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THE CANADIAN MANUFACTURER

AND INDUSTRIAL WORLD.

DEVOTED TO *
THE
MANUFACTURING & MINING INDUSTRIES,
OF THE
DOMINION. *

Vol. 13.

TORONTO, AUGUST 19, 1887.

No. 4.

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SEE ADVERTISEMENT, PAGE 136.

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VOL. XIII.

TORONTO, ONT., AUGUST 19, 1887.

No. 4.

GEORGEISM vs. SOCIALISM—A DISTINCTION WITHOUT A DIFFERENCE.

MR. HENRY GEORGE, in stating his views concerning the abolition of poverty, has declared that "Practically the greatest and most fundamental of all reforms—the reform which will make all other reforms easier, and without which no other reform will avail—is not to be reached without concentrating all taxation into a tax upon the value of land, and making that tax heavy enough to take, as near as may be, the whole ground rent for common purposes." In other words his land theories constitute only the foundation for other reforms, and after establishing a community of interest in land by this proposed system of taxation, he thinks that all other desired reforms will be easily accomplished.

We fail to see that the "State," acting as a general landlord and collecting ground rent for common purposes, would be any better off than it would be if the same ground was under personal ownership. If tenants are to be taxed so high that they must bear all the burdens of taxation, no man would desire to be a tenant. But admitting the desirability of a tenancy, the tenant would naturally desire to know how long he would be permitted to occupy the land. If indefinitely, wherein would consist the difference between State and personal ownership? If for a stated and arbitrary term—if he could be dispossessed at the will of the State—what inducement would there be for him to erect factories and workshops, or to build a residence for himself and family and homes for his employes? If land is valuable only according to that which may be produced on or from it, and if no one but the State has a right to the land, why should the producer tenant be allowed to appropriate anything he may obtain from it? The land can be worth nothing except something valuable can be produced upon it, and that production must come from the individual labor expended upon it. Therefore if Mr. George's land theory is correct, to be final and of any value it must extend to personally as well, and the State should also own and control everything that the land produces, or that may be produced or created upon the land.

The absurdity of the proposition is apparent. The circumstances which surround a man in one place may not prevail as regards another man in another place. The land is not all alike valuable or desirable, for in some places when tickled with a hoe it will laugh with a bountiful harvest, while in other places a man's bread must of necessity be earned by the sweat of his brow. Aside from that which may be obtained from the land, the land in certain places may be made very valuable by that which may be erected or placed upon it, while the

land in other places may not be at all susceptible of such improvement. If an individual may be permitted to have absolute ownership in property other than land, as for instance his dwelling house or factory, of what use or value would or could such property be without the land for it to rest upon? And if the owner of the residence or factory possessed no such land, of what value would any land adapted to such purpose be?

The promulgation and teaching of this George theory tends directly to socialism, which is but a very short remove from anarchy, and has aroused the public mind to such an extent as to put Mr. George and his reform orators on the defensive. At every opportunity that now presents itself these men denounce Socialism, and endeavor to explain the distinction—for there is no difference—between it and Georgeism. Who can define the difference between Georgeism and Socialism? Mr. George at present stops at absolute State ownership of all the land, though, as we have shown, should that theory ever be put into practice, it would be impossible to stop short of State control in all things, while Socialism would reach the latter result at one bound. Mr. George if opposed to Socialism, as he says he is, to be consistent must abandon Georgeism—if he will not abandon Georgeism he must sooner or later unreservedly accept Socialism, and become just such a socialist as he now denounces. At a recent meeting of the Anti-Poverty Society held in New York Mr. George mentioned "monopolies" as the point which separates the teachings of that Society from Socialism, maintaining that when any business became a "monopoly" it should be taken charge of by the Government and run by and for "the people." Will Mr. George promulgate a code of rules by which it may be known with absolute certainty when any business oversteps his prescribed bounds and becomes a "monopoly"?

MINERAL RESOURCES OF CANADA.

At the recent meeting of the American Institute of Mining Engineers, held at Duluth, Mr. J. H. Bartlett, M. E., of Montreal, made the following statement in a paper read by him regarding the mineral resources of Canada:—

"In almost every province iron ore is found in abundance, and the provinces which have not coal have an abundance of timber fit for making charcoal. We possess the only deposits of coal on both the Atlantic and the Pacific shores and in both Vancouver's Island and Cape Breton the coal seams run out under the ocean. In both these provinces of British Columbia and Nova Scotia, nature has been prodigal with deposits of various descriptions of iron ore of very good quality, and with plenty of flux all in the immediate vicinity of the coal fields. "San Francisco is largely supplied with Nanaimo coal, and the blast furnaces in Oregon get most of their iron ore from

Texada Island in British Columbia. The eastern cities of Portland and Boston are supplied with some of their coal from Nova Scotia, and it would appear possible also to supply iron ore to eastern furnaces from that province. In New Brunswick both coal and iron are found. In both Ontario and Quebec there are immense deposits of the finest quality of iron ores and an unlimited supply of charcoal timber. In Manitoba there is iron ore, and they have about 15,000 square miles underlaid with coal.

"In the North-West Provinces, the future great wheat-producing country of the continent, there are deposits of iron ore reported, but the country is so vast no special explorations have been made for it. They are, however, working a large deposit of anthracite coal at Anthracite, N.W.T., of a quality which compares favorably with the best from Pennsylvania, and there are 500 square miles of this section. The climate of this country is cold, but there are 50,000 square miles of it underlaid with coal of good quality, and in easily reached and worked seams, estimated to yield from five to nine million tons per square mile."

With the advancing conditions of metallurgical science, and with such stupendous resources as those above described, there is no doubt that the economic problems, which up to this time have so greatly puzzled the Canadian iron trade, will at no distant day find a satisfactory and remunerative solution.

FRENCH ENTERPRISE IN THE UNITED STATES.

If it be true—and as yet we have seen no denial—that the Bethlehem Iron Company was enabled to take the recent heavy contract for furnishing steel forgings to the Navy Department at an extremely low figure, because of the silent partnership of a French firm, Schneider & Co., which has transferred its own plant to America, together with a force of skilled French workmen, then it is in order to ask, whether the Government interprets this as consistent with a policy of protecting home capital and labor.—*Cleveland Iron Trade Review*.

If it is desirable under any circumstances to have such a steel-making plant as that which Schneider & Co. have transferred to the United States established in that country, even though it has to be operated with a force of skilled foreign workmen, we fail to observe any inconsistency on the part of the Government as regards its policy of protecting home capital and labor. The plant in question is undoubtedly of superior construction to any in the United States, and the French workmen possessed of greater skill in making the quality and style of steel required than American workmen, or the foreign concern could not have incurred the great expense incident to removing their plant and workmen from France to the United States, and so far underbid American manufacturers as to be awarded the contract. Unlike private persons or corporations requiring such material, the United States Government was not at liberty to invite bids from manufacturers elsewhere than in that country, and we imagine that the Bethlehem Iron Company did nothing more than what they were consistent in doing to arrange to import both machinery and workmen to enable them to comply with the Government's terms when bidding for the contract. The Schneider steel plant ceased to be "French" when it was placed on American soil; and the "skilled French workmen" brought over to operate it will soon become assimilated with and a valuable part of the American people. It is not at all likely that either the plant or the workmen will ever be returned to France. Canada would gladly welcome such an invasion to her soil, and would consider the proceedings both natural and very agreeable.

THE DOMINION EXPOSITION.

THE Dominion and Industrial Exhibition which will be opened in Toronto, September 5th, will undoubtedly be the grandest affair of the kind ever held in Canada. Ever since the Dominion Government decided to contribute \$10,000 to the enterprise the management have been indefatigable in their efforts to make the affair an unbounded success, and that end is now fully assured. The aggregation of interesting events and special attractions was never before equalled, and those who will attend will carry away delightful memories and the consciousness of having seen the greatest and most important exposition ever displayed in this country. Lord Lansdowne, the Governor-General, attended by his official staff and surrounded by a host of notable personages, will formally open the exposition, and will also unveil the Fort Rouille monument on the same day. During the continuance of the exposition the principal streets of Toronto will be brilliantly illuminated in the evenings; there will be a remarkable and most interesting aquatic display on the harbor in front of the city, in which every available steamboat, yacht, launch, and other water craft will take part, all beautifully decorated with flags and bunting, and illuminated with Chinese lanterns and colored lights; Professor Pain, of London, who provided the pyrotechnic display at the recent review before the Queen of the Royal Navy of England, will provide a brilliant display of fireworks, in which will be included a scenic representation of the siege and capture of Peking, China, by the British forces, in which living actors will take part, and there will be no end of the attractions to be seen both within and without the exhibition grounds. The exhibits, in point of number and general attractiveness, will surpass those of any former year.

THE ABOLITION OF BAIL.

THE United Labor Party of the United States, ever vigilant in the search for "oppression" as practised on the poor down-trodden laboring man, has discovered that such oppression exists under sanction of and demand of the law, in the barbarous system now in vogue which requires a laboring man to give bail when accused of crime, or go to jail. The law applies alike to all classes of society, but the United Labor Party is only fighting in the interests of the laboring man, and desire to have the bail requirement modified as applied to him. The modification desired consists in not exacting bail under any circumstances. The claim is that the law presumes every man to be innocent until he is proven guilty, and therefore an accused man, being presumably innocent, should not be required to give any bail for his appearance when wanted for trial. Preliminary imprisonment must be abolished, a simple pledge—a personal recognizance that he will answer when his name is called and he is wanted for trial shall be all that is required. The opinion of the United Labor Party is thus stated: "If the accused appears, the only defensible object of the preliminary arrest would be accomplished; if he absconds, judgment by default would make him an exile for life, and rid the community of a worthless member. If, however, justice cannot be satisfied without vengeance, fugitives could be brought back from any State of the Union under extradition laws, and as bail may reclaim their prisoner wherever found, defendants might be

released in the custody of official bail, who could pursue them to the ends of the earth. Doubtless this would impose additional expense upon taxpayers, but shall personal liberty be weighed in the balance with pocket-books? Are mercenary considerations to prevail against the plain right of a man to be free, until by crime duly proved he forfeits his freedom?"

The wretch who but a few days ago in the jail in this city received his second installment of twenty-five lashes on his bare back for corrupting a little girl and committing an awful outrage upon her, would have been but too glad if the plan of the United Labor Party, as above expressed, had been law in Ontario. He might have been extradited from any other province of the Dominion, if he could have been found therein, but Canada would have been rid of the scoundrel, manifestly to the great injustice to any other country to which he might have escaped. The United Labor Party are evidently not good conservators of the public welfare, nor calculated to make efficient criminal laws.

CONVICT LABOR IN THE UNITED STATES.

ACCORDING to the report of Hon. Carroll D. Wright, Commissioner of the Bureau of Labor Statistics of the United States, the total number of prisoners in the penal institutions of the United States is 64,349, of whom 58,454 are males and 5,895 females. Of these 45,277 are engaged in productive labor. There is one prisoner in the United States to every 930 of the population, and one convict laborer for every 300 free workmen, but calculated according to their productive capacity they are as one convict to every 380 free workers. The total product of the penal institutions of the United States was a little more than one half of one per cent. of the value of the product of the industries of the country; that is, for every hundred dollars worth produced by free labor, fifty-four cents worth was produced by convict labor. In all the industries except one the comparative rate of product was even less than this. The exception was the boot and shoe industry. As many as 7,600 convicts are employed in making boots and shoes in the States, and the proportion of prison laborers to free laborers is 1 to 162. These convict shoemakers produce thirty-six per cent. of the total product of the prisons of the country. The matter of convict labor is occupying a good deal of public attention in the United States, and close calculations are being made to ascertain exactly how far convict labor interferes with the labor of free workmen who have committed offences against society.

ICELANDERS IN CANADA.

WE notice elsewhere the advent of quite a large number of Icelanders into Canada, some fifteen hundred, comprising three separate parties, having arrived here during the present season. About twenty-six hundred of these people have arrived in Canada previous to this year, within the past ten years. The present immigration is the result of efforts made by Mr. B. L. Baldwinson, of Winnipeg, who visited Iceland last year, having been sent there by the Minister of Agriculture. The principal Icelandic settlements in Canada are in Manitoba, at Thingville, Cyprus and Gimli; and there is an Icelandic newspaper published in Winnipeg. The Icelanders in the Cyprus settlement number about 400, and had 2,000 acres of land under cultivation last year, on which they were work-

ing \$14,000 worth of agricultural implements, and possessing an abundance of farm animals. The inhabitants of Gimli, on Lake Winnipeg, are mostly fishermen and lumbermen, at which occupation they are doing fairly well. Many of these people who, when they first came to Canada, crossed over into Dakota and Minnesota, have returned, many of whom are now living in Winnipeg.

The population of Iceland was 68,000 at the last census, but it is rapidly diminishing, and the country is in a deplorable condition. The land produces only hay and grass in small quantities, and as the winters are becoming more severe, and failure of crops constantly occurring, the people are disheartened, and are leaving at every opportunity. The chief dependence for food has been upon the cattle and sheep raised on the land, and the fish caught along the coast; but the snow, which falls in nearly every month of the year, has almost entirely killed off the sheep, and the wretchedness of the people is only ameliorated by the contributions which have been sent them from time to time. Herdsmen, shepherds and fishermen exclusively, the people in Iceland know nothing of growing grain and but little of potatoes or other roots. Professor Powell, of Oxford, says that the people of Iceland have never seen a road, a tree or a plow. They are, however, all more or less educated, and it is said that there is not a child on the island ten years old who cannot read.

The tide of Icelandic emigration, having set toward Canada, it is likely that nearly all of the inhabitants of that Arctic region will finally find homes in this more favored land.

THE MANUFACTURERS' LITTLE INTEREST.

THE following letter was written in reply to one previously printed in the *Toronto Mail*, written by Mr. Thomas Shaw, Secretary of the Ontario Farmers' Institute. It was sent to the *Mail* with a request to publish, but it was refused publication. The *Mail*, although claiming to be willing to give both sides of the Commercial Union question a fair hearing, freely admits letters written in favor of that question, but refuses to publish replies thereto. The consistency of the *Mail's* "fairness" is apparent.

To the Editor of the *Mail*.

SIR:—In the course of an explanation of his reasons for having allowed my previous letter to have appeared in your columns such a length of time without reply, Mr. Shaw says that he knows I will "be patient with a farmer antagonist, coming from a class proverbial for their slowness."

Mr. Shaw has formed a correct estimate of my complaisance, as I am quite agreeable to his taking all the time he requires when replying to any of my letters, but I might remark that I do not regard him as an antagonist in the literal acceptance of the word. We are each imbued with widely divergent views on the trade question; we are each discussing this question from opposing standpoints, not, I hope, from any feeling of personal antagonism, but from the higher motive of wishing to afford food for reflection to those who may be sufficiently interested in the question under discussion to peruse our respective letters, but who may have neither the time nor the application to search out data for themselves.

