of Canada were not neglected. It is interesting to note that in the following official British classification, British Columbia is not included in the term "Canada." The new registrations for the year 1898 were:

	Cov.	Nom. Capital
British Columbia	64	£7,449,540
Klondike, Yukon	28	2,459,100
Canada	24	1,417,100
Newfoundland and N. S. ..	6	515,000

Of British Columbia new companies, the largest was the Lo Roi Company—capital, £1,000,000, in £5 shares. Four others had

capitals of half a million—the East Lo Roi, the West Lo Roi, the Columbia-Kootenay, and the Associated Gold Mines of British Columbia. Four of £200,000 each, viz., the British Columbian Mineral Properties, the Northern Exploration of British Columbia, the Pacific and Northwestern Mining Corporation, and the Ymir Gold Mines. Most of the above appealed to the public for their shares, as did also the Whitewater Mines, £125,000; the Chemainus Mining and Smelting and the British Corporation of British Columbia, each £100,000.

In Canada proper a large new company is the East Canadian Company, £400,000. The Canada Lead (Quebec), £275,000; the Saskatchewan River Exploration, £250,000, and the Canadian Gold Fields (a reconstruction), £150,000 are also notable companies.

It was expected that the new mining companies for the Klondike district would far outdo those of the preceding year, but 1898 fell short of 1897. The larger companies of last year were. The Klondike Government Concessions, £500,000 capital; the Klondike Hydraulic, £310,000; the British Canadian Gold Fields of Klondike, £275,000; the "De Windt" Exploration, £250,000; the Klondike-Cassiar Mines and Traders and the Klondike Parent Pioneers Corporation, each £125,000; the Golden Klondike River and the Klondike Twenty Miles Concession, each £100,000.

Newfoundland established two important companies the Newfoundland Copper Company with £250,000 capital, and the Newfoundland Iron Ore Company with £150,000.

THE PULP INDUSTRY IN PROVINCE OF QUEBEC.

The Quebec Chronicle reviewing the pulp industry in that section of the province says: "This is the district traversed and opened up by the Great Northern and the Quebec and Lake St. John Railways. The country along the line of these roads has been transformed from a savage wilderness to a scene of hustling industry, and within a few years."

Among these industries pulp making figures most prominent. Following The Chronicle, we first meet with the works of the Jacques Cartier Power Co., on the Jacques Cartier river. Sixty men are constructing a dam there. Next is the sawmill at Lake St. Joseph. St. Raymond prides itself upon being the busiest parish in the district. It has a pulp mill of its own, that of the St. Raymond Company. A tremendous lot of timber is being got out, too, for the improvements in Quebec harbor and for the works of the Jacques Cartier Power Company, and for other works under construction at St. Gabriel. At Persuis the Sewell estate is taking out 60,000 logs.

Half a dozen miles further north, at Riviere a Pierre, the Glens Falls Paper Company is getting out 120,000 spruce logs. At the same point three small steam sawmills are cutting for the Quebec market. Rosseau & Vallee are cutting 90,000 logs, and the steam mill at Notre Dame des Anges is cutting 40,000 logs. Rheant's steam mill is cutting 50,000 logs. At St. Tite's Songall's mill is cutting 75,000 logs.

But the climax is at Grand Mere, where in two years \$2,000,000 have been invested in improvements by the Laurentide Pulp and Paper Company. It employs in one way or other 1,100 hands. During the present winter a large sawmill is to be erected at Grand Mere, capable of cutting 8,000,000 feet of deals and lumber.

At Shawinigan, ten miles west of Grand Mere, a Boston company is spending \$4,000,000 upon works to produce electric power to run pulp and paper mills and other industries.

Lake St. John district, northeast of Quebec, is progressing equally rapidly. Many new sawmills are operating in that fine section. The pulp mill at Chicoutimi is turning out three cars of pulp per day. Farmers are crowding into these fertile lands, off which their first crop, the timber, is probably the most valuable they will ever reap, rich as the agricultural yield promises to be, for nowadays timber, instead of being an incumbrance to be cleared out of the way and burned, is a valuable resource, which the railways enable the farmers and lumbermen to put on the market at a low cost. But the timber which offers the best return to the settler is pulp wood, which yields him a better harvest in winter than his fields do in summer. The prosperity of the district of Quebec is chiefly a result of its great spruce forests.

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We would rather retain the old system than use a Time Recorder where this is not possible. A. S. KLEIN CO., Chicago, Ill.

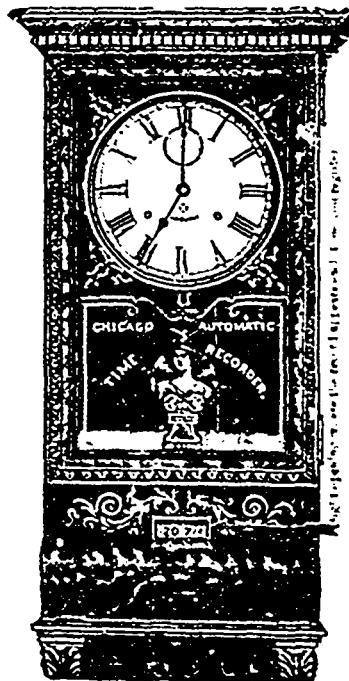
We give a 30 days' trial free of charge. Send for Circular or notify our Agents and they will call.

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W. C. BULLOCK & CO.,

442 York Street, TORONTO, ONT.



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WIRE MANUFACTURERS
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**HAMILTON
& MONTREAL**

Wire Screens for Every Class of Material.

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

Special Attention given to Miner's Requirements.

THE UNITED ELECTRIC COMPANY.

The amalgamation is announced of the W. A. Johnson Electric Company and the Toronto Electric Motor Company, Limited.

About a year ago the business of the Toronto Electric Motor Company was re-organized as a joint stock company, Mr. J. W. Thompson at that time purchasing an interest and combining with it the manufacturing business formerly carried on in Hamilton under the style of the Thompson Electric Company. Recently Mr. Thompson has secured control of the entire business of the Toronto Electric Motor Company, Limited. This company and the W. A. Johnson Electric Company have amalgamated their manufacturing business under the style of the "United Electric Company, Limited," with head offices at 134 King street west, Toronto. Both factories will be operated at present. Arrangements are, however, being made for a considerable extension of their manufacturing plants.

The officers of the new company will be W. A. Johnson, president and managing director; J. W. Thompson, secretary and treasurer; J. Norman Smith, engineer in charge of works. The official staff of the company have had a long and very extensive experience in electrical engineering and manufacturing, and, being practical and technical experts, and of recognized executive ability, the success of the new company is assured, Mr. Johnson having since 1882

acted in the capacity as superintendent and electrical engineer, and for many years general manager of the Ball Electric Light Company, Limited, the first electrical manufacturing business established in Canada, and for the last five years proprietor of the manufacturing business of the W. A. Johnson Electric Company. Mr. Thompson was also on the staff of the Ball Company, and later had entire management of the Reliance Electric Manufacturing Company. Mr. J. Norman Smith was formerly superintendent of the Ball Company, and for the past five years engineer of the W. A. Johnson Electric Company.