Mr. Shaw in his first paragraph refers to himself as a "farmer," and he is no doubt a most progressive one, but I believe that Mr. Shaw is also a newspaper man and editor of a class journal. Of course I readily acquit him of a deliberate intention to shield himself behind the plea that I should "be patient with a farmer antagonist," but I am addressing myself to Mr. Shaw the editor, not Mr. Shaw the farmer. That I do so correctly may be assumed from the fact that in each of his letters he freely uses the impersonal "we," and if this is not to be considered, in this case, an editorial attribute, I may so construe it as to believe that I am engaged in controversy with a syndicate of correspondents who are pooling their issues in an endeavor to make out a case.

The next paragraph commences as follows: "Mr. Nicholls takes exception to my line of defence. He seems anxious for me to quote figures, in answer to which I may say that it rests with me to choose my own methods—not with Mr. Nicholls to choose them for me." In reply I willingly admit that I suggested that the advocate of a new principle, political or otherwise, should try and advance some reliable and tangible propositions in support of his theory, and also suggested that Mr. Shaw might possibly render his deductions more credible by hearkening unto the advice so kindly tendered him. That he does not so elect, and thereby possibly make his letters a little more difficult to reply to, is a matter that if it does not concern his sympathizers is certainly of no moment to myself.

Having now discussed the preamble of his letter I will occupy myself with his criticisms of my statements, but first let me say that unlike Mr. Shaw I have, throughout this discussion, quoted Dominion statistics and argued the question of Commercial Union from a national standpoint. The mean average of advantage or disadvantage that such a policy would result in to the Dominion as a whole, must be considered, rather than the pointing out of isolated instances wherein a benefit might be claimed to accrue to a single Province.

Mr. Shaw says "The census returns of 1881 tell me there is virtually no separate computation for the employés of farmers. But we can get at it approximately another way. In 1881, the number of farmers in the Dominion is given in the census as 464,025. Now anyone who knows anything about farming must be aware that on an average every farmer employs one male and one female assistant. It matters not though those should be of his own family and in some instances that they have not attained their majority." Very plausible, Mr. Shaw, but the very acme of absurdity, for it must be remembered that in many cases where the farmers employ male help their employés live in separate cottages or log houses on a portion of the employers farm. When the census enumerators are preparing their returns such employés are classed as tenant farmers and help to make up the total of 464,025 farmers as quoted. The farmer's sons who are of mature age are also, I have reason to believe, classed as farmers and added to Mr. Shaw's grand total, and consequently I might consistently object to that gentleman's attempt to make the one total do double duty. I will not raise this objection, however, for in my previous letters I have already so many times conceded his unwarranted contentions for the pleasure of argument only that I may as well do so once more in order to demonstrate the folly of such a course of reasoning if carried to its logical conclusion. According to Mr. Shaw everybody employed on a farm but the actual owner should be separately classified as employés. The owner's sons and daughters, even if they have not obtained their majority, the employé who rents from his employer a habitation on a corner of the farm, etc., or in brief every person on a farm who gain their subsistence off it. Were this method pursued it would simply reduce the grand total of 464,000 farmers and in a corresponding ratio increase the number of employés of farmers, but the united totals would remain the same less the number of females actually employed. It would effect a distinction of classification with but very little difference in numbers. But, conceding Mr. Shaw's line of reasoning to be a fair one, again only for the sake of argument, let me apply the same to the manufacturing industries, for if every mouth that the farmer finds food for is to be enumerated, the same rule should apply to the manufacturer.

According to the census of 1881, the manufacturers employed 254,935 hands. Adopting Mr. Shaw's ingenious theory I am entitled to add to this total the members of each manufacturer's family above a certain age, his domestics and any male help he may employ around his residence. In addition, as out of the total of 254,935 hands there will be a large number of men who are the fathers of families dependent on them, and who in some instances may also employ domestics, I am fairly entitled, by Mr. Shaw's method, to augment this total

by the number of persons so dependent or domestics so employed. The money which purchases subsistence for all these is distributed by the manufacturers, and they are therefore as eligible for enumeration as every mouth that the farmer finds food for on his own property. Of course the proposition is not tenable, and I think it is just as well to stick to official figures instead of constructing ingenious theories. Mr. Shaw's peevish complaint that I am not a practical farmer is not a sufficient excuse for adopting a theoretical in preference to a practical defence. With commendable discretion Mr. Shaw fights exceedingly shy of my previous arguments showing that the value of the productions of a farm should not alone be regarded as the total earnings. He says, "And it is idle for Mr. Nicholls to talk of adding the annual increase in value of farm property to the interest account when there is but little or no increase to add." That my talk was not as "idle" as Mr. Shaw assumes may be proved from the fact that he signally fails to refute a single proposition as set forth in this connection. He does not attempt to show that there is little or no increase to add, but refers in a cursory manner to the returns of the Ontario Bureau of Industries. Whilst refraining from quoting such returns for the benefit of your readers, although even were they able in a measure to substantiate his assertion, they would simply be from a provincial and not from a national state of affairs. I agree with my disputant that "Facts are pearls—when true—and should be carefully strewn," but I do not begrudge him the fine collection of pearls he has been able to gather from a perusal of the many facts I have advanced for his edification.

In noticing my presentation of the fact that the value of our exports of eggs to the United States have been steadily decreasing, Mr. Shaw remarks: "It may be that the trade may not increase in the future as in the past, but it is certainly an excellent one though it were to remain stationary." Certainly it is an excellent one, and it would be strange indeed if we could export nothing with profit to a country from which we import many millions worth of products annually. The point, however, is that it has not remained stationary, but has been steadily decreasing since 1883, until last year the value of such exports was more than one-fourth, or nearly \$700,000 less than in 1883. Were this reduction altogether in value the force of Mr. Shaw's argument that the price of wheat has also fallen during the period quoted would be more apparent, but the reduction is in quantity as well as in price. In reference to the lower price of wheat we are not disadvantaged as against the United States, as the average of wheat prices will not be found to be in favor of that country as compared with Canada.

At this stage of his reply Mr. Shaw has evidently tired, and with admirable diplomacy says: "But why should 'we' follow Mr. Nicholls further in his blunders? So far as 'we' have gone 'we' have made it clear that his figures are incorrect, and therefore valueless. To follow them to the end would swell this paper beyond all reasonable limits, therefore 'we' forbear."

The admission is a candid one. To attempt to follow my arguments to the end with any chance of refuting them would doubtless swell Mr. Shaw's "paper" to unreasonable limits, and he may well regard the task as hopeless, but his frankness deserves recognition, and therefore I acknowledge that he has gained what may be considered by some as an advantage over me, not on the method but through the medium of the controversy. As the *Mail* is presumably an independent paper, it would be unfair to charge it with partisanship, therefore I conclude that it is simply unintentional prejudice in favor of Mr. Shaw's side of the question that moves it to publish his letters in such prominent position as compared with the location of mine, with the additional advantage from a newspaper standpoint of having his surmounted by a couple of inches of eulogistic and explanatory headlines. This advantage Mr. Shaw is welcome to, for I accept it as an implied compliment that my case has been so presented as to render any such artificial assistance unnecessary.

TORONTO, July 30th, 1887.

FREDERIC NICHOLLS.

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Editorial Notes.

MR. FREDERIC NICHOLLS is Secretary of
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 The Tanners' Association.
 His Office is at the Publication Office of
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 6 Wellington Street West, Toronto.

Any association of manufacturers who may desire to hold meetings for organization or other purposes, are invited to avail themselves of the meeting room adjoining the office of the CANADIAN MANUFACTURER.

The various commercial organizations of the city of Detroit, Mich., have invited Mr. Erastus Wiman and Hon. Benjamin Butterworth to address the merchants of that city on the question of Commercial Union.

The statistics of the foreign trade of the United States show that that country sells more sewing machines in Switzerland than it sells in Chili, and that Switzerland sells more sewing machines in Chili than it buys of the United States.

Over eight hundred Icelanders arrived at Quebec a few days ago, en route to their new homes in the North-West Territories. They came by steamer via Glasgow, Scotland. A considerable emigration is going on from Iceland, their destination being the farming regions of Canada.

The double harness for the patrol wagon team has arrived from Cambridge, Mass., and it fits them like the paper on a jam jar.—*Hamilton Spectator.*

Will our contemporary inform us if there is any harness manufactory in Canada capable of making a double harness suitable for a patrol wagon. If there is any such, why send to a foreign country for the one in question.

At a recent meeting of the United Labor Party in New York city, held for the election of delegates to the party convention, the Socialists beat the Henry George faction, there being great enthusiasm over the result. The sentiment of the convention was, "With his land theory alone Mr. George cannot accomplish his end. Taxing only lands would be an injustice to the farmer. We must abolish the private ownership of machinery and capital."

A DISCOVERY of anthracite coal is said to have been made near Campbellford, in eastern Ontario, samples of which have been tested by an expert, who reports them of the best quality of hard coal. The coal beds are quite near the large iron mines in that district, which fact adds to the importance of the discovery. It is said that the coal beds where the discovery was made are probably very extensive, and that they may yield enormous quantities of coal. Experienced miners from Pennsylvania will examine the locality.

At the Canal convention recently held at Sault Ste. Marie it was made clear that there will soon be a blockade of traffic unless increased lockage facilities are provided. As a matter of fact the utmost capacity of the new lock was almost reached

in June last. The growth of the traffic through the canal has been wonderful. In 1860 the freight passed through amounted to 400,000 tons; in 1880 it was 1,750,000 tons; and last month alone it was 1,000,000 tons. The total tonnage for this year, it is estimated, will not be less than 6,000,000 tons.

THE Mani' (Man.) cheese factory manufactured 9,245 pounds of cheese from May 2nd to June 10th, a portion of which was sold for 14 cents, and the balance for 11 cents a pound, the total amount realized on the production being \$1,087. The amounts realized by the patrons of the factory from the milk converted into cheese is considerably greater than if the milk had been used for butter making. We do not see that either Commercial Union or additional railroad facilities could possibly help the Manitou cheese market, when the best New York State cheese is worth only about 10½ cents a pound in New York city.

IN order to get the Gogebic and Menominee range Bessemer ores into wider use at the east, which has been prevented in part by the high rate of lake charters and other causes, it is reported that a syndicate is about to be formed, with \$2,500,000 capital, which will build eight iron steamships of 2,000 or 3,000 tons for the transportation of their ores. Contracts are now being negotiated with the several lines of railroad tapping the lakes at Erie, Buffalo and Cleveland, and extending down into Pennsylvania. In this way they expect to land their Bessemer ores in the heart of Pennsylvania in direct competition with the ores now used.

THE United States Commissioner of Patents has refused to register a trade-mark for distilled spirits in which the words "Knights of Labor" or "K. of L." appear. The Commissioner says there is no pretense that the manufacturers who seek to register such trade-marks are Knights of Labor or are engaged with them or under their auspices, yet the distinctive marks point to this labor organization or to the members as a class as the origin of the ownership of the articles to which it is applied. In other words, the proposed trade-marks are in the nature of a false representation and a deception as to the general public, possibly inducing them to purchase articles under the belief that they are manufactured by a society in which they have a friendly interest, and for that reason such applications are refused.

THE Chicago *Tribune* recently outlined a magnificent project, as yet largely on paper, by which Sault Ste. Marie is to rival Minneapolis as a wheat-flour manufacturing centre. It describes Lake Superior as the mill-pond, and mentions a proposed canal around the Sault Ste. Marie locks as the source of unlimited water power, "with 190,000 cubic feet of water tumbling over the dam every second." A syndicate has been organized with \$1,000,000 capital, which is under \$100,000 bonds to complete the canal within two years and a half. Here, it is alleged, "the wheat now ground at Minneapolis is to be ground in transit. The Grand Trunk and Canadian Pacific are there to offer transportation when navigation is closed." The impossibility of a lack of power at any time is dwelt upon as a

basis for the belief that a chief glory of the Flour City is to be taken from her. Still there appears to be much lacking in the vainglorious account of the project.

A MAN in New York travels along the streets of that city accompanied by a frame scales with a swing platform, and a stout barrel in a go-cart pushed by his laboring man. Whenever he sees a dump of coal on the sidewalk he walks to the basement bell and seeks the job of weighing the black diamonds before they are stowed away in the cellar. He balances his beam to the weight of the platform and barrel, and then his man fills the barrel; he weighs it himself, and so on until the whole pile has gone through the scales. He then gives a signed certificate and receives his fee, 40 cents a ton. If the first cartload weighed turns out O.K. the customer is generally satisfied that the whole consignment is correct. Many people are perfectly willing to pay the small fee demanded, just for satisfaction. If the weigher is noticed by the coal cart driver, it may be guessed that his subsequent deliveries will be all right. The scheme might be adopted in other places besides New York.

THE recent efforts to form a pool of the various Michigan salt manufacturers having failed because, as it usually happens, two or three concerns stood out for better terms than the rest were willing to grant, it is now predicted by some that the price of salt in the Saginaw valley will drop to 40 cents a barrel. From a table showing the average price for twenty-two years, it appears that the stuff has declined from \$1.85 in 1868 to 51 cents. The average for the eleven years 1866-76 was \$1.45, and for the eleven years 1877-87 only 77 cents, or barely half as high. The product of the industry in 1870 was 621,352 barrels, and in 1886, 4,097,943 barrels, while the quantity so far this year is upwards of 400,000 barrels in excess of the first seven months of 1886. The *Northwestern Lumberman*, presenting these facts, adds that "there ought not to be much grumbling on the part of the consumer when he can buy 280 pounds of fine salt and a 20 cent package thrown in for 51 cents."

THE Permanent Exhibition of Manufactures and Commercial Exchange, at 63 to 69 Front street west, Toronto, of which Messrs. Nicholls & Howland are proprietors, has been opened to the public, and is one of the important features of the city. The enterprise is unique, nothing like it, we believe, being in existence anywhere in either Canada or the United States. Its object is to afford a practical arrangement whereby unavoidable expenditures in the display and sale of certain lines of manufactures may be largely reduced, while at the same time, and at comparatively small cost, the goods of exhibitors may be viewed by thousands of business men, the building being open and free to the public during all business hours during the entire year. Power and shafting are provided for exhibitors who may desire to show machinery in operation; instructed attendants are in charge who will fully explain the merits of exhibits, and the incidental expenses, such as for salaries, rent, light, heat, care, telephone, etc., all of which are absolutely essential in the display and sale of goods, are systematized and reduced to a minimum. A large number of manufacturers, jobbers and agents have already secured space in the exposition buildings, and have their goods on view.

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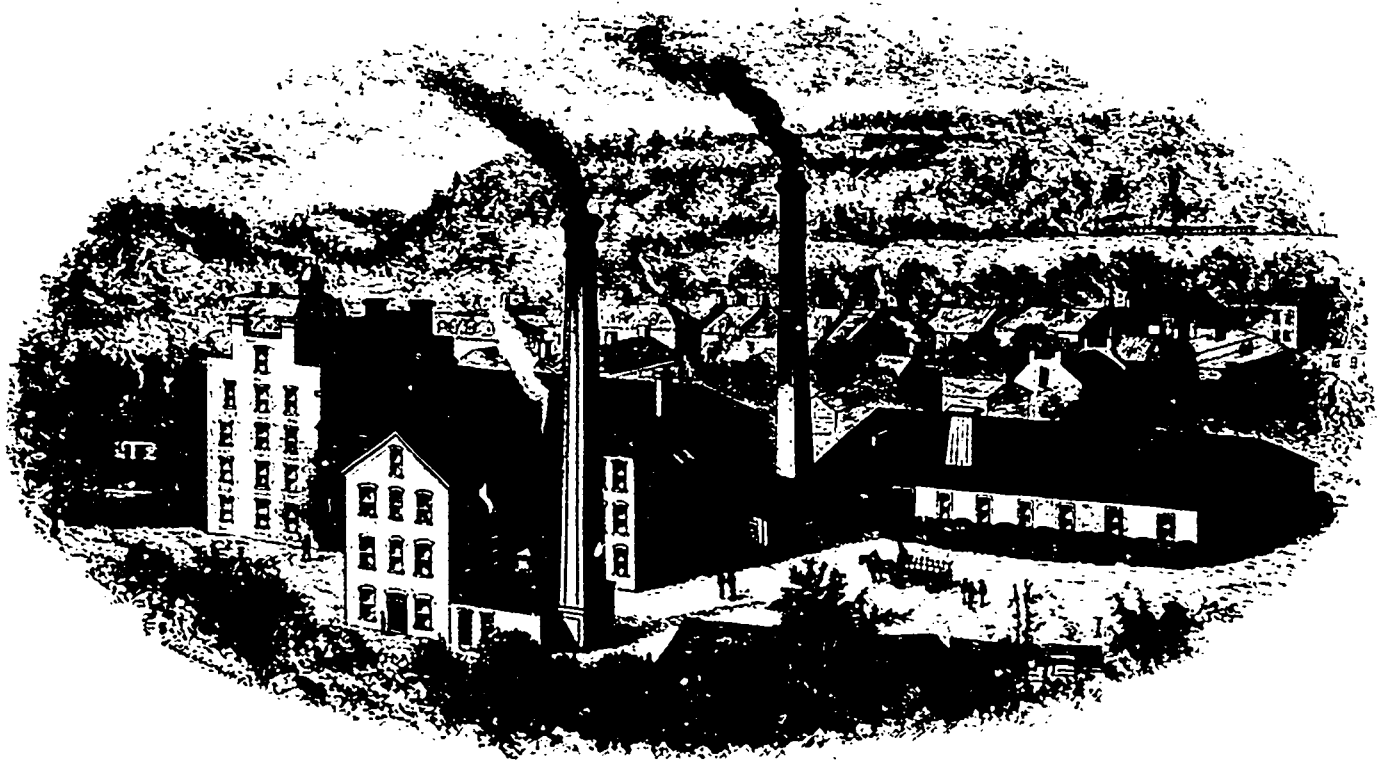
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THE EXPOSITION PROGRAMME.

Mr. H. J. HILL, manager and secretary, has sent us a handsome chromo-lithographed programme of the daily exercises and attractions of the Grand Dominion and Industrial Exhibition which will begin September 5 and close September 17. For the benefit of our readers we give a condensation of the programme:

Monday, Sep. 5.—Preparation Day—All exhibits must be on the grounds. The public not admitted.

Tuesday, Sep. 6.—Formal opening of the Exhibition at 2 o'clock by His Excellency, the Governor-General.

Wednesday, Sep. 7.—Athletic Day—Great programme of athletic sports. Foot and hurdle races, bicycle races, etc.

Thursday, Sep. 8.—Stock Breeders' Day—Competition for special sweepstake prizes, etc. At 8 p.m. the first grand display of fireworks will be given by Prof. Pain, of London, followed by the pyrotechnic spectacle "The Siege of Peking."

Friday, Sep. 9.—School Children's Day—Special attractions for old and young. Drill competition by school cadets; calisthenic and other exercises by Young Ladies' Club; jubilee anthem by children, etc.

Saturday, Sep. 10.—Societies' Day—Large gatherings of uniformed societies; procession through the city and drilling at the Exhibition grounds.

Monday, Sep. 12.—Citizens' Day—A grand programme. Exciting Roman team races by young ladies on thoroughbred horses at full speed—the first exhibition of this kind ever seen in this country. Grand double balloon ascensions with trapeze performances during ascension, by a gentleman and a lady. Brilliant illumination of grounds in the evening, and second grand display of fireworks by Prof. Pain, followed by "The Siege of Peking."

Tuesday, Sep. 13.—Germania Day—The German citizens of Ontario have announced that they will make a "Grand Demonstration" on this day. Remarkable and interesting thoroughbred horse racing to skeleton waggons by young ladies. Evening electric illumination of grounds and buildings. Prof. Pain's fireworks and "The Siege of Peking."

Wednesday, Sep. 14.—Farmers' Grand Gala Day, under the patronage of Hon. John Carling, Minister of Agriculture, and the Dominion and Provincial Granges, Patrons of Husbandry and Farmers' Institutes of the Province. Exciting horse races. Evening electric illumination. Prof. Pain's fireworks and "The Siege of Peking."

Thursday, Sep. 15.—American Visitors' Day—All the special attractions. Double balloon ascensions and race by Prof. Hunt and Miss Hunt, with trapeze performance during ascensions. Young ladies' three mile bareback race on thoroughbred horses, changing horses at end of each mile. Evening electric illumination, Prof. Pain's grand fireworks display, and "The Siege of Peking," and other special features.

Friday, Sep. 16.—Review Day—The last opportunity to visit Canada's Great Exhibition of 1887. All the attractions, the grounds remaining open till 10 p.m.

Saturday, Sep. 17.—Exhibitors' Day, during which none but exhibitors and their assistants will be admitted. The Treasurer will commence paying prizes at 9 a.m. All the express companies will have offices on the grounds. There will also be a branch post office, and telegraph and telephone offices open to the public. Special features in the city during the exhibition time will include illuminations of the principal streets, and Aquatic Carnival on the Bay, besides performances at the theatres, Haunlan's Point, etc.

A SHIPMENT of 436,000 pounds of cotton, filling nineteen cars, recently passed over the Canadian Pacific railway, consigned to parties in Shanghai, China.

THE International Oil and Refining Company of Michigan have filed articles of incorporation at Detroit, with the capital stock fixed at \$5,000,000, the purpose being the manufacture and sale of petroleum products.

DR. OTTO, of Germany, inventor and patentee of the Otto gas motor engine, has commenced suits in the United States Court for injunction and heavy damages against parties making and using an engine called the Korting gas engine.

THE fiber from pine leaves, as a substitute for jute, flax, etc., is now used in the manufacture of carpets. The prepared material bears a close resemblance to yarn, and is capable of being dyed or bleached and woven in patterns. It bids fair to become a considerable industry.

A CANADIAN Pacific official reports that his company has contracted to carry 900 carloads of Australian wool from Victoria, B.C.,

to Boston and other ports on the Atlantic seaboard. This wool was, until this season, brought in sailing vessels to American ports on the Pacific, and shipped over the Northern Pacific to Boston.

THE Treasury Department at Washington has decided that sawed elm boards 16½ feet in length and 1½ inches in thickness, the edges of which follow the natural shape of the tree, used in the manufacture of hoops, are dutiable at the rate of \$2 per thousand feet board measure under the tariff provision for sawn elm lumber.

THE Chicago Times has been watching the effect of the eight-hour movement in that city, and it finds that nine-tenths of the workmen spend the extra two hours away from home, generally in saloons, and that the consumption of beer has increased one-fifth. The liquor trade, anticipating such a result, strongly backed the eight hour agitation.

MESSRS. NICHOLLS & HOWLAND, of the Permanent Exhibition of Manufactures of Toronto, have received advice from their Australian agent that a shipment of exhibits from that country would be forwarded by next steamer. They are also negotiating for an exhibit of Mexican products and manufactures, and for a trophy of natural products from the North-West.

THE richest lead discovery of modern times has been made in Franklin county, Missouri, according to a statement in the *St. Louis Republican*. A landslide revealed a solid vein of lead eight feet high, and at least six feet broad, with various branches terminating in pockets yielding massive nuggets. Three men took out 60,000 pounds in a few days, and the product sold readily at the mines for \$22 per 1,000 pounds.

A PARTY of Japanese merchants from Yokohama have recently arrived in this country. They say the opening of the Canadian Pacific Railway brings out a large trade from Japan, particularly in silks. They have made every arrangement for establishing agencies here, and on their return will get up a petition to their government asking that a Japanese consulate-general with vice-consuls be established at suitable trade centres in Canada.

THE fifty-cents-a-ton duty has been taken off hard coal. Our free trade friends told us that we could buy our hard coal that much cheaper this year, but we did not believe them. Anthracite is no cheaper than last year. The national treasury will lose about half a million dollars; the Canadian consumer is not benefited one cent. The American coal master pocket the money, and that is the way free trade works in practice.—*Mitchell Advocate*.

MR. WALTER GILLESPIE, of Montreal, has invented and patented a method of making hollow axles which consists in first casting upon a tubular malleable ingot, then substituting a mandrel for the core and subjecting the ingot to the action of dies which draw it out so that its greatest exterior diameter is at the ends, then spreading it by hammering between two flat dies to enlarge the hollow centre, by which the mandrel is released, and finally reducing the ends over a smaller mandrel.

THE directors of the most important engineering works in Italy (Savona, Genoa, Milan, Venice and Naples) have forwarded a memorial to the government in which, after recapitulating the conditions considered necessary for the development of their industry, they pray for an advance of the import duties on locomotives, tenders, waggons, etc., as imperatively necessary. The government and the customs committee have decided to recommend the proposed duties to the attention of the Chamber of Deputies.

RESTLESS iron is being manufactured in New York by a new process which, it is claimed, converts the surface of the metal into magnetic oxide of iron. This is done by subjecting it successively to the action of highly heated air and carbonic oxide gas from coal fires. The hot air converts the metallic surface into red oxide of iron, which is then reduced to black or magnetic oxide by the gas. This renders it rust proof when exposed to the air or to fresh or salt water. The process can be applied with most satisfactory results to water pipes and architectural iron work.

MR. J. B. TYRRELL, of the Canadian Geological Survey, has taken a party to the Lake Dauphin district to determine the character of the mineral deposits there. The quantity of coal and lignite found in the Northwest is practically unlimited. At Edmonton there is a good seam cropping across the country as far south as Red Deer River. Above Edmonton on the North Saskatchewan there is a seam of lignite twenty-five feet in thickness, which has been traced south about 200 miles. There is abundance of coal at Rocky Mountain mine, on the Saskatchewan, also on the Red Deer and Bow Rivers.

THE Merchandise Marks Bill, as amended by the Select Committee of the British House of Commons, provides that in every case in which an article is found to be stamped with a fraudulent trade mark, with a mark indicating a false place of manufacture or with a false mark of measure or weight, the offender shall be liable on summary conviction to a maximum penalty of four months' imprisonment or a fine of twenty pounds, and, on indictment, two years' imprisonment with or without hard labor. Marks as to quality are not dealt with by this provision. Power is also given to the customs authorities to confiscate all articles arriving at English ports on which such marks are detected.

As a general rule, any invention that is valuable to the patentee in this country is worth equally as much or more in the United States, England and some other foreign countries. Six patents—embracing Canadian, English, German, French, Belgian, Cuban and Spanish—will secure to the inventor the exclusive monopoly to his discovery among about 170,000,000 of the most intelligent people in the world. The facilities of business and steam communication are such, that patents can be obtained abroad almost as easily as at home. A circular containing further information and synopsis of the patent laws of various countries is furnished free by Messrs. Munn & Co., solicitors, 361 Broadway, New York.

On Monday, Aug. 15, Mr. Rainer, of Guelph, Ont., head of the Rainer Piano Manufacturing Company, died at that place at a patriarchal age. Mr. Rainer was a native of Germany, and early in his life selected Canada as the home of his adoption. He always claimed to have been the first piano manufacturer in the Dominion, and as early as 1858 took first prize at the Provincial Exhibition held in Toronto. A similar award was made in his favor at Toronto at several successive exhibitions down to 1882, when he carried off the silver medal, bronze medal and diploma. Deceased was interred at Guelph on Tuesday. For more than a year Mr. Rainer has been suffering from inflammation of the stomach.

A CONTRACT has been closed with the Canadian Pacific Railroad Company to deliver at Vancouver for the San Francisco market 1,800 tons of Banff anthracite coal. This is regarded as the inaugural shipment to that city, and others will follow in rapid succession. It is believed that a regular fleet of colliers will be established between Vancouver or Port Moody and San Francisco and other coast cities and towns. A thorough test has been made of this coal at the request of the Dominion Government, and it has been found to equal many of the best and most popular brands of the Pennsylvania article. Special transportation rates have been agreed upon by both the railway and the owners of the mines at Banff.

THE manufacture of cotton in Japan is of the most primitive description. It is almost entirely a domestic industry, gin, spindle, and loom being found in the house of the farmer on whose land the plant is grown, the female members of the house doing the spinning and weaving. The spinning-wheel differs in no respect from that used in Japan 300 years ago, or from that in use in England prior to the invention of the jenny, except that the wood is bamboo. The cost of one of the wheels is about 9d.; it will last five or six years, and with it a woman of ordinary skill can earn 2s. per day. Small factories are beginning to spring up, but still the great bulk of the native grown cotton is used in the manner described.

It is reported that some sixty bricklayers have been "blacklisted" by the "Union" in Chicago, their only offense being that they had the courage to work while their former companions were foolishly out on a strike. Although much has been said in praise of the settlement of the recent strike by arbitration, yet this seems to have been the weak point about it, that it is possible for the men who befriended the master builders to be kept out of employment as punishment for their opposition to the will of the Union. The law should take hold of the matter and determine whether an organized body of men can conspire together to prevent other men from obtaining employment.—*American Artisan, Chicago.*

A TWENTY-THREE foot vein of what promises to be a valuable kind of fuel has been discovered at Elsinore, Cal., and it is thought that the whole valley is underlaid with it. It is described by the *News* of that place as quite soft, and easily worked when in the mine, but it gets hard when exposed to the air. It resembles slate somewhat in appearance, although of a somewhat lighter color. It is clean, leaves no marks or stains on the hand, does not slack or crumble in the air, can be split like mica into very thin fibres, burns freely, and needs only to be ignited with a match, smells like burning rubber when being consumed, and leaves behind a jet black ash resembling lampblack in all its properties. It is said to be worth \$15 per ton for making gas.