The United Electric Company will have a capital stock of \$150,000, of which \$100,000 is fully paid in, and \$50,000 treasury stock. The company will manufacture a very complete line of apparatus, including automatic arc dynamos and universal arc lamps of enclosed and open types, direct driven and belted direct current multipolar dynamos and motors, bipolar motors and dynamos, inductor alternators (having inherent regulation) for lighting and long-distance power transmission by polyphase currents, induction motors, etc. These and other lines to be added, not heretofore manufactured by the respective companies in the consolidation. The Toronto Electric Motor Company have done, possibly, the largest Canadian business in bipolar direct current motors of the single field coil type.

The various agencies of both companies

will be maintained, and agents will be appointed where neither company is now represented.

With the enlarged facilities for doing business the company will be in a position to cater for all classes of electrical work, furnishing strictly high-grade apparatus.

A POSSIBLE NEW CANADIAN INDUSTRY.

The American Carpet and Upholstery Journal prints the following article which suggests that the State of Minnesota adjoins the province of Manitoba, being separated by an imaginary line, and also the western portions of Ontario, and that the grasses which are being put to such good use in Minnesota grow in equal profusion on the Canadian side of the line. The article says:

The rumor current for some months past that a certain species of grass found in the Northwestern States, particularly in Minnesota, was convertible into a floor covering of great durability and slightly appearance, too,

BRADFORD Merchant who is buying British Textiles on commission for two good German and Swiss houses and has ample warehouse and office accommodation, desires to add Canadian connection (knows market well) or any other country, and will confine himself to good house. Address--
Box 3495 Sell's, 167 Fleet St., London, England.

To MANUFACTURERS

Do not be misled on the Wood Pulley question! The construction of the Dodge Split Pulley is unique. The complete and extensive plant of Dodge Manufacturing Company, of Toronto, makes it possible for them to make an all-wood pulley nearer perfection than any of its competitors. No other wood pulley is made just like the Dodge Pulley, because a lot of special and expensive machinery was necessary before the Dodge Pulley could be produced in its present state of perfection.

Our output exceeds that of all other wood pulleys combined. There are no drawbacks with us, we have the best wood split pulley made, and we want to send you our new 260-page Catalogue, also our revised Discount Sheet and to tell you all about all kind of pulleys.

We carry a complete stock of pulleys in sizes from 4 in. diam. to 60 in. diam. any face, and can ship most any order on day received. A post card or a phone will bring us to you at any time.

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Bar Iron, Steel, Boiler Plate,
Rivets, Tube Expanders,
Hammers, Metallic Letters
and
Figures for Patterns.

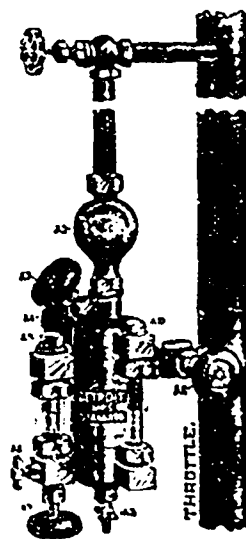
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THOSE WHO BUILD HIGH-GRADE ONES
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The Detroit Sight-Feed Lubricators

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

Send for Catalogue and Prices.

Detroit Lubricator Co.,
DETROIT, MICH.

has been confirmed by the appearance in the eastern markets of grass matting made by the Northwestern Grass Twine Company, of St. Paul. Samples of these goods are on view at the company's New York warerooms in the Bedford Building, where Mr. J. W. Kjelgaard, the eastern agent, is showing them to many interested callers.

The Northwestern Twine Company's fabrics consist at present of mattings or carpets, rugs and stair carpets. The patterns are capable of some very fine mottled effects, so that they look not unlike carpeting. The stairs are exceedingly rich and the color effects are good throughout. What impresses one at first sight is that these fabrics have come to stay. Their wearing qualities have been severely tested in the west, and there is no doubt of their enduring qualities. The prices are intended to be strictly reasonable, and the lists fixed already on rugs and stairs indicate a big margin for the retailer.

Should these grass fabrics become competitors with China and Japan straws, the discovery will rank among one of the most important of the century now closing. That this is the aim of the inventors there is no doubt. They have vast works in the west and ample capital, thus ensuring a thorough marketing of their product.

INDUSTRIAL PROGRESS OF WOODSTOCK, ONT.

Perhaps the largest furniture factory in the Dominion, the Anderson Co., is located in Woodstock. It gives employment to 400 men the year round. Within the past five years the capacity of the factory has been greatly increased, both in additions to the buildings, and improvement to machinery, and the greater part of it has been added within the past two years.

The Thomas Organ Co. gives steady employment to eighty hands, and are increasing the capacity of their plant. They are now turning out 110 organs a month, together with 400 organ and piano stools.

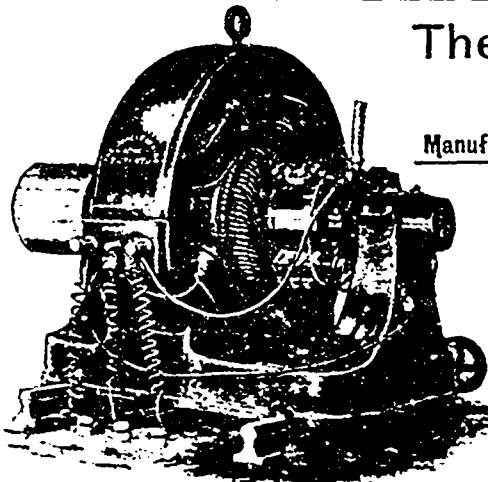
The D. W. Karn Co. have added a pipe organ factory to their concern, at a cost of \$3,000, in which department there are \$18,000 worth of orders waiting to be filled. The firm employ 250 hands in the pipe organ, reed organ, and piano departments, and the pay roll amounts to between \$7,000 and \$8,000 a month. The capacity of the factory is 25 pianos and 125 organs a week.

The Bain Wagon Co. have erected sheds and otherwise improved their plant to the extent of \$10,000 within the past two years, and the company contemplate the expendi-

ture of a similar amount on their property in the near future. The number of hands employed is 200, while the output last year was 5,000 wagons and 2,500 sleighs.

Among the other manufacturing concerns of Woodstock, which have recently been increasing their working power, is the James Hay Co., manufacturers of the Singer sewing machine boxes. The firm is now employing 100 hands, which is the average the year round.

M. Lethoule, an electrical engineer from Paris, France, has been visiting Quebec province examining its water powers, especially with a view to estimating the advantages for electrical developments there. His information, it is stated, is being collected for a department of the French Government. This official presentment of the advantages which the province offers for the application of electricity to the industrial purposes is expected to influence French capitalists favorably toward Canada, and especially toward Quebec, the province covered by his inquiries. M. Lethoule expects to return to Quebec and spend a year there studying its resources.



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All Work Fully Guaranteed

ELECTRIC LIGHT and
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and ASSAYERS.**

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Engineers and Builders

MODERN MINING and MILLING MACHINERY

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SHAKES LIKE A PAN—SEND FOR SPECIAL CIRCULAR



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Write for Prices and Samples.

JOHN HOPE & CO., LACHUTE SHUTTLE and BOBBIN WORKS,
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THOMPSON & CO., Manufacturers of

BOBBINS and SPOOLS

FROM SELECTED STOCK.

Correspondence Solicited
Orders Promptly Filled.....

• SHERBROOKE, P. Q.

THE CHICAGO TIME RECORDER.

The accompanying illustration is of the Chicago Automatic Time Recorder, manufactured by the Chicago Time Register Company, Chicago, Ill., who are now introducing their Time Recorders, (for keeping

time of employes) in Canada, through Messrs. W. C. Bullock & Co., 43 York street, Toronto. They make both an Autograph and Numerical (or key) Recorder, which is claimed to be the handsomest constructed, most simple in operation, and positive in

action machine on the market. Their recorders are, they inform us, the only ones that produce an absolutely indisputable and legal record, since they have a "sight opening" where the record appears each time it is used.

Heretofore in other recorders, the workman has been unable to verify the record made at the time of registering, which has been the cause (not theoretically but in fact) of an endless number of disputes, and in such cases the employer has been powerless to prove the accuracy of the record, since obviously no one could swear to the accuracy of a record made on a machine so constructed that during the production of the record it was both invisible, and to all practical intents inaccessible. With the Chicago recorders such disputes are absolutely out of the question, because should a workman question the correctness of the time credited

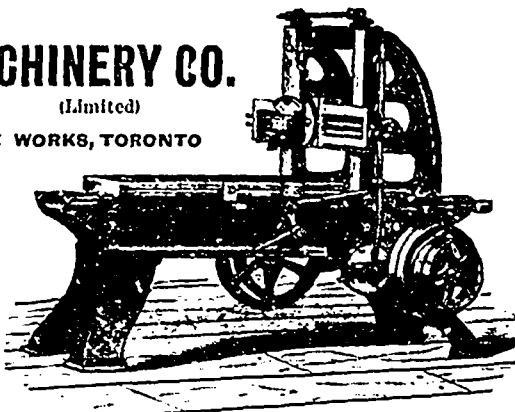
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- General Machinery
- and Supplies.



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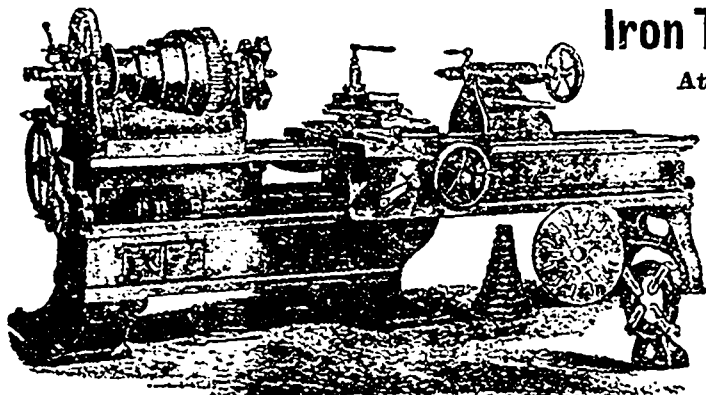
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Send for Circulars,
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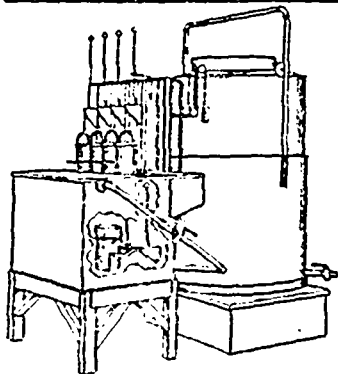
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Ideal Generator the only machine that submerges the carbide.

- No Opening of generator.
- No Heat in generator.
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- No Danger.

Recognized by all EXPERTS as the PROPER PRINCIPLE
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Sizes—25 light to 2000 light.

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

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OIL-CLOTHS of Every Description

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All other Countries in Postal Union, Eight Shillings Sterling per year, postage paid.

Importers in any country of the world desiring accurate information regarding any Canadian manufacturing industries and their products should correspond with

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HAMBURG AND PORTLAND, ME.

	From Hamburg.	From Portland.
SS. Helene Rickmers	Jan. 21th.	Feb. 13th.
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SS. Strathay	" 26th.	" 27th.
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And Fortnightly thereafter.

Through Bills of Lading issued to and from all points in Canada and Western States by the Grand Trunk Railway or their Agencies.

For further particulars apply to

JAMES THOM, Manager,
13 St. John Street,
MONTREAL.

NOTICE

To Importers and Exporters.

We beg to call your special attention to the improved service we intend to offer shippers and consignees next season. We have decided to increase the sailings of the HANSA-ST. LAWRENCE LINE between Hamburg, Antwerp and Canada, to a 10 days' service, beginning in the month of April next. The sailings have hitherto taken place fortnightly, with extra opportunities when required, but we shall in future have a sailing from Hamburg, Antwerp and Montreal every ten days.

We are quite prepared to meet the requirements of the trade by arranging for extra boats, so that shippers and consignees can depend on a first-class service, with every facility for the prompt shipment and careful handling of their goods.

We would further point out that our line offers to shippers at Antwerp and consignees in Canada, special facilities in view of splendid accommodation at our loading and discharging berths. In Antwerp and Montreal we have extensive quay accommodation, protected by large sheds and connected with the different Railroads, thus ensuring the prompt transhipment of cargo.

In view of our efforts to provide a first-class regular service, in both directions (for our steamers also load back direct to Antwerp and Hamburg), we rely on your favoring us with your undivided support.

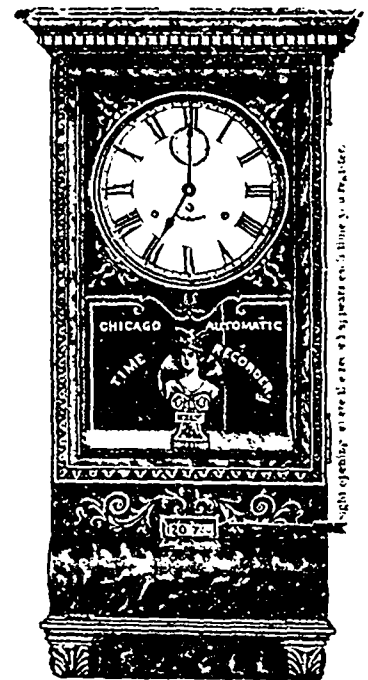
JAMES THOM, Manager,
13 St. John Street,
MONTREAL.

to him, the bookkeeper can show the record made by the workman and inspected by him at the time it was made.