It is feared that, under a recent decision of the Secretary of the Treasury, the Canadian Pacific Railway will secure the greater portion of the freight from the Pacific slope to the Eastern seaboard, to the great injury of the American Trans-continental roads. This decision is that the Pacific Coast Steamship Company, which runs a line of vessels from San Francisco to the terminus of the Pacific Railway, may carry freights from American ports on the Pacific Coast in bond through Canadian territory, via rail routes, to the eastern portion of the United States. The Canadian Pacific Railway is not hampered by the long and short haul clause of the Interstate Commerce law, and it will doubtless secure many thousand tons of freight through this order.—*Philadelphia (Pa.) Bulletin.*

THE last year the Reform Government was in power in Canada the amount to the credit of depositors in the post office savings bank was \$3,945,669. On the 30th June last it was \$19,497,759. The increase in other savings institutions has been in proportion. For instance, the amount on deposit on the 31st of December, 1878, in the City and District Savings Bank of Montreal was \$3,438,078. On the 31st December, 1886, it was \$6,993,526. Similar reports are made by other institutions. And yet the "rule or ruin" orators and organs tell us that the people of Canada were never worse off, and that the National Policy and bad Government are driving the people to poverty and the unfortunate country to ruin.—*Ottawa Citizen.*

It is understood that a circular has been issued to the Knights of Labor from the headquarters of the general officers proposing a plan of insurance to which all members of the order may belong, irrespective of age or sex. The initiation fee is to be \$2 and the annual dues half that. The assessments, from which death benefits of \$1,000 each are proposed to be paid, are to range from 70 cents for persons of 18 years to \$5 60 for those of 70 years. These assessments are to be levied only when the necessary sum of \$1,000 is not in the treasury. Many secret societies have insurance branches, while others are distinctively insurance societies. They are mainly prosperous, and in most instances are not only managed economically, but pay death claims promptly.

At a meeting of the tin-plate manufacturers, recently held at Swansea, Wales, action was taken relative to a statement circulated in Germany prejudicial to the English tin-plate makers. The statement was to the effect that while German tin-plates contained no lead in the tinning, English made plates do contain lead. The Swansea meeting therefore adopted a resolution in the following language: "That the secretary be requested to state in reply that this assertion is quite erroneous; that terne plates, which are chiefly used for roofing houses, are coated with a mixture of lead and tin, as is well known, and are frequently called 'lead' plates; but that in the manufacture of tin plates no admixture of lead is ever made in this country; and, on the contrary, it is held by all makers to be to their own interest to use only the purest tin they can obtain."

FOR some time we have been aware of the manufacture in Pawtucket, Rhode Island, of "Canton matting," but were not at liberty to say anything about it. Now it is out in the local papers. Mr. Isaac Lindsley, who invented the looms now running at Pawtucket on haircloth, also invented a loom for weaving this matting. Mr. Lindsley has been a long time in perfecting these looms, and now has five in operation in the Hicks Mills, Pawtucket. It has never been supposed that Yankee ingenuity would outdo the Chinese and Japanese in making this matting; but such is the case to-day. The article has always been made by hand, in the East, and about one and one-half yards per day was considered a good day's work. The matting at Pawtucket is made of grass, imported from China, which is grown in water. It is a slender, tall grass. But some of it is made from flag, secured in the United States. The article made at Pawtucket is perfect on both sides; that made in the East is perfect only on one side. The matting woven on Mr. Lindsley's looms is about a yard wide, and the looms now in operation can weave 150 yards per day. The only danger is that the Chinese government may put an export duty on the grass, when they find that the matting is being made in this country.—*Wade's Fibre and Fabric.*

MANY valuable improvements have been lately made in England in the manufacture of asbestos paint. In the tests made of its efficiency a piece of light pine wood, about six inches long by four inches square, painted with five coats, was placed for upward of half an hour in an ordinary grate fire, but, although the wood within was reduced to charcoal, there was no blaze whatever emitted during the charring. Again, a small model theatre, built of wood, with set scenes and accessories, was sprinkled with turpentine and set on fire; every portion was ignited, and the whole was consumed.

similar model, with the set scenes and the wood framing all painted with asbestos, was drenched with turpentine and set on fire, too, but the thin scenes were only partially charred at the lower ends with the turpentine flames, while the timbering was not even ignited.

THERE are those who talk much of the necessity to us of foreign markets, and are ready to surrender their own to secure them. Do not listen to such preaching. The nation which cannot command its own markets cannot command foreign markets; for those conditions of production which will enable a foreign producer to undersell us here will enable him to undersell us in distant markets, where cost of transportation must be added to cost of production here. Every mile of distance to market is a dead charge upon production, and every mile cut off is a direct addition to profit. Seek first and all the time the nearest market, and make it, and all possible augmentation of it, your own, and then, if ever, will be added the facilities and opportunities of trade and commerce the world over which are sure to come to that people whose highest attainment in production is the result of the greatest variety and development of their own industries. This is the sure and only way to the markets of the world consistent with health and prosperity at home.—Hon. Henry L. Drives, of Massachusetts.

COMMON sense and sound logic are marked features of the recent decision of the Supreme Court of Vermont on the subject of the boycott. It reads: "The exposure of a legitimate business to the control of an association that can order away its employees, and frighten away others that it may seek to employ, and thus be compelled to cease the further prosecution of its work, is a condition of things utterly at war with every principle of justice and with every safeguard of protection that citizens under our system of government are entitled to enjoy. The direct tendency of such intimidation is to establish over labor, and over all industries, a control that is unknown to the law, and that is exerted by a secret association of conspirators that is actuated solely by personal considerations, and whose plans, carried into execution, usually result in violence and the destruction of property. That evils exist in the relations of capital and labor, and that workmen have grievances that oftentimes call for relief, are facts that observing men cannot deny. With such questions we, as a court, have no function to discharge further than to say that the remedy cannot be found in the boycott."

On the North Saskatchewan river, in the Northwest Territory of Canada, about seventy miles above the town of Edmonton, Alberta, there is an interesting example of naturally reduced iron. Along the river bank a lignite formation crops out for several miles, overlaid by clay shales and soft argillaceous sandstones containing nodules of clay ironstone. These nodules are similar to others found at Edmonton, and proved by analysis to be carbonates of iron, containing 34.98 per cent. of metallic iron. The Saskatchewan seam of lignite has at some time or other been burnt, leaving a bed of ashes, clinkers, and burnt clay, in places twenty feet thick, and now covered with a dense growth of grass and underwood. From this mass of burnt clay pieces of metallic iron can be picked out, weighing in some cases fifteen or twenty pounds. They have evidently been reduced from the nodules above mentioned by the heat of the burning lignite. Most of the pieces of iron are much rusted, but when scratched with a file they show a bright surface. The observation is interesting, and to some may help to explain how primitive man originally discovered the reduction of iron ore.—*Engineering.*

NEW HAVEN, Conn., is in a quandary. The Consolidated Railroad Company, which comprises all the through lines between Boston and New York, has its shops located in that city, employing 8,000 men, and paying over \$200,000 a year taxes. For a long time it has complained of its local taxation, and pointed out the benefits it gave the city and asked for a reduction. Instead of this the town council last week met and for political purposes, intended to capture the labor vote, authorized the construction of a number of new edifices, among which is to be a new palatial almshouse at a cost of \$500,000. To do this the tax had to be increased. There was a general protest from all sides, including the railroad companies, but to no avail. President Clark, of the Consolidated, has notified the city that the directors had ordered the removal of all the shops from the city. The loss in population and taxes will be tremendous. And all public expenses will have to be greatly curtailed. The railroad company will be petitioned to stay, but President Clark says that this comes too late. The idea has proved so attractive to the directors and will be so beneficial to the employes that it will be at once carried out. It is even feared that it will cost the city the present grade of postmaster. They killed their goose.

A ROILER furnace for refuse fuel has been invented by M. Albin, a French engineer, by means of which sawdust, tanyard refuse, etc., are economically utilized. The principle of this system consists in the employment of a tubular cylindrical boiler of considerable diameter in proportion to its length, a spacious steam dome and an inclined fire grate supplied with hot air. The fire grate is stepped with a double tier of horizontal bars placed crosswise of the furnace at a slope of 45°, thus permitting a large volume of air to traverse over and through the combustible. The cold air enters in the first place through flues placed alongside the smoke flues on their way to the chimney, and it is finally led to the front of the double row of bars, which are, of course, closed in from access of fresh air. The whole of the boiler, with the exception of the steam dome, which projects, is enclosed in the setting and surrounded with flues. The clinking of the fire bars is managed by a mechanical attachment which rocks them and slices off the clinker. The charge of raw fuel is in the first place deposited upon a flap door, which can be laid horizontally to receive it, when loaded it is turned over so as to project the charge into the furnace, at the same time closing the opening, every care being taken to properly ignite the gas before admitting it in direct contact with the boiler plates, and afterward to make the contact as intimate as possible.

THE existence has just been discovered of a detestable microbe which feeds upon iron with as much gluttony as the phylloxera upon the vine. Some time ago the greatest consternation existed among the engineers employed on the railway at Hagen by the accidents occurring always at the same place, proving that some terrible defect must exist either in the material or the construction of the rails. The German Government directed an inquiry to be made and a commission of surveillance to be formed for the purpose of maintaining constant watch at the spot where the accidents—one of them attended with loss of life—had occurred. It was not, however, until after six months had elapsed that the surface of the rails appeared to be corroded, as if by acid, to the extent of 100 yards. The rail was taken up and broken, and it was perceived that it was literally hollowed out by a thin gray worm, to which the qualification of "rail-eater" was assigned, and by which name it is to be classed in natural history. The worm is said to be two centimetres in length and of the size of the prong of a silver fork in circumference. It is of a light gray color, and on the head carries two little glands filled with a corrosive secretion, which is ejected every ten minutes upon the iron. This liquid renders the iron soft and spongy, and of the color of rust, and it is then greedily devoured by the insect. "There is no exaggeration," says the official report of the Commission, "in the assertion that this creature, for its size, is one of the most voracious kind, for it has devoured thirty-six kilogrammes of rail in a fortnight."—*Cologne Gazette.*

A SUPPLEMENT to the annual report of the Minister of Public Works for 1885-86 has just been published, giving a statement of expenditure on public works of the Dominion, from Confederation to 30th June, 1886, and also the expenditure prior to Confederation. The supplement is compiled by Mr. O. Dionne, accountant of the department, and consists of 110 pages, giving details of expenditure by years, and by provinces, showing the total amount expended on railways, canals, public buildings, etc., and giving amounts charged respectively to capital account and consolidated fund, as well as dividing the cost of construction and improvement from maintenance and repairs. There are thirty-eight tables altogether, and they will doubtless prove very useful for reference. The total amount expended since Confederation on account of construction and improvement was \$154,225,883.80, and on maintenance and repairs \$47,143,392.81, making a total of \$201,369,276.61. Of this amount the sum of \$128,910,386.45 was charged to capital account, and the balance to consolidated fund. The cost of the Parliament and Departmental buildings, Ottawa, according to Mr. Dionne's statement, has been \$4,485,109.92, of which \$4,361,479.62 has been charged to capital account and \$123,630.30 to consolidated fund. Taken in connection with the public debt these statements are very satisfactory. By the public accounts for last year it appears that the net public debt on 30th June, 1886, was \$223,159,107.09, and if we deduct from this the \$75,728,641.37, which appears as the net debt at Confederation, the increase of the debt since that date is \$147,430,465.72, of which about twenty-five millions is represented by the readjustment of subsidies to the provinces and ten millions by lands taken from the Canadian Pacific Railway when finally adjusting their accounts. The actual increase of debt, therefore, has only been about \$110,000,000, while the expenditure on public works—not including Dominion lands—has been over \$200,000,000; or, in other words, for every dollar the debt has been increased nearly two dollars have been spent in useful public works, which assist largely in developing the country.

Manufacturing.

THE CANADIAN MANUFACTURER.

Send \$2.00 and receive it twice a month, postage paid, for one year.

A LARGE agricultural hall is to be built in Goderich.

THE woolen mill at Orangeville, Ont., will shortly be rebuilt.

THE new piano factory at Ingersoll is rapidly approaching completion.

MESSRS. A. L. WRIGHT & Co., are building a steam saw mill at Clovenale river, near Salisbury, N.B.

THE annual meeting of the stockholders of the St. Croix cotton mill has been adjourned until Sept. 7.

MR. HENRY GREEN, Lyndhurst, Ont., is erecting a large roller mill with a capacity of 80 barrels a day.

MESSRS. LEAMY & KYLE are about erecting an extensive sash, blind and door factory at Vancouver, B.C.

THE E. B. Eddy Manufacturing Co., at Hull, Que., are putting a new sheet iron roof on their match factory.

MR. WM. SMITH, of Beaverton, Ont., has added a new planer and matcher to the woodworking department of his business.

MR. JOHN GOODMAN, of Minden, Ont., is putting new machinery in his mill and expects to have it again in operation this season.

MESSRS. D. C. McCaig & Co., Portage la Prairie, Man., have begun the manufacture of their recently patented Eclipse fan mill.

THE Hamilton Bridge and Tool Works, Hamilton, Ont., have orders enough already booked to keep them busy until late into next year.

IT is said that the Rathbun Company, of Deseronto, Ont., have decided not to build a flour mill and wood-working shops at Lindsay as has been reported.

MR. ROBERT BICKLE has commenced the manufacture of cheese boxes in Peterborough, Ont., his works having a capacity to produce 2,000 boxes per week.

MESSRS. INGLIS & HUNTER, Toronto, have recently supplied a new 100-horse power boiler to the works of the Toronto Paper Company, at Cornwall, Ont.

THE parties who are now erecting the mammoth flouring mill at Keewatin, Man., will also build a barrel factory with capacity to turn out 200,000 flour barrels a year.

THE new saw mills of Messrs Grier & Co., at Ottawa, are in full blast. The new and improved machinery, which has been recently placed in these mills, is working well.

MESSRS. W. CRAIG, C. Bell and W. H. Squires, of Virden, Man., have formed a co-partnership and will operate the flour mill at that place, Mr. Koestner retiring from the concern.

THE extensive match factory of the E. B. Eddy Mfg. Company, at Hull, Que., near Ottawa, has been closed temporarily, while certain alterations and improvements are being made.

MESSRS. STEVENS & BURNS, of London, Ont., have employed a full force of workmen and commenced operations in the Darvil foundry, in that town, recently purchased by them.

THE Hutton Woolen Mfg. Company, of Glentay, Ont., have purchased the woolen mills at Washago, Ont., which, after having been put in good order, will be operated by them.

MR. CHARLES STARK, Toronto, manufacturer of gold and silver watch cases, etc., reports being overrun with orders and is behind in filling them owing to a scarcity of skilled workmen.

MESSRS. J. W. PENDRAY & Co., soap manufacturers, Victoria, B.C., have received a large order for their goods from a Montreal firm, with instructions to ship via the Northern Pacific Railway.

THE Wm. Hamilton Mfg. Company, of Peterborough, Ont., are building band saw machinery for the new lumber mills of the Victoria Lumber Company, at Victoria Harbor on Georgian Bay.

MESSRS. CLAYTON SLATER and Wynn Ellis have bought out the interests of Messrs. Foster and Brock in the Canada Starch Works at Brantford. Mr. Ellis was the late secretary of the company.

MESSRS. WATSON BROS., of Portage la Prairie, Man., have been awarded the contract for supplying the machinery to be placed in the elevators of the Farmers' Elevator Company at that place.

THE Gutta Percha and Rubber Mfg. Co., of Toronto, whose works are at Parkdale, near this city, are having considerable new machinery made for them by Messrs. Inglis & Hunter, of Toronto.

THE Royal City Planing Mills Co., of Vancouver, B.C., are sending samples of their windows, sashes, doors, blinds and lumber to Yokohama, Japan, in the hope of establishing a trade with that country.

MESSRS. JAMES G. BAILEY and Wm. McIntosh have succeeded to the ownership and business of the Steel Harrow Company, of New Glasgow, N.S., Mr. Wm. P. McNeill withdrawing from the concern.

GREAT quantities of telegraph poles, hoops and staves, are being shipped from the vicinity of St. Thomas to the United States the present season, the value of the exports from that city exceeding \$62,000.

THE picker, drying, scouring and dyehouse departments of the extensive woolen and cotton mills of Messrs. Harvey & McQuesten, at Hespeler, Ont., were destroyed by fire July 30, entailing a loss of about \$15,000.

THE Terra Cotta Lumber Company, of Deseronto, Ont., have begun the manufacture of terra cotta lumber, and are producing a very superior article. They have already booked quite a number of orders for their products.

THE Selkirk Mining and Smelting Company, of Illecillewaet, B.C., recently made a shipment of fifteen and a half tons of silver-bearing ore to smelting works at Denver, Colorado, which assayed 2,120 ounces of silver to the ton.

ON account of the scant supply of water Harris & Co.'s woolen mills and the flour mills at Rockwood, Everton and Eden Mills are able to run only a part of the time. W. Farrish is using steam entirely in his mills.—*Guelph Herald*.

MR. PETER BERTRAM has bought out Mr. R. T. Wilson's axe factory at Dundas, Ont., and will increase the capacity of the works. These works have been in existence for about fifty years, and their products are widely and favorably known.

AMONG the new machinery recently placed in the mills of the Thorold Knitting Company, at Thorold, Ont., are a number of the Dodge "Independence" split wood pulleys, manufactured by the Dodge Wood Split Pulley Company, of Toronto.

THE Canadian Fish, Oil and Guano Company have applied to the Province of Quebec authorities for incorporation. The company propose to acquire fishing grounds and carry on the business of fishing and the manufacture of fish oil, fish guano, etc.

THE effort to obtain a bonus of \$6,000 from the town of St. Thomas, Ont., as an inducement to get Messrs. Essex & Co., brass founders, to remove their works to that town from London, Ont., has been again defeated by a vote of the tax payers.

THE Welland Vale Mfg. Co., St. Catharines, Ont., inform us that they are fairly busy in their works at Lock No. 2 on the old Welland Canal. They manufacture axes, scythes, forks, hoes, rakes and other agricultural and farming implements, edge tools, etc.

THE Windsor Cotton Company, of Windsor, N.S., held their fifth annual meeting at Windsor a few days ago. It was shown by the directors' financial statement that the mills of the concern had earned about \$20,000 during the past year. Mr. Wm. Curry was elected president.

"THE PREMIER," the new steamboat built in San Francisco for the Canadian Pacific Navigation Company, has been launched, and will soon be ready for service. She will probably be sailed under the flag of the United States, and will ply on the route between Vancouver and Puget Sound.

MESSRS. A. & P. WHITE, of Pembroke, Que., having thoroughly overhauled and put in order the saw mill recently purchased by them from Mr. W. B. McAllister, have put the same in operation. The improvements to the mill include an extension of the main building and considerable new machinery.

MR. S. H. C. MINER, of Granby, Que., one of the largest stockholders of the Granby Rubber Company, says that work on the company's new factory is progressing rapidly. It is to be equipped with the latest and best machinery and fitted for the manufacture of all kinds of rubber goods, and is to employ about 300 hands.

MR. JOSEPH SEAGRAM, Waterloo, Ont., proprietor of an extensive brewery in that town, is building a dam above his premises for the purpose of ensuring a reliable and sufficient supply of water for his establishment and for protection against fire. There are said to be a large number of copiously flowing springs on the land enclosed by the dam.

HON. J. G. ROSS, of Quebec, and Mr. E. B. Eddy are said to have recently purchased the large lumber mill of Messrs. McLaughlin Bros., at Arnprior, together with extensive timber limits on the Ottawa river, the consideration being \$2,500,000. A short line railway will be built from Arnprior to Ottawa to facilitate the business of the new concern.

THE St. Croix Cotton Mills, Milltown, N.B., Lewis Dexter managing director, are running 750 looms at present, their capacity being 950. Between the 1st of September and the 1st of June the mill is run at full capacity. They manufacture fancy shirtings, gingham, ticks, denims, etc. When running to their full capacity they turn out 55,000 pounds weekly. They employ 700 hands.

MR. A. E. CALDWELL, engraver and draughtsman on wood, 173 Richmond street west, Toronto, informs us that he has been and is now exceedingly busy getting out work intended to illustrate catalogues for parties who will have exhibits at the forthcoming Dominion Exposition to be held in this city next month. Mr. Caldwell has large experience in his line of business, and is well known to the trade.

MR. W. F. THORP, vice-president of the Banff Coal Company, is reported in the Victoria (B.C.) *Standard*, as saying that the company are working their mines now as extensively as they are at present able to do, and that they are not able to supply the demand. They expect soon to be sending coal to British Columbia at the rate of 500 tons per day. They have 150 men employed, and would put on as many more if they could be had.

MR. JAMES HUNTER, of St. John, N.B., has invented a telephone receiver support which is recognized as a great convenience in using the telephone. It obviates the necessity of holding the receiver to the ear while waiting for or listening to a conversation, thus securing liberty for the hands. For writing messages, or for holding memoranda or copying orders sent through the telephone, and it is not liable to get out of order.

MESSRS. P. W. ELLIS & Co., manufacturing jewelers, 31 Wellington street east, Toronto, are meeting with a large demand for the jubilee medal made by them and specially intended for presentation to prize winners of athletic associations, etc. A new and pleasing feature in presentation prizes is a trowel manufactured by them in which the handles are made from a great variety of real stones, agates, etc., of beautiful appearance and a marvel of the lapidaries' art.

MESSRS. R. H. SMITH & Co., proprietors of the St. Catharines Saw Works, St. Catharines, Ont., inform us that they have in press a new catalogue in which is embraced all the specialties manufactured by them, and which they expect to have ready to present to the trade at an early date. They are preparing a fine exhibit of specimens of their products, which are to be displayed in the Permanent Exhibition of Manufactures in Toronto, enclosed in a suitable glass case.

THE Whitman & Barnes Mfg. Co., St. Catharines, Ont., whose works are located on the old Welland Canal between St. Catharines and Merriton, are manufacturing mowing and reaping machines, machine knives, sections, guard plates, and machine cutting apparatus complete, spring keys, etc. They have on exhibition in their office machine knives which have cut 150 tons of hay the past season and which are still in excellent condition, proving the superior quality of the goods.

THE Thorold Knitting Company, of Thorold, Ont., felicitate themselves upon having secured the services of Mr. W. A. Canfield, late manager of the mills of the Kingston Hosiery Company, of Kingston, Ont. Mr. Canfield superintended the placing and arranging of the machinery in the Kingston mills some six years ago, and was manager of that concern from that time until he quit there to assume charge of the Thorold mills, in which he is a large stockholder.

MESSRS. W. H. STOREY & SON, Acton, Ont., are offering the trade the patent turtle driving cuffs with wristlets combined, of which they are the sole manufacturers in Canada. This is a new invention, the object attained being to prevent cold air from circulating up the sleeve when driving. All who have suffered from cold arms and wrists when driving will appreciate these cuffs when the

snow flies again. Messrs. Storey are also manufacturers of an efficient railroad brakeman's cuff which protects the wrist from cold air, snow and cinders.

MESSRS. WM. KENNEDY & SONS, of Owen Sound, are busily engaged in the manufacture of a large new American water wheel for Mr. John Crilly's paper mill near Montreal. They are negotiating with the Penman Manufacturing Co., of Paris, with a view to putting in a new American wheel in that Co.'s No. 2 mill, and making other improvements therein. The specifications for the large Keewatin roller mill call for new American water wheels, and it is expected that Messrs. Kennedy & Sons will make them, as they control the Canadian market for that turbine.

MR. JAMES MORRISON, 75 and 77 Adelaide street, Toronto, manufacturer of steamfitters and plumbers supplies, manufactures the celebrated Hancock aspirator; Gresham's English automatic re-starting injector; an automatic sight feed lubricator; steam and hydraulic gauges of every size and description; Government pop safety valves, for steamboats, etc. The foundations of the five story brick addition to Mr. Morrison's works, recently alluded to in these pages as being in contemplation, are above ground, and the work on the building is being rapidly pushed to completion.

AT the recent annual meeting of the Nova Scotia Cotton Mfg. Co., limited, held in Halifax, N.S., the directors' annual report showed that the gross profits of the business for the past year amounted to \$34,625. After suitable appropriations were made to offset losses and doubtful debts, and to depreciation account, and after paying a 3 per cent. dividend on the capital stock, there was still left more than \$10,000 to clear the losses incurred on the previous year's business, and to carry forward a balance of \$4,331.51. This is the first dividend ever declared by the company.

THE Coupon Introduction Company, 12 Cortlandt street, New York City, are introducing an indestructible fuel cartridge, for which they claim great merit. It is a metal cylinder packed with asbestos or mineral wool, indestructible by fire, with absorbent qualities to absorb about a pint of coal oil, which, when placed in any ordinary cooking or heating stove, will burn one hour and produce heat enough to cook a meal or warm a room, without the aid of coal, wood or other fuel. It is especially useful in summer when a fire is necessary for cooking purposes only, for the cartridge can be kindled instantly and when needed, without the necessity of continuing the fire longer than to cook a meal.

MESSRS. McQUAT & McRAE, Lachute, Que., proprietors of the Victoria Foundry, have sent us an illustrated circular descriptive of some of the goods manufactured by them. Among the articles are the Acorn and Forest Beauty cook stoves; Champion cultivator; a line of artistic school desks; specimens of cemetery railing and ornamental crestings and finials, etc. They do all kinds of castings in iron and brass, and manufacture and repair general machinery of every description. They have recently extended their premises, converting their machine shop into a store for stoves, general hardware and machinery supplies of every description, and have moved their machinery into a new building where they have more room and better facilities for turning out first-class work.

THE City Foundry and Machine Works, W. & A. Moir, proprietors, are being worked up to their fullest capacity. With a large plant of the most superior iron working machinery, this firm has obtained a well-merited reputation for the rapidity and perfection with which they turn out their work. They make a specialty of mill and steamboat work, and have one of the most complete stocks of mill gearing carried by any machine works in the Maritime Provinces. They are about manufacturing the new lock safety valves, with which, under the new regulations, all marine boilers have to be provided. The new valve has many points of superiority over the old, being a pop valve with an improved and indestructible spring, which is not liable to get out of order. Hereafter, there will be no possibility of weighing down the valve, and one possible danger to steamboat travel is thereby forever banished.—*Halifax (N.S.) Critic*.

THE Dodge Wood Split Pulley Company, Toronto, occupy a full page of this paper describing the Dodge system of transmission of power by ropes and the Dodge patent wood split pulleys. Every manufacturer who has occasion to use power of any sort is interested in the transmission of that power from the engine via the shafting to the machinery in use; and to more fully and practically explain the system, and to derive the benefits of it themselves, the company in question have introduced it into their works at 81 to 89 Adelaide street west, this city, where all who may be interested are invited to call and see the ropes and wood pulleys in operation,

driving all the machinery in their factory. It is claimed for this system that it is cheaper and superior to belts in many cases, such as where the driven shaft is at right angles with the driver; when the drive is perpendicular, particularly when it is in quarter twist and perpendicular; for long drives, such as across a street or stream, etc.

MESSRS. RICE, LEWIS & SON, Toronto, as will be seen by their card in another page, are offering for sale McAvity's improved boiler feeder, manufactured by Messrs. T. McAvity & Sons, St. John, N. B. Regarding this implement the manufacturers say that there has for a long time existed a demand for a boiler feeder having all the good qualities of the best feeders made but dispensing with the numerous valves and handles necessary to their operation, and which require considerable attention from a practical engineer. Among the advantages claimed for the McAvity feeder are that it can be started by two simple movements with but the one lever with which it is provided; can be operated by a person totally ignorant of engineering; the operation of it is the same for all classes of boilers; the mechanism is, very simple, it can be easily and readily repaired when necessary, and it has an improved strainer attached which prevents gravel passing into the feeder. All sizes will lift water 25 feet, working on a 25-foot lift as on a level.

SOME hundred of workmen are at present actively engaged in the work of erecting the mammoth mill at Keewatin, where such an excellent water power exists. Mr. Reid, of Montreal, has the contract, and the work is being pushed forward with all possible speed. The mill, which will be built of granite, and fitted up with the finest machinery, will have a capacity of 1,200 barrels per day. The company is also building an elevator there, which will have a capacity of about 200,000 bushels. The mill elevator and tailrace will cost about \$200,000, and when completed will be one of the finest and best equipped works on the continent. When the institution is in full blast it is expected that between sixty and seventy-five men will be constantly employed. The work will be completed in October, when the work of fitting up will commence. Mr. Mitchell, the president of the company, states that the mill will be ready for active operations early in January, so that the grinding of the present year's crop will be done. No stock of the Lake of the Woods Milling Company was ever offered for sale, the entire amount being taken up by eastern capitalists.

THE Thorold Knitting Company, of Thorold, Ont., (of which mention was recently made in these pages), have about completed the alterations and repairs in their newly acquired mills at Thorold, and expect to put the same in operation in a few days. These mills, formerly the property of the Thorold Woolen and Cotton Manufacturing Company, were closed in September of last year, the company going into liquidation and the property passing into the control of the Bank of Quebec, from whom it was transferred to the Thorold Knitting Company. The mills will be employed in the production of all kinds of knit underwear for men, women and children, and will be under the immediate control and superintendence of Mr. W. A. Canfield, late manager of the Kingston Hosiery Company's mills at Kingston, Ont. Considerable new machinery has been placed in the mill, and its capacity will entitle it to the designation of a four or six set mill. At present about 60 hands will be employed, but it is proposed to considerably enlarge the works next spring. Messrs. James Lockhart & Co., Toronto, are large stockholders in the new company, and will handle the products of the mill. Mr. W. H. Sheppard, the Secretary of the company, and Mr. Canfield, the Manager, are also large stockholders.