Nor is this all. An even more important result is that with the Chicago Recorders, every workman becomes a check on the accuracy of the machine, and its proper operation, so that an erroneous record made because of any failure of the machine whatever, is certain to be at once detected and may be corrected, whereas with recorders of the old type, the fact that it is not recording properly is more than likely to remain undiscovered until the end of the day, or perhaps end of the week, and at a time when it is impossible to get a correct account of time, involving perhaps hundreds of dollars, to say nothing of the annoyance. Thus the Chicago recorders produce an absolutely indisputable and legal record.

The simple manner of operating these Recorders is a matter of vital importance. The Chicago Numerical (or key) Recorder is operated by inserting the key (each employe has a numbered key) and giving it a slight push, when the bell rings and the record appears in full view. You need not turn the key, which takes time, and often causes considerable trouble in extricating, and causes an erroneous record to be made.

A key board is placed on each side of the



Numerical (or Key) Recorder

CHEMICAL
COMPOUND
COMPANY

CORRECTLY
COMPILED
CHEMICAL
COMPOUNDS

CIVILITY
CAREFULNESS
COMPLETENESS
CONTINUITY

DO YOU KNOW

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

IF YOU DO NOT BUY

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

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

A Few Mines



WHO USE

BRITISH COLUMBIA :

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- War Eagle Mine.
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CANADIAN RAND DRILL COMPANY, Montreal

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Recorder, (denoted the In and Out board). The employe after having registered upon arrival hangs his key upon the In Board and after registering upon departure hangs it upon the Out Board. Thus it can readily be seen if the employe is in or out.

The Chicago Autograph Recorder requires the employe to sign his name on the record sheet; the wrist support upon which he

rests his hand when writing his name, is thoroly lowered, causing the machine to automatically print the time opposite his name, in full view. There is no lever of any kind to turn in order to register, which causes delay and if forgotten produces an erroneous record.

As a result of this simple manner of operating both the Numerical and Autograph Recorders, the Chicago Register Co. guarantee to register twofold more rapidly with them than can be done with any other machine. The material used in their construction is the best of their respective kinds; the clock movement being the Seth Thomas. They are put in on thirty days' trial free of charge.

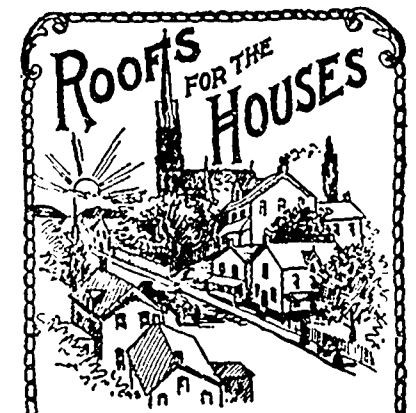
In the issue of THE CANADIAN MANUFACTURER of October 7th last, in stating some facts regarding this machine it was possible to misconstrue what was said so that the impression might prevail that only the "Autograph Recorder" possessed the sight opening feature. This is not the case, however, as both the "Autograph" and the "Numerical" recorders possess this important feature.

Mr. W. C. Bullock, the Toronto agent for these machines, is well and favorably known not only in this city but throughout Ontario, and will no doubt push the sale of these indispensable adjuncts in every workshop and factory most vigorously.

THE HORSELESS CARRIAGE IN TORONTO.

In another page reference is made to an electric motet that has recently been seen on the streets of Toronto, coincident with which several specimens of Wood's motor carriages have also been displayed. Regarding the event the Toronto World says:—

"The automobile has already reached as high a degree of perfection as the bicycle had ten years ago, when the pneumatic tire was still unknown. It can safely be predicted that the next decade will do as much for the self-propelled vehicle as the past decade has done for the wheel. As far as general utility goes, we believe the automobile will far surpass the bicycle, revolutionary as the latter has been. When the horseless carriage has been in use a few years, the construction of our pavements will assume a new aspect. It will then be-



32 Years Ago

We started the manufacture of sheet metal building materials, and this long experience enables us to offer intending builders all that is desirable in Steel Roofing, Steel Siding, Steel Ceilings, etc.

We Prefer

That you purchase through the trade, still if your dealer cannot give the information you desire, or offers a substitute "just as good," write us.

"The Pedlar Patent Shingles" are the best, and the best cost no more than the poorest.

Pedlar Metal Roofing Co. OSHAWA, CANADA.

CHARLES F. CLARK Pres. JARED CHITTENDEN, Treas.

ESTABLISHED 1849.

THE BRADSTREET MERCANTILE AGENCY

THE BRADSTREET COMPANY, Proprietors

346 & 348 Broadway, NEW YORK.

Offices in the principal cities of the United States, Canada, the European Continent, Australia, and in London, England.

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

TORONTO OFFICES:

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



WATER WHEELS

For Heads of 3 Feet to 2000 Feet.

ADAPTED TO MILLING AND ALL POWER PURPOSES.

Recent tests at Holyoke enable us to guarantee:

The Largest Power ever obtained from a wheel of the same diameter. The highest speed ever obtained for the same power. The highest mean efficiency ever obtained when running from half to full gate. We guarantee also: A runner of the greatest possible strength. A gate operated in quickness and ease of opening and closing.

Write for pamphlet, stating your Head.

JAMES LEFFEL & CO., Springfield, Ohio, U.S.A.



The **Diamond Machine & Tool Co.**

TORONTO, ONT.

Manufacturers of....

Machine Screws

OF EVERY DESCRIPTION.

Reduce Your Fuel Bills

Increase Your Output...

BY USING

The IMPROVED JONES UNDERFEED STOKER

Guaranteed Increased Economy, from 15 to 50% | Guaranteed Increased Boiler Capacity from 40 to 100%.

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

The First and Only Successful Underfeed Stoker.

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

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

For Estimates and other Information write

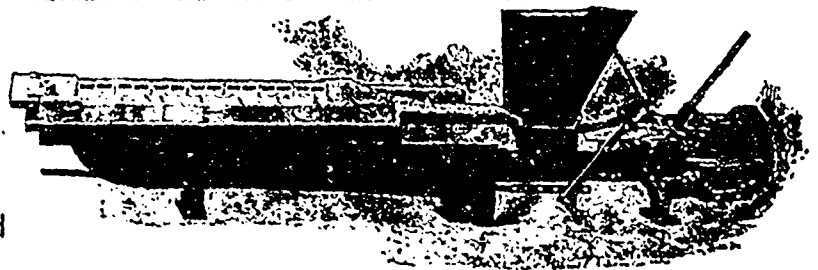
The General Engineering Co. Limited

SOLE MANUFACTURERS FOR CANADA.

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

Montreal—A. TREVETHICK, - Box 1123,

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



come evident that the universal adoption of the new motor in cities will mean cleaner, healthier streets, and a big diminution in the appropriation for the street cleaning department. The elimination of horses from the public thoroughfares will greatly reduce the cost of maintaining them, for it must be remembered that it is the horse more than the vehicle that ruins the pavement. Im-

ECO MAGNETO WATCHMAN'S ELECTRIC CLOCK.

Without Batteries.

Write for descriptive circular to

Eco Magneto Clock Co.,

Room 71, 620 Atlantic Avenue,
BOSTON, MASS.

MONTREAL ELECTRIC CO.,

1898 Notre Dame Street,
(Balmoral Hotel Block).

Agents for Province of Quebec.

John Starr, Son & Co. (Limited),

HALIFAX, N.S.,

Agents for the Maritime Provinces.

PROPOSALS INVITED.

THE EDISON

Electric Light and Power Co., Ltd.,

OF SPRINGHILL, NOVA SCOTIA,

Invite proposals for the development of a water power and supply of generators, switch board equipment, transmission line, extension of line in new district, wiring and all necessary material for 3,000 house lights. Generators to consist of two alternators, 75 K. W. each, with sufficient transformers of capacity for above generators, marble switchboard with necessary equipment, hydraulic machinery necessary to develop 500 horse power, including masonry construction and power house.

In submitting proposals complete plans and detailed specifications of the most modern and efficient electrical and hydraulic machinery must accompany each tender, otherwise they will not be considered. All bids must be deemed to cover and include all incidental matters and things necessary to the full and complete working of a first-class modern lighting and hydraulic plant. Said proposals must be filed at the President's Office on or before March 31, 1899. All information required by bidders will be supplied by the undersigned.

The Company reserve the right to reject any and all bids submitted.

EDISON ELECTRIC LIGHT AND POWER CO. OF SPRINGHILL, Limited.

J. E. SIMPSON, President.

Felts for Pulp Mills

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

HAMELIN & AYERS, Lachute Mills, P.Q.

ACETYLENE GAS...

THE SAFETY LIGHT AND HEAT CO.

Have in successful operation Machines from 5 to 200 Lights.

SIMPLICITY AND SAFETY are the leading features.

Being deeply water sealed IT CANNOT LEAK.

IT MAKES THE GAS COOL, washes it twice, and

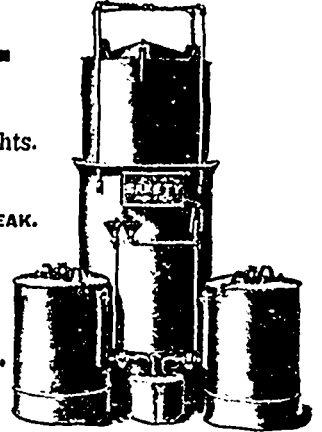
thus makes only PURE GAS.

NEVER CLOGS THE BURNERS.

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

Sole Proprietors and Manufacturers of the CELEBRATED CLIFF-WARDLAW GENERATORS.

SEND FOR BOOKLET.



The London Machine Tool Co., LONDON, ONT.

Toronto Office, 42 York Street.

MANUFACTURERS OF GENERAL MACHINERY...

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

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

All correspondence relating to the following Tools will be promptly answered, viz:

LATHES—Engine, Gap, Broak, Turret, Fox, Spinning, Etc.
PLANERS—Standard, Crank, Plato, Etc.
DRILLS—Standard, Sensitivo, Multiple, Radial, Etc.
MILLING MACHINES—Lincoln, Plain, Universal, Etc.

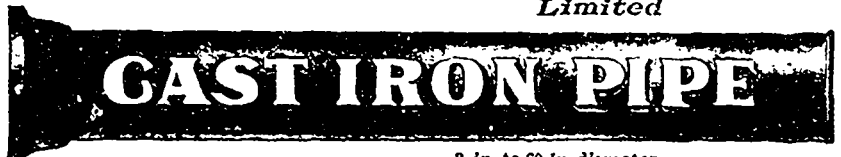
SHAPING MACHINES—Whitworth, G. & E. Rack-Driven, Etc.
HAMMERS—Steam, Sandage Drop, Stiles Drop.
BULL-DOZERS for all purposes.
PUNCHES AND SHEARS for Plato, Angles, Channels, Gauges, Etc.

And we would call special attention to our PRESSES for Cutting, Stamping, Drawing, Wiring, Riveting, Etc. We shall also esteem it a pleasure to give quotations on Special and General Machinery in our line.

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

THE GARTSHORE-THOMSON PIPE & FOUNDRY CO.

Limited



3 in. to 60 in. diameter.

For Water, Gas, Culverts and Sewers

Special Castings and all kinds of WATER WORKS SUPPLIES

FLEXIBLE AND FLANGE PIPE. HAMILTON, ONT.



BENT WOOD SPLIT PULLEYS, RIM... (REID'S PATENT).

The Strongest, Lightest and Best Belt Surface in the World

No Glue, no Nails in Rim like Segment Rim Pulleys, to be affected by Steam, Dampness or Moist Temperature.

EVERY PULLEY GUARANTEED.

The Reid Bros. Manufacturing Co., of Toronto, 257 King St. West, Toronto.

provement in the automobile and improvement in our pavements will progress hand in hand. The one is complementary of the other. Good pavements will permit of lighter, cheaper and more useful vehicles, while improvement in the latter will increase the demand for better roads. When the new motor has made sufficient headway to convince the public that it is to be a permanent fixture, a new pavement policy will come to the front with a rapidity and force that will astonish people.

"With the elimination of the horse, the smoke-emitting chimney and a few other controllable nuisances, the city will become as healthy as the country. As a matter of fact the city will ere long become preferable to the country from a sanitary point of view, and nothing will tend more to effect this change than the elimination of the horse and

the consequent cleanliness of the streets. The day when the new order of things will be in full swing cannot arrive too soon.

"It is satisfactory to know that the new vehicles have made their debut in this city. A strong company has been formed to manufacture them, and within a few months the automobile will be put to a practical commercial test. We understand that a number of self-propelled cabs will be put in commission in Toronto on May 1st, all of them being manufactured in this province. Our pavements are fairly well adapted for the motors, and as there are few hills in the city the automobile will have a decent opportunity in Toronto of showing what it can do. It is said that the electric cabs were able to get about during the recent snow storm in New York, when locomotion by horses was impossible. If the

now conveyance fulfils what its makers promise, it is destined to be a big success in Toronto. It is not difficult to imagine a time in the near future when iron rails in cities will be superfluous, and when the trolley may be declared a nuisance. As an enthusiastic New York editor remarks: 'The possible changes which will be brought about by the new motors are almost illimitable, and the liveliest imagination may not be able to go too far in picturing them as they will occur actually in a future which is separated from the present by a few years only.'