ONE of the most remarkable electrical lighting and power developments ever exhibited is the invention or discovery of Mr. C. W. Mead, of Cleveland, O., now being shown in operation in this city. In the electrical apparatus now generally in use the energy is produced by the use of a dynamo, and where such strong currents are used as are necessary in supplying arc and incandescent lamps, fatal results usually occur to persons coming in contact with the conducting wires. In this new Mead method no such accidents or results are possible, for while the energy created is sufficient for the purposes intended, and the light produced by it is equal to that produced by the dynamo, unlike that energy it is not at all dangerous, and the full force of the current may be passed through the human body without creating any uncomfortable or unpleasant feeling, or indeed any feeling whatever, in which respect it is entirely different from dynamo-created electricity. The battery of the apparatus consists of a series of cells of peculiar construction, in which the electricity is generated, the number of lamps to be used or the amount of power to be obtained regulating the number of cells of be embraced in the battery. The battery may be enclosed in a convenient box, and when once put in order and the necessary con-

nections made, can be used for a long time without any other attention than in occasionally replenishing the cups. Suitable copper wires having been arranged where lamps are desired, the mere turning of a button at or near the battery, or at the lamp, admits of or cuts out the light. Either the arc or incandescent lamp can be used. A sufficient number of cells can produce sufficient power to operate machinery, a 13-horse-power machine being shown in operation. It is claimed that this apparatus can produce electricity cheaper than by any other known method. Owing to the great simplicity, safety and inexpensiveness of this method it is particularly adapted for use in residences, offices, factories, street and steam cars, yachts and steamboats, and wherever a good, strong, steady light is desired.

Authorized Capital and other Assets over
5,000,000.

MANUFACTURERS' LIFE INSURANCE COMPANY

— AND —

Manufacturers' Accident Insurance Company

ISSUE ALL KINDS OF LIFE AND ACCIDENT POLICIES
AT THE LOWEST POSSIBLE RATES.

Special advantages are given Manufacturers' to indemnify themselves against the

"Workmen's Compensation for Injuries Act."

SIR JOHN A. MACDONALD, P.C., G.C.B. - - PRESIDENT.

SIR ALEX. CAMPBELL, K.C.M.G.

GEORGE GOODERHAM, Esq.

WILLIAM BELL, Esq.

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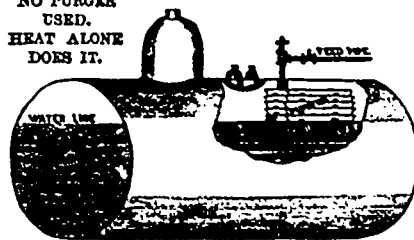
J. B. CARLISLE,

Managing Director.

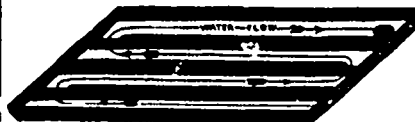
**38 KING STREET EAST,
TORONTO, ONT.**

PATENT BOILER WATER PURIFIER.

NO PURGER
USED.
HEAT ALONE
DOES IT.



SHOWING POSITION OF PURIFIER IN BOILER.



SHOWING ONE OF THE PANS OF PURIFIER.

THIS PURIFIER ENTIRELY PREVENTS THE FORMATION OF SCALE UPON SHELL AND FLUES OF ANY BOILER IN WHICH IT IS USED. ALL IMPURITIES ARE EXTRACTED FROM THE WATER BEFORE IT REACHES THE WATER LINE, AND ARE DEPOSITED IN THE PANS OF THE PURIFIER.

THESE PANS CAN BE REMOVED, CLEANED AND REPLACED WITH VERY LITTLE TROUBLE, AND IN A VERY SHORT TIME, WITHOUT EMITTING THE BOILER OF HOT WATER, WHICH MEANS A SAVING OF TIME, LABOR AND FUEL.

FOR PARTICULARS AND PRICES ADDRESS

J. W. HERMAN, 214 1/2 King St. West, Toronto, Ont.

THE PERMANENT EXHIBITION

Of Manufactures, and Commercial Exchange,

63, 65, 67, 69 FRONT STREET WEST (OPP. QUEEN'S HOTEL).
NICHOLLS & HOWLAND, TORONTO.

We invite attention to the following particulars :

Under the pressure of keen competition, economy in the manufacture of goods has been a constant source of study, and in most establishments every avenue of waste has been closed, and every perfected method of production has been adopted.

It is far different with the *distribution of goods*, and it is the very necessary economy in this direction that we have in view, as it matters not how cheaply goods may be manufactured if the expense of selling them is so great as to swallow up most of the margin of estimated profit.

A number of outside firms now have, and many more are finding out the necessity of having, a branch office in this city. In many cases such offices are located on a side street, and are visited only by those who go there purposely on business bent. In maintaining such offices expense has to be incurred for salaries, rent, light, heat, cartaking, telephone, etc., etc., and no matter how the expense of each item is curtailed, the annual cost is bound to be a large one.

It is our object to afford a practical arrangement whereby this unavoidable expenditure may be largely reduced, while at the same time the benefits sought to be attained will be very much greater. For a moderate rental we offer every advantage of a private branch office, with the additional advantage of being represented in a trade centre or "commercial exchange," where an exhibitor's goods will be seen by thousands of business men throughout the year. To an appreciable extent our Exhibition will change the existing order of things, as in many instances the customer will visit the agent instead of the agent having to hunt up the customer.

The Permanent Exhibition will be open, free to the public, every week day.

Extensive advertising will keep the exhibition and its advantages fresh in the minds of the people.

Power and shafting is provided for exhibitors who may wish to show machinery in operation.

Instructed attendants will be in charge for the purpose of explaining the merits of each exhibit to interested visitors.

It is designed to supply the long-felt want of a central exchange, wherein goods can be kept on show for the inspection of the thousands who come up month after month to this commercial metropolis.

It is also in contemplation to provide, for the convenience of outside manufacturers, and for city merchants and brokers, suitable accommodation for meeting and transacting business, and which may be designated as a "CHAMBER OF COMMERCE," or "TRADE EXCHANGE." For example, a manufacturer whose works are located in an outside town, but who makes periodical business trips to Toronto, can advertise on his office stationery that either himself or representative may always be found, between stated hours on certain days, at the Permanent Exhibition. Other particulars, such as accommodation for trade sales, etc., will be made public at a later date.

DIRECTORY OF EXHIBITORS:

The following firms are already represented in the Permanent Exhibition. Their manufactures have a deservedly high reputation, and are recommended to the notice of intending purchasers of any of the respective lines in the following list. Prices, terms, discounts, etc., may be obtained from the several firms direct, or from Messrs. Nicholls & Howland, Permanent Exhibition of Manufactures :

Armstrong, J. B., Manufacturing Co., Guelph, Carriage Materials.	Hart Emery Wheel Co., Hamilton, Ont., Emery Wheels and Emery Wheel Machinery.
Armstrong, J. A. & Co., Guelph, Ont., Carpets.	Hay, Peter, Galt, Ont., Machine Knives
Automatic Refrigerator Co., Ottawa, Ont., Hanrahan's Patent Automatic Refrigerators.	Heatie, J. G., Montreal, Que., Toilet Soaps and Perfumery.
Barnum, The Wire and Iron Works, Windsor, Ont., Wire Goods of all descriptions,	Howland, H. S. Sons & Co., Toronto, Ont., Hardware Specialties.
Hailing, Cresting, Fencing, etc., etc.	Howland, H. S., Kleinburg, Ont., Flour.
Barker & Ellis Co., The, Toronto, Ont., Manufacturing and Wholesale Stationers,	Hemming Bros., Toronto, Ont., Fancy Plush Goods and Jewellers' Cases.
Acc. Unit Books, Office Sundries, etc.	Ingersoll Door Guard Co., Ingersoll, Ont., Patent Door Guards.
Pertram, Juhn & Sons, Dundas, Ont., Iron and Wood Working Machinery	Ireland, F. C. & Sons, Lachine, Que., Breakfast Cereals.
Blake, George F., Manufacturing Co., Boston, Mass., Steam Power Pumping Machinery.	Ives, H. R. & Co., Montreal P. Q., Fencing, C.esting, Stoves and Hardware Novelties.
Breck, Charles & Sons, Toronto, Ont., Brooms, Brushes, Woodenware, etc.	Jardine, A. & Co., Toronto, Ont., Coffee, Spices, and Pure Gold Baking Powder.
Brethaupt & Co., Berlin, Ont., Leather.	Kerr Bros., Walkerville, Ont., Water, Steam and Gas Valves of Improved Pattern.
Brush, George, Eagle Foundry, Montreal, P. Q., Blake Stone Crusher.	King, H. W. & Co., Georgetown, Ont., Power Knitting Machinery.
Clare Bros. & Co., Preston, Ont., Stoves and Furnaces.	Leslie, James, Montreal, Que., Woollen and Cotton Mill Supplies.
Cowan & Co., Galt, Ont., Wood Working Machinery, Engines and Bolvers.	McCaskill, D. A. & Co., Montreal, Que., Varnishes and Japans.
Creechman Bros., Georgetown, Ont., World's Star Knitting Machinery.	Miler Bros. & Mitchell, Montreal, Que., Beaudry's Steam Power Hammer.
Crompton Corset Co., Toronto and Berlin, Ont., Corsets.	Munderloh & Co., Montreal, Que., Watchmen's Clocks.
Valley, P. F. & Co., Hamilton, Ont., Extracts, Essences, Blacking, and Grocers' Sundries.	Morris, A. W. & Bro., Montreal, Que., Cordage and Binder Twine.
Dominion Baby Carriage Co., London, Ont., Baby Carriages and Battan Furniture.	Morrison James, Toronto, Steamfitters' and Plumbers' Supplies.
Dunald Produce Co., Norwich, Ont., Evaporated Fruits.	Northey & Co., Toronto, Ont., Steam Pumping Machinery.
Dix Engine Co., Toronto, Ont., Engines, Bolvers, etc.	Northumberland Paper Co., Campbellford, Ont., Straw Board and Tarred Paper.
Dunham Barb Wire Co., Montreal, P. Q., Barb Wire.	Ontario Bolt Co., Toronto, Ont., Bolts, Nuts, Spikes, etc.
Durereourt Twine Mills, Toronto, Ont., Twines and Cordage.	Oshawa, Stove Co., Oshawa, Ont., Cooking and Heating Stoves.
Demi 1st Starch Works, Walkerville, Ont., Corn Starch and Laundry Starch.	Pejcer, T. & Co., Guelph, Ont., Carriage and Wagon Axles.
Ellis & Kelchley, Toronto, Ont., Coffees, Spices.	Pillow, Hersey & Co., Montreal, Que. (Geo. A. MacAgg, Western representative),
Ellis & Co., Toronto, Ont., Manufacturing and Wholesale Chemists and Druggists.	Nails, Tacks, Bolts, etc.
Ellis, P. W. & Co., Toronto, Manufacturing and Wholesale Jewellers.	Ramsay & Son, Montreal, Que., Plate and Stained Glass, Paints, Oils, etc.
Enwick & Selater, Montreal, Que., Flies and Mill Supplies.	Robin & Saller, Montreal, Que., and Toronto, Ont., Leather Belting and Lace Leather.
Gate City Stone Filter Co., New York, Water Filters.	Rumpel, Geo., Berlin, Ont., Felt Boots and Shoes.
Globe Tobacco Co., Windsor, Ont., and Detroit, Mich., Tobaccos	Simpson & Co., Berlin, Ont., Furniture.
Gooding & Co., Danville, Que., Leather Belting and Lace Leather,	Smith, H. H. & Co., St Catharines, Ont., every description of Saws.
Grand & Toy, Toronto, Ont., Ticker Automatic Letter and Document Files.	Stahschmidt & Co., Preston, Ont., Office Desks, Chairs, School Furniture, etc.
Grand River Knitting Mills, Co., Paris, Ont., Smyrna Rugs and Knit Goods.	Storey, W. H., & Son, Acton, Ont., Gloves.
Grape Sugar Refining Co., Walkerville, Ont., Syrups and Glucose	Toronto Rubber Co., Toronto, Belting, Fire Hose, Etc.
Hamilton Industrial Works Co., Hamilton, Ont., Wringers, Mangles, etc.	Toronto Novelty Manufacturing Co., Toronto, Ont., Ironing Boards.
	Watts, A. & Co., Brantford, Ont., Household Soaps.

IN CONNECTION WITH OUR PERMANENT EXHIBITION WE HAVE EXCELLENT

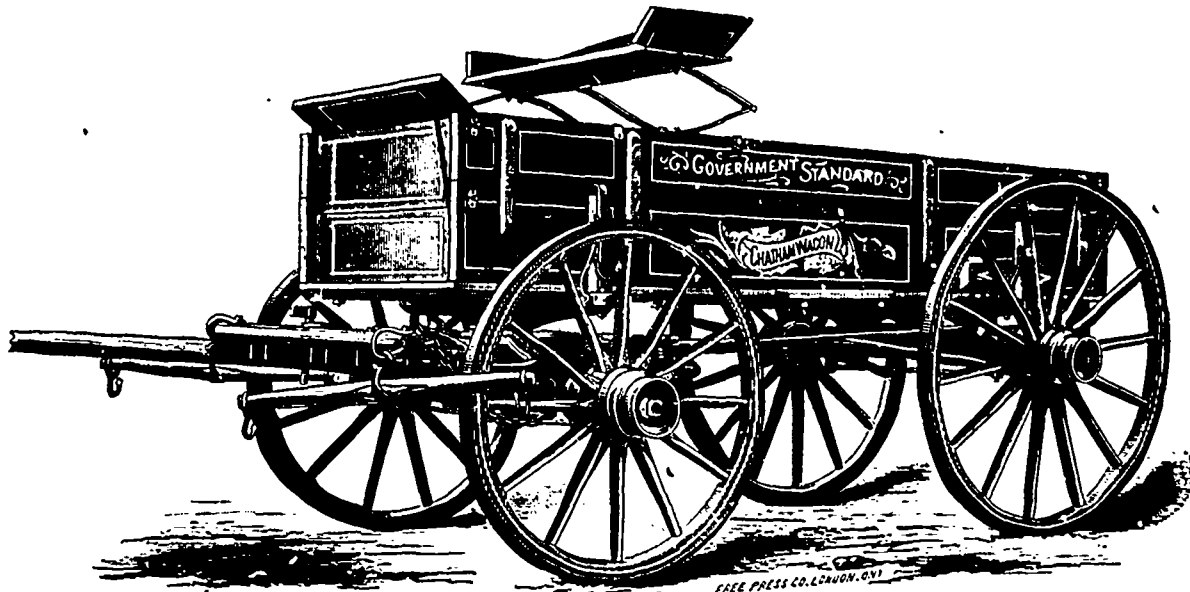
STORAGE—LIGHT, DRY, CLEAN.

Our facilities for receiving and shipping are unsurpassed, and we invite inspection or correspondence.

THE CHATHAM MANUFACTURING CO. (Ltd.)

MANUFACTURERS OF

HARDWOOD LUMBER,



SHIP PLANK AND

THE CHATHAM WAGON, of which wagon the above is a faithful cut, and which the Government of the Dominion of Canada has adopted as the **STANDARD WAGON.**

We simply ask intending purchasers, in their own interests, to send to us for particulars of the Chatham Wagon, or if there is one convenient closely examine it before purchasing any other.

We also make Railway Platform Baggage Trucks, Farm and other Dump Carts, the Celebrated Main Bob Sleigh, the Patent Champion Hay Rack, etc., etc.

CORRESPONDENCE SOLICITED.

CHATHAM MANUFACTURING CO. (LIMITED).

THE WELLINGTON MILLS LONDON

GENUINE EMERY

OAKEY'S Flexible Twilled Emery Cloth.
OAKEY'S Flint Paper and Glass Paper.
OAKEY'S Emery Paper, Black Lead, &c., &c.

PRIZE MEDAL AND HIGHEST AWARD, PHILADELPHIA, 1876.
 For Superiority of Quality, Skillful Manufacture, Sharpness, Durability, and Uniformity of Grain.

Manufacturers JOHN OAKEY & SONS, Wellington Mills, WESTMINSTER BRIDGE ROAD, LONDON, ENGLAND.

Enquiries should be addressed to

JOHN FORMAN, 467, ST. PAUL ST., MONTREAL

CANTLIE, EWAN & CO.

General Merchants and Manufacturers' Agents.

BLEACHED SHIRTINGS,
 GREY SHEETINGS, TICKINGS,
 WHITE, GREY AND COLORED BLANKETS,
 FINE AND MEDIUM TWEEDS, KNITTED GOODS,
 PLAIN AND FANCY FLANNEL,
 LOW TWEEDS, ETOFFES, ETC.

Wholesale Trade Only Supplied.

15 VICTORIA SQUARE,
 MONTREAL.

20 WELLINGTON ST. E.
 TORONTO.



TIMBER AND LAND SALE.

(CERTAIN lots and the timber thereon situate in the Townships of Allan, Assiginack, Bidwell, Billings, Carnarvon, Campbell, Howland, Shegolandah, Tehkummah and Mills on the Manitoulin Island, in the District of Algoma, in the Province of Ontario, will be offered for Sale at Public Auction in Blocks of 200 acres, more or less, on the 1st day of September next, at 10 o'clock a.m., at the Indian Land Office in the Village of Manitowaning.

TERMS OF SALE.—Bonus for timber payable in cash, price of land payable in cash, a license fee to be payable in cash, and dues to be paid according to Tariff upon the timber when cut.

The land on which the timber grows to be sold with the timber without conditions of settlement.

At the same time and place the Merchantable timber of not less than nine inches in diameter at the butt, on the Spanish River Reserve and French River lower Reserve will be offered for sale for a cash bonus and annual ground rent of \$1.00 per square mile, and dues to be paid on the timber as cut, according to Tariff of this Department.

For full particulars please apply to James C. Phipps, Esq., Indian Supt. Manitowaning, or to the undersigned.

No other paper to insert this advertisement without authority through the Queen's Printer.

Department of Indian Affairs,
 Ottawa, 2nd June, 1887.

L. VANKOUGHNET,
 Deputy of the Supt. General of Indian Affairs.

BELDING, PAUL & CO. SILK MANUFACTURERS MONTREAL.

ORGANZINES, TRAMS,
 SPUN SILK YARNS,

And all Threads for Manufacturing Purposes made to order.

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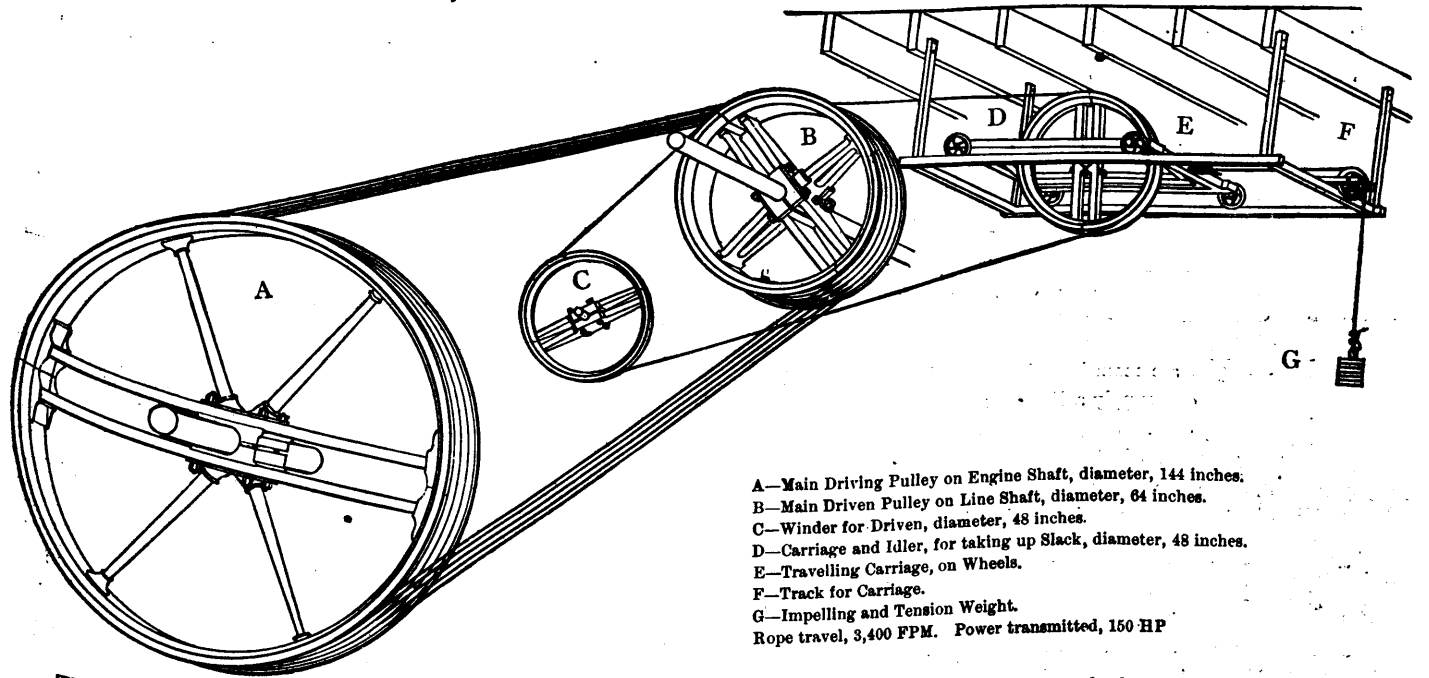
THE TRANSMISSION OF POWER BY ROPES AND THE DODGE PATENT WOOD PULLEYS.

The great advantage of Wood over Iron as a material for belt pulleys (or drums) to transmit power economically, has induced the DODGE WOOD SPLIT PULLEY CO., of Toronto, to introduce grooved hard wood pulleys for the special purpose of transmitting power by ropes (manilla tallow laid), and in this connection Mr. Dodge has taken out Canadian Letters Patent for a system of applying the ropes, adjusting the pulleys, and taking up slack, that is giving the most unqualified satisfaction.

This system of transmitting power by ropes is cheaper and superior to belts in many cases, such as where the driven shaft is at right angles with the driver, also where the drive is perpendicular, particularly when it is quarter twist and perpendicular; also where the driver and driven are close together; also for long drives, such as across a street, or a stream, etc. For transmitting power from an engine to the line shaft this

system is unequalled; steady all the time, not like a heavy belt, which is always more or less flapping, jerking and stretching, then slipping and losing power. It is safe to say that an engine hitched up by the Dodge Rope System will do 25 per cent. more work on the same consumption of fuel than the same engine would do with a belt. We have put up a number of the Dodge Patent Rope transmissions during the past year, all of which are in most successful and satisfactory operation, as certified by the testimonials published in our catalogue of well-known manufacturers who have them in use. Parties who are in want of anything in this line, or who are interested in the efficient and economical transmission of power, are cordially invited to call at our works, 81-89 ADELAIDE STREET WEST, Toronto, and see the ropes and wood pulleys in operation, as we are driving our whole factory by this system.

WITH OUR SYSTEM OF MANILLA ROPE TRANSMISSION is overcome the objection to Wire Rope (because of crystallizing) and gearing, (because of loss of friction) and shafting (because of the liability to get out of alignment, hence loss of power by friction), and a separate engine plant (because of its great expense); on the contrary, with the Manilla Rope System, under the Dodge patents, the power is transmitted with the same efficiency as though the shafts were close together, there being no loss of power by excessive tension, or bad alignment, but simply the friction of the journals to overcome at the carriers, which have a strain of weight of the rope to carry.



A—Main Driving Pulley on Engine Shaft, diameter, 144 inches.
 B—Main Driven Pulley on Line Shaft, diameter, 64 inches.
 C—Winder for Driven, diameter, 48 inches.
 D—Carriage and Idler, for taking up Slack, diameter, 48 inches.
 E—Travelling Carriage, on Wheels.
 F—Track for Carriage.
 G—Impelling and Tension Weight.
 Rope travel, 3,400 FPM. Power transmitted, 150 HP

The illustration, as shown above, is one of peculiar construction, and represents an engine transmission of power by a manilla rope, under the Dodge system of patents, and is shown as in actual use at the works of the Dodge Mfg. Co., at Mishawaka, Ind.

The system herewith illustrated and described is one of great interest to all consumers of power. Inasmuch as it takes the place of expensive gearing and broad belts, the advantages to be thus derived may be thus summarized:

To transmit the same power with a rope *versus* a like power with a wide belt, first, requires much narrower faced pulleys; consequently, much less expensive; 2nd, the interest on the money invested in a belt will more than supply the rope, saying nothing about the wear and tear; 3rd, better power, from the fact that all sliding of the belt is overcome, and the rope gear becomes as positive as the cog gear.

The transmission consists of a series of wood split pulleys, and ordinary manilla rope (tallow laid).

The engine used is an automatic, and the size of the cylinder is 18x40, making 90 RPM, and transmits 150 HP., the driver, A, and driven, B, have each several grooves, in which are wound the ropes, the number of wraps being used, as in previous cases, to gain surface in contact, for adhesion of the rope. The winder, C, in this case, is simply used to convey the rope to the slack carriage, to prevent obstruction. This, together

device for taking care of the slack, and giving the proper tension to the rope, is shown at E, with the impelling weight at G. The slack side of the rope is paid directly from the driver to the carriage, E, which, it will be seen, takes in and pays out slack as it occurs, and acts also for a tension on the rope. The weight at G may be increased or decreased with the power.

This apparatus was erected and started December 2, 1884, and has been running constantly since, with same splice, and transmitting an average of 150 HP.

The rope shows no signs of wear, and looks as though it would last for years to come.

The rope is an ordinary one-inch diameter manilla, and travels at a velocity of 3,420 FPM.

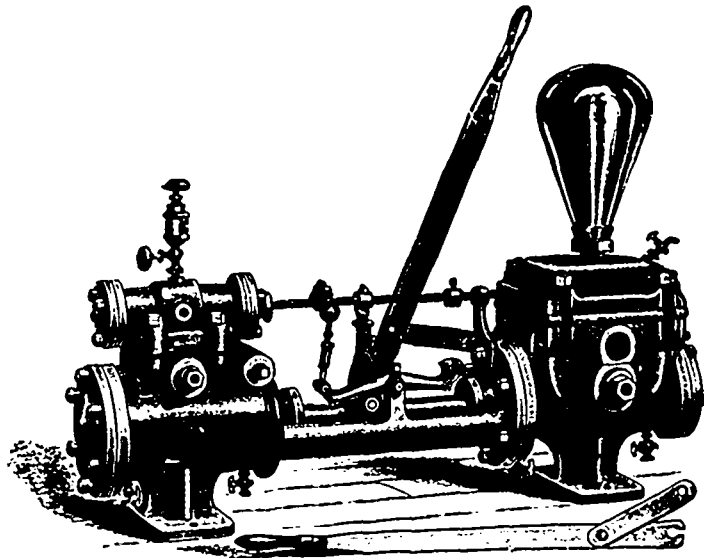
We make the following summary:

Velocity of rope, 3,420 FPM. Transmits, as above, 150 HP. (indicated). The tension on the rope is, therefore, $\frac{3300 \times 150}{430} = 1,408 + 106$ pounds (one-half the weight in the weight-box) = 1,608 pounds; which is the strain on the rope. There being five pulling wraps of rope, hence the strain would be divided five times = $\frac{1,608}{5} = 321$ lbs. strain on the rope = 3 1/2 per cent. of the breaking strain of the rope; it being estimated as safe to use 10 per cent. of the breaking strain of the rope.

[The breaking strain of a one-inch manilla rope is 9,000

KNOWLES STEAM PUMP WORKS,
 —BUILDERS OF—
STEAM PUMPING MACHINERY IN EVERY VARIETY

**BOILER
 FEED,
 FIRE
 and
 TANK
 PUMPS**



Simple and Duplex
**PUMPING
 ENGINE**
 for
TOWN and CITY
SUPPLY.

For Particulars, Address **44 Washington St., BOSTON.** **93 Liberty St., NEW YORK.**

—SEND FOR ILLUSTRATED CATALOGUE—

To Users of Glue.

WE are manufacturing a reliable GLUE, and can supply a limited number of consumers only. We guarantee our glues to be made from selected stock, and to be of the same uniform quality. (Glues not as represented, or not proving satisfactory, returnable at our expense.)

JAMES HAY & CO.
 WOODSTOCK, ONT.

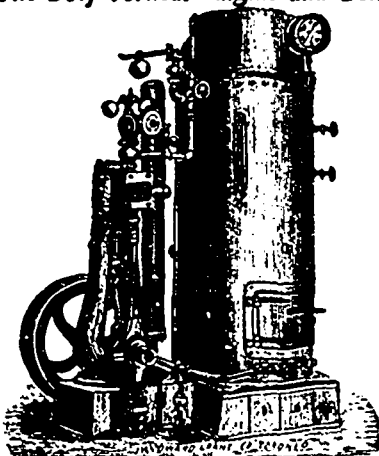
ARMSTRONG'S BUGGY AND CARRIAGE GEAR.

The "Defiance"

THIS GEAR meets the demand of the Driving Public for low-riding Buggies, and combines with this, lightness, durability, and great ease of motion. By the use of improved machinery and manufacturing in large quantities, we are enabled to make prices MODERATE. Send for our descriptive circular.

J. B. ARMSTRONG MFG. CO. (Ld.), Guelph, Ont.

The Doty Vertical Engine and Boiler.



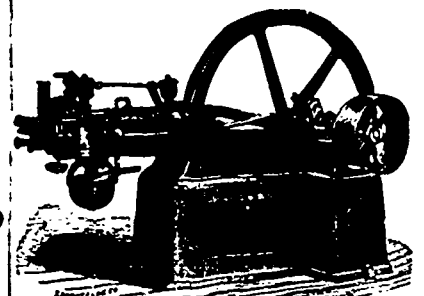
SEND FOR REDUCED PRICE LIST.