The McPherson Shoe Company, Hamilton, Ont., are installing in their works one of the Royal Electric Company's fifty h.p. S.K.C., two-phase motors. This is to replace their present steam plant.

JOHN J. KELLER & CO.

104 and 106 MURRAY ST.
NEW YORK

220 Church St., Philadelphia.

135 Pearl Street, Boston.

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

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

MANUFACTURED BY

JOHN R. GEIGY & CO.
BASLE, SWITZERLAND

**LIGHT YOUR
FACTORY WITH**

LUXFER PRISMS

The latest device for

LIGHTING

dark rooms and
offices

By Daylight

For catalogue
and estimates
write to

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

58 Yonge Street, - TORONTO.



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**Shafting, Pulleys
Hangers
Tube Cutters
Pipe Cutting Machines
Swing Saws
Wood Lathes
Dough Mixing Machinery
PAPER BOX MACHINERY.**

Special Machinery of all kinds.

C. T. PENDRITH & CO.

Nos. 73 to 81 Adelaide St. W.,
TORONTO.

Telephone 1535.

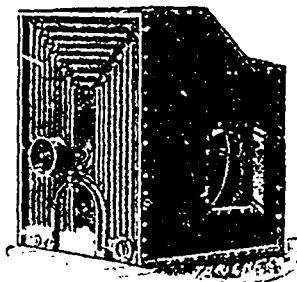
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The Fan System of Steam Heating for Heating
of Factories and all Classes of Buildings.

DRYING . . .

Appliances for Drying

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



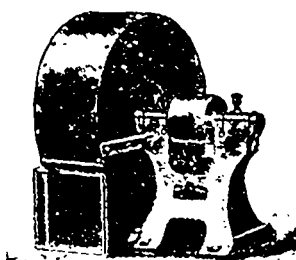
Heater and Housing.

VENTILATING . . .

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

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Ventilating Co., GALT, ONT.**



Fan.

F. E. ATTEAUX & CO.

53 Colborne Street
Toronto,

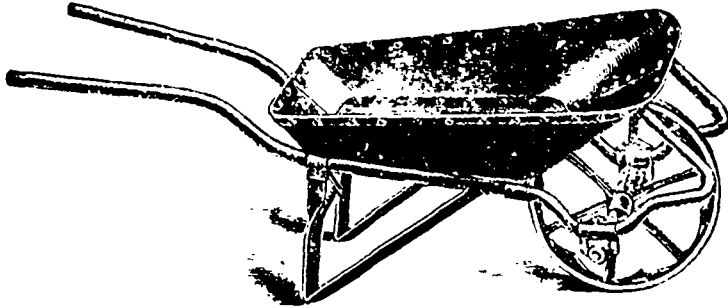
15 Lemoine Street, Montreal.

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

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

QUALITY AGAIN!

— THERE WHERE WE WIN.



The "National" Barrows are all steel, thicker bottom than side, dump forward, with frame so constructed as to prevent running back on the operator. They are especially adapted for Coal, Coke and for Foundry use.

A FEW OTHERS!

- Fairbanks Standard Scales.
- Nicholson and American Files.
- Nova Scotia Shafting.
- Fairbanks Trucks.

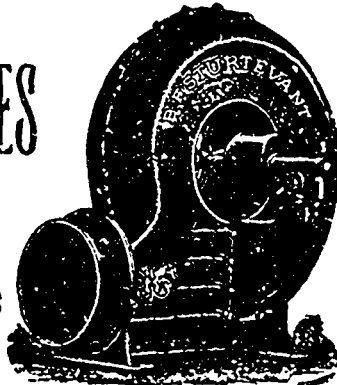
- Fairbanks Asbestos Disk Valves.
- Norton Emery Wheels.
- Dodge Wood Split Pulleys.
- Gas and Gasoline Engines.

THE FAIRBANKS COMPANY, 749 Craig St., MONTREAL.

The Sturtevant IMPROVED PORTABLE FORGES

TWENTY-FIVE SIZES AND STYLES

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



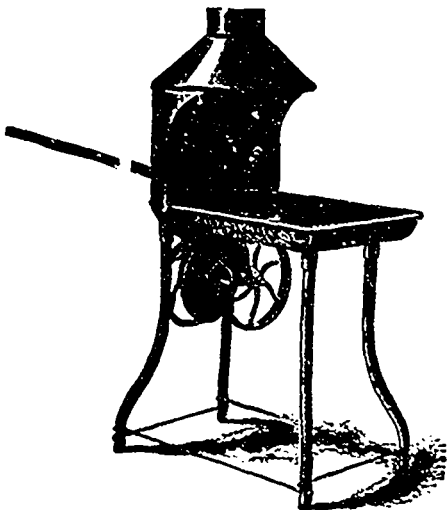
The Sturtevant STEAM : FANS

For BOILER FIRES

FORCED OR INDUCED DRAUGHT

MANUFACTURED BY

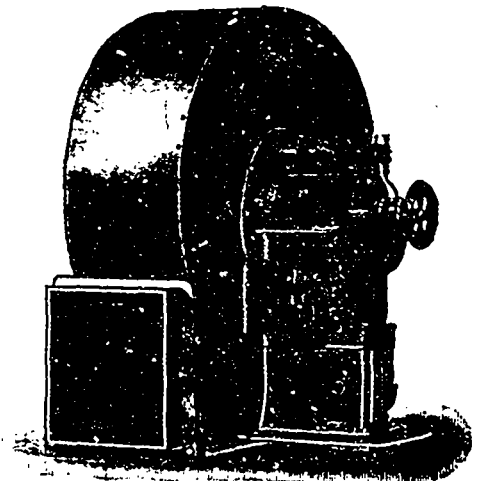
B. F. STURTEVANT CO.
Boston, Mass., U.S.A.



The STURTEVANT Blowers and Exhausting FANS

Known as the Monogram Pattern,
For Blowing Boilers and Fires, Ex-
hausting Dust and Gases.

SEND FOR CATALOGUES



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

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

THE GOLDIE AND McCULLOCH GAS ENGINE.

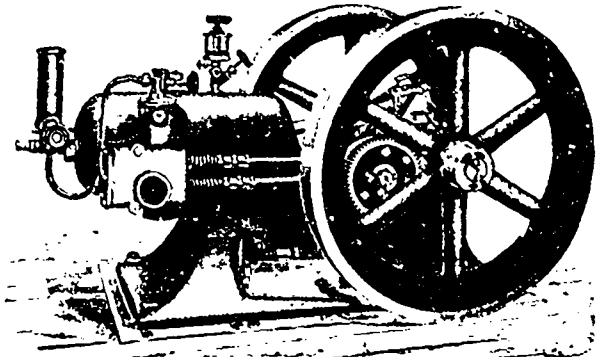
The accompanying illustration is of The Model Gas or Gasoline Engine, manufactured by the Goldie & McCulloch Co., Galt, Ont.

The production of this engine is in response to the demand for an inexpensive but reliable motor of small power, that can be easily managed and operated by persons of ordinary intelligence, who are not necessarily experienced engineers.

Some of the advantages claimed for this engine are, it can be operated at small expense; it occupies but little floor room; is always ready for work at a moments notice; no expense for fuel when not in motion; no danger from explosion; no noise; no dirt; no unpleasant smell, can be operated with either gas or gasoline. If with gas, all that is to be done is to connect it with the gas supply pipe in which is a shut off cock. If with gasoline, the fuel is taken direct from a tank supplied by a pump. The tank is situated outside the building at any distance desired, and the gasoline is pumped to a small tank at the engine. This small tank is kept constantly full and has an overflow back to the large tank. The governor is of the type that regulates the supply of gasoline according to the amount of work being done, by shutting off

the supply when the speed increases above the normal. The advantages of this over a graduated charge governor lie in the fact that if a small charge be admitted, it will not explode and be thus wasted. The governor in use on the Model overcomes these objections, and keeps the speed as regular as possible in a gas engine.

The remarkable simplicity of this engine is one of its strongest recommendations.

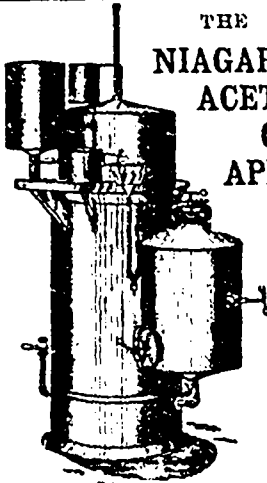


The Goldie & McCulloch Gas Engine.

There are but few working parts, all of which are in plain view, and there is not a rod or lever that is concealed or inaccessible.

These engines are made in different sizes and powers, and specially commend themselves to those who desire an effective machine that can be operated at small cost. The name of the builders is a perfect guarantee for the perfection of the engine.

THE NIAGARA FALLS ACETYLENE GAS APPARATUS



Patented in Canada, United States and Great Britain.

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

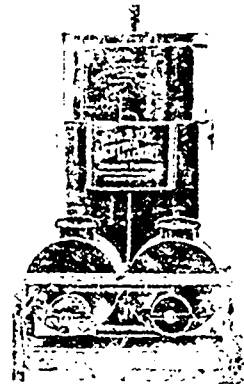
Acetylene Gas the Coming Light.
CHEAPER THAN ELECTRIC LIGHT
COAL GAS OR COAL OIL

For Private Dwellings, Business Houses, Churches, Public Halls and Offices.

For particulars write to the
NIAGARA FALLS ACETYLENE GAS MACHINE CO.
NIAGARA FALLS, ONT. LIMITED

Sun Lighting Machine.

ACETYLENE GAS.



The Acme of Perfection in Lighting.

At the Minimum of Cost.

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

Write for Catalogue.

THE **Acetylene Lighting Co.**
(LIMITED).
LONDON, ONTARIO.

KELLY'S DIRECTORY.

We are informed that Kelly's Directory of merchants, manufacturers, and shippers, and guide to the export and import and manufacturing industries of the world, for the year 1900, published by Kelly's Directories, Limited, London, England, is now in course of rapid preparation and will be distributed to subscribers early in the coming year.

Regarding this well-known and valuable commercial work the publishers say:—

"It is endorsed by the British Government, and its compilation is largely assisted by British Consuls.

"It contains the names and addresses of wholesale merchants and manufacturers in every line of trade in all towns and cities, in every country in the world.

"It gives the tariffs of all countries and the principal statistics of all towns and cities.

"It is the standard work of its kind, and is in universal use throughout great Britain, the Colonies and Europe.

"It is used for circularizing, or as a medium for advertising, or for both purposes, by nearly 200 of the leading houses in the provinces of Ontario and Quebec.

"Subscribers can avail themselves of the unequalled facilities freely offered by the Home office, to obtain private information of a commercial nature."

List of Trade Directories of Great Britain which can be had on application to the Dominion agent:

SITUATION WANTED.

THOROUGHLY competent and reliable man with best references, desires situation in Canada as Bookkeeper and Accountant, who can take full charge of office if required; or as Dyestuff salesman or buyer and chemist for concern handling dyestuffs. Address FITZGIBBON, care of THE CANADIAN MANUFACTURER, Toronto.

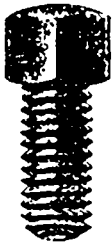
THE JAMES MORRISON BRASS MFG. CO. LIMITED.
 MANUFACTURERS OF **ENGINEERS BRASS GOODS AND SUPPLIES.**
TORONTO, ONT.
 THE JMT SERIES
 THE STANDARD OF VALVE EXCELLENCE
 HEADQUARTERS for the CELEBRATED "HEINTZ" STEAM SAVER
 "HOMESTEAD" PATENT
 Best Blow off Cock
 Always Tight — Always Works Easy
 ACT FOR PATENTAGERS
 HIGH GRADE ONLY.

WREYFORD & CO.
 McKinnon Building, Toronto.
 Agents for
ENGLISH, COLONIAL AND GERMAN
MANUFACTURERS OF
WOOLENS, HOSIERY, SHIRTS, ETC.
 Reg. Cable Address "STRUKO," Toronto.
 Correspondence Invited.

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

TORONTO MACHINE SCREW CO.

Manufacturers
 of



**Hexagon
 AND
 Square
 Head Cap
 Screws.**

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

Send for Price List
 & Discounts

109} Adelaide St. W., - TORONTO.

PATENTS
PROMPTLY SECURED
 Write today for a free copy of our interesting books
 "Inventors Help" and "How you are swindled."
 We have extensive experience in the intricate patent
 laws of 50 foreign countries. Send sketch, model or
 photo for free advice. **MARION & MARION,**
 Experts, New York Life Building, Montreal, and
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F. R. F. BROWN, M.I.M.E.
Consulting Engineer,
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 Machinery, Rolling Stock, Engines and Boilers of
 every description supplied. Inquiries a specialty.
ARBITRATIONS VALUATIONS
 22 Street Railway Chambers, Montreal.

WOOD ENGRAVING
PHOTO ENGRAVING
HALF TONES
 OR ANY CLASS OF ENGRAVING FOR ADVERTISING
 PURPOSES, CATALOGUES, MAGAZINES, &c.
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 6-8-10
 Adelaide St. W. TORONTO.

Cabinet furniture and upholstery trades ;
 grocery and oil and color, and provision
 trades ; leather trades ; stationers, publishers ;
 printers, booksellers and paper makers ;
 chemists and druggists and chemical manu-
 facturers ; engineers, iron and metal trades ;
 manufacturers of textile fabrics ; watch and
 clock, goldsmith and jeweler's trades ; build-
 ing trades ; wine and spirit trades, brewers
 and maltsters ; post office, London directory
 (100th annual edition) ; titled, landed and
 official classes. Arthur Gate, 794 Dover-
 court Road, Toronto, agent for Canada.

ELECTRICITY IN STREET CLEANING.

A correspondent of The New York Elec-
 trical Review makes a suggestion that might
 be adopted and carried out to good advan-
 tage in Toronto. He says:—

The recent snow storm has brought about
 another storm, a regular cyclone of complaint
 and indignation at the utter breakdown of
 the Street Cleaning Department of New
 York City. Among the many excuses given
 for failure was the inability to hire carts,
 because most of the teams used in business
 wagons had to be doubled up. Hence it was
 not a scarcity of carts, but of horses.

Somewhere about \$100,000 has been eaten
 up in the effort to clean away the snow, and
 somehow the snow is with us still.

Now, for that amount of money, the city
 could have made and owned probably 100
 automobile four-wheelers, with their motors
 and storage batteries complete, each capable
 of taking in tow six or eight ordinary carts
 loaded with snow, and taking them to the
 dumps in much livelier fashion than the poor
 cart-horse was ever known to accomplish.
 Once tried the plan would never be given
 up, for, unlike horses, automobiles do not
 eat their heads off in munching hay and oats
 in good weather. Besides, they could be
 used to very great advantage in street clean-
 ing all the year round.

A half a million dollars thus expended
 would put the city in possession of the full
 equivalent of from 5,000 to 6,000 horses ;
 and an equal amount would purchase enough
 carts to allow continuous loading, so that
 with enough shovellers the hauling could be
 done as fast as the great number of carts
 could be filled.

But the idea goes further. There would
 be absolutely no practical difficulty in having
 constructed a number of automobile and
 automatic electric machines for lifting the
 snow from the street and loading it into the
 train of carts. Such a machine is almost
 embodied in the electric snow sweepers of
 the trolley companies.

With such an equipment a ten-inch snow-
 fall would present no difficulties, and the
 city would save many thousands of dollars
 annually to the taxpayers.

Bring customers to your customers, by
 advertising to the consumer. Plans and
 rates will be cheerfully prepared and
 submitted by the **E. DESBARATS ADVER-**
TISING AGENCY, Montreal.

A. C. NEFF
CHARTERED ACCOUNTANT
 Room 500 McKinnon Bldg.,
 Tel. 1330. — TORONTO.
 Audits and Investigations a Specialty.

GEORGE WHITE-FRASER.
 Member Can. Soc. C.E.
 Member Am. Inst. Elec. Eng.
CONSULTING and Electrical Engineer.
CONSTRUCTING
 Railways, Lighting, Power Transmissions,
 Factory Plants, Reports, Specifications, Tests.
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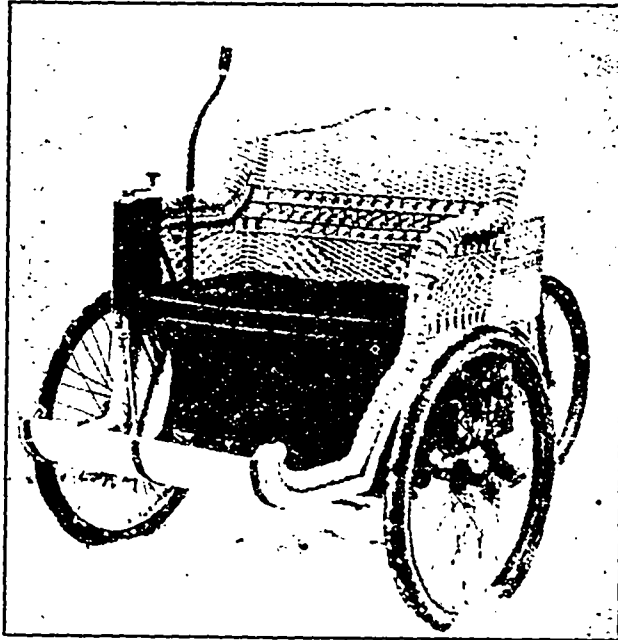
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Canadian Electric Motet.

As will be seen by reference to the illustration, the motor is suspended above the front axle, the power being applied to the front wheels. The steering is done by means of a steering rod attached to the third or hind wheel. This rod is jointed and can be turned up and out of the way of persons entering or leaving the carriage, as shown in the illustration. When the driver is seated

the steering rod is turned down and is operated with the left hand, leaving the right hand for the management of the electrical device. In operating this device there is a key, the position of which indicates the direction in which the power will act, either forward or backward, or if shut off. This key is similar in size to an ordinary door key and may be carried in the pocket; and


without the insertion of it in its proper place the motor cannot be started. The small handle shown is to regulate the speed.

The company publish the following brief description of this motet:

Total weight, 400 lbs.; battery weight, 180 lbs. (Still Patent Battery); capacity, two persons and 50 lbs. of baggage, or, fitted for light delivery, 250 lbs. and driver; speed, 12 to 15 miles per hour; range (without recharging), 30 miles; steers by hind wheel, guided by left hand, steering handle lifted, as shown in photo, when occupant leaves seat; controller (in right hand) has four positions, reverse and brake; current used, 15 amperes on ordinary roads; power from special motor, designed by

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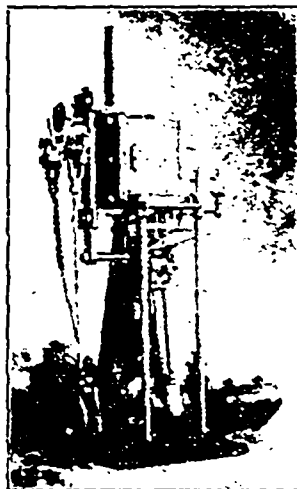
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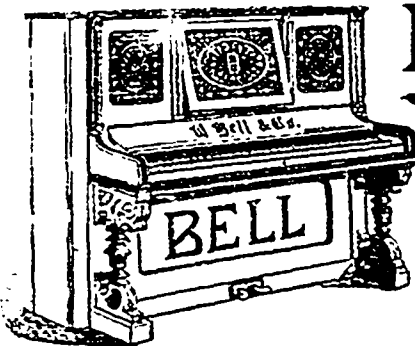
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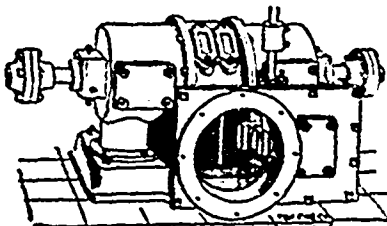
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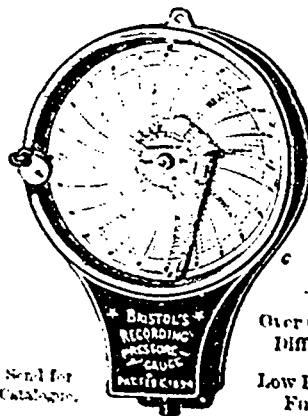
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