**JOHN DOTY
 ENGINE CO.**

No. 2 Bathurst Street,
TORONTO, ONT.

In sizes from 3 to 10 H.P. Specially adapted to places where 3 to 10 H.P. is required. Simple, safe and durable.

**THE
 Otto Silent Gas Engine.**



In sizes from 2 to 7 H.P. Most convenient power in the market.

SEND FOR CIRCULAR.



A Well Tried Treatment
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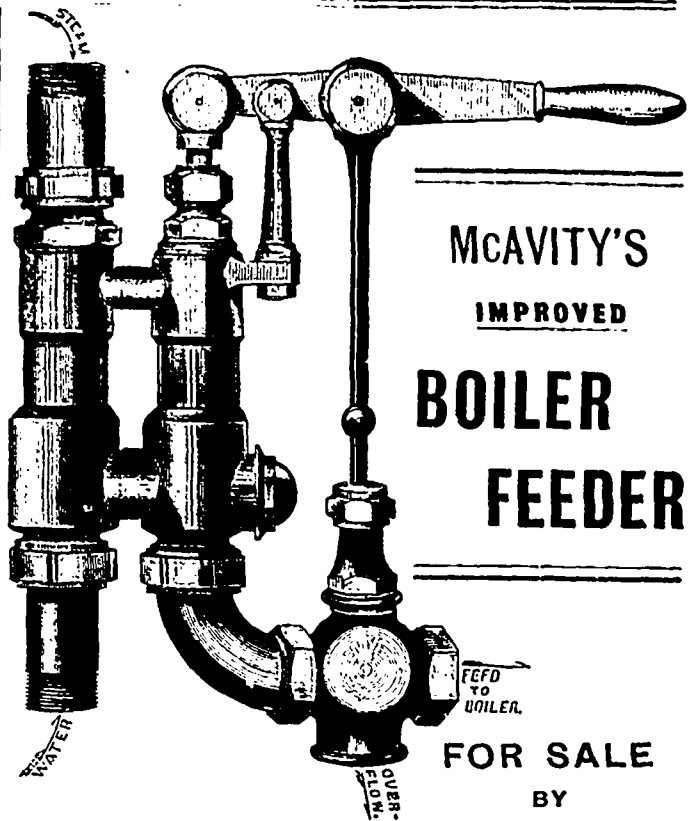
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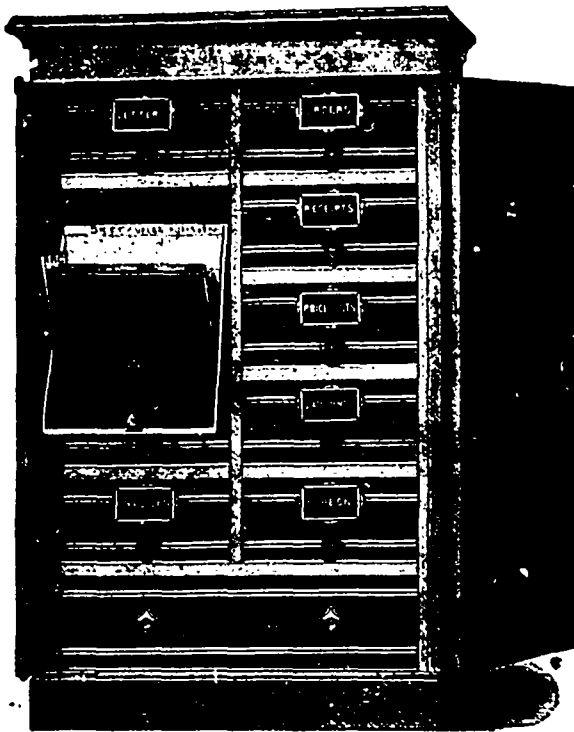


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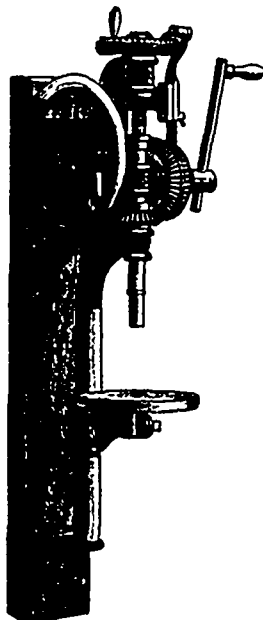
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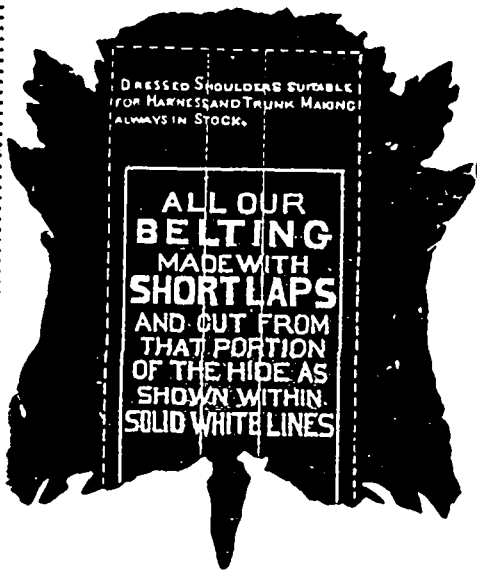
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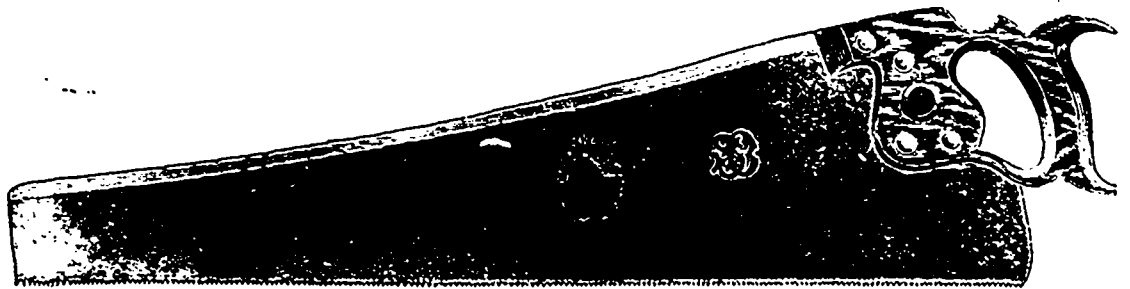
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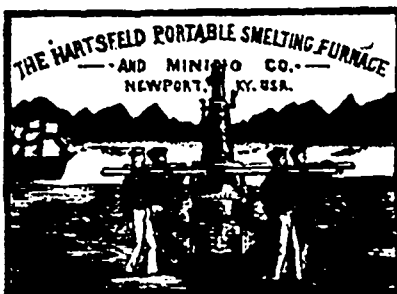
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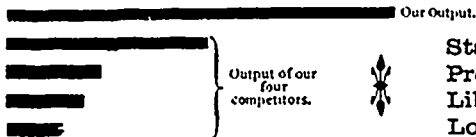
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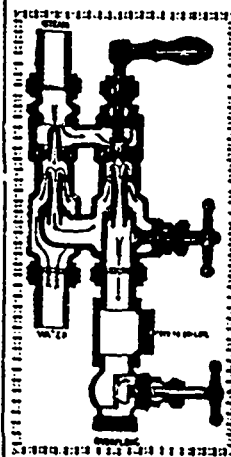
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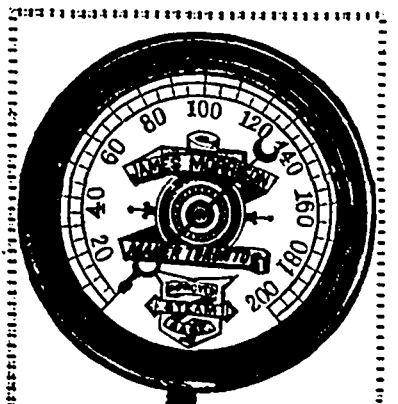
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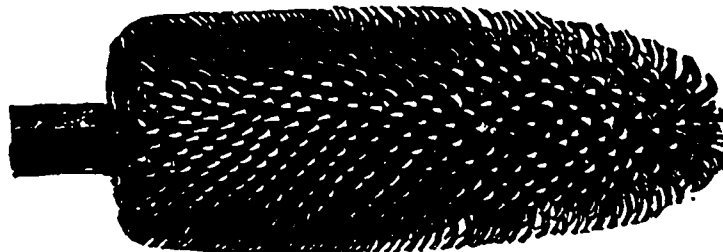
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
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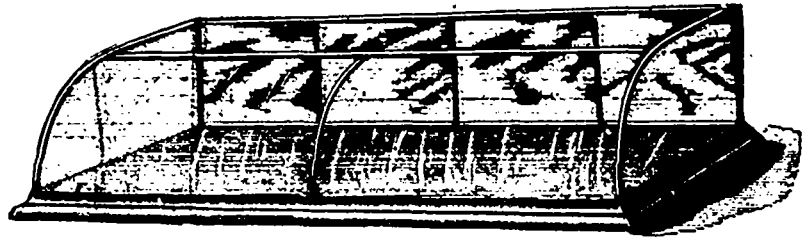
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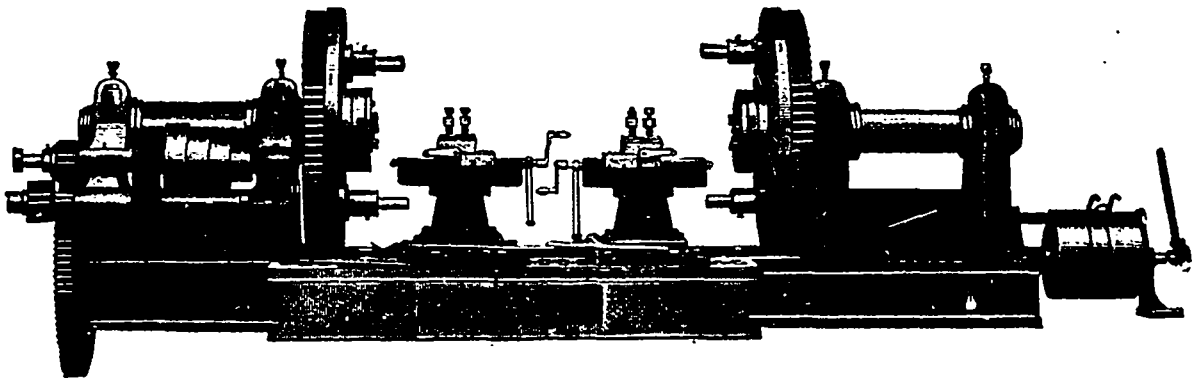
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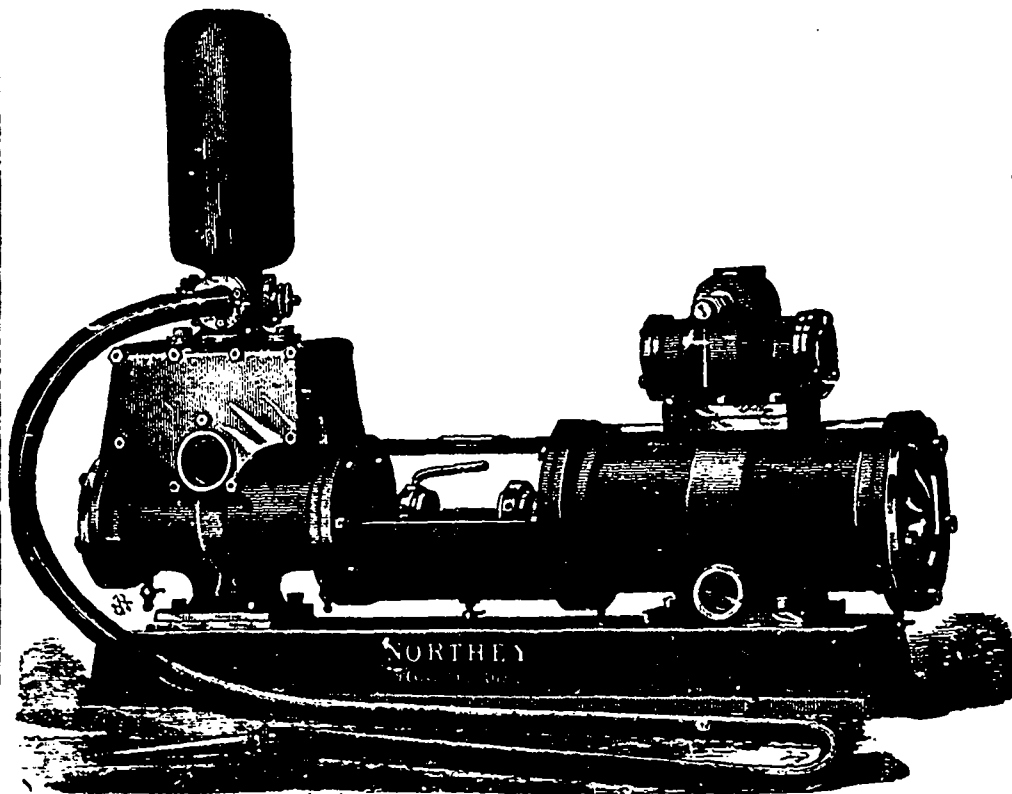
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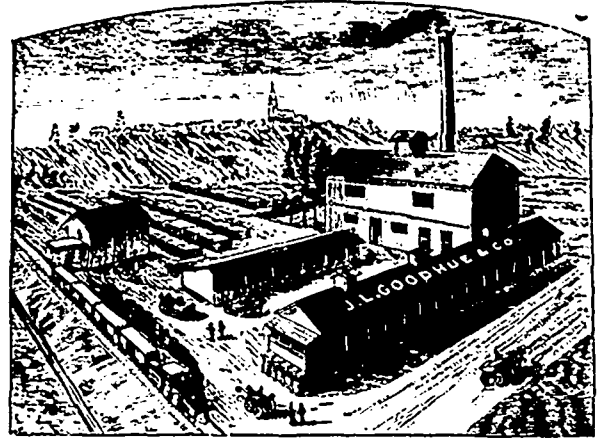
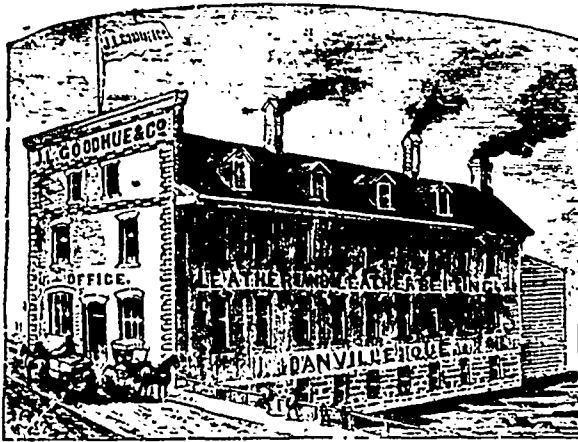
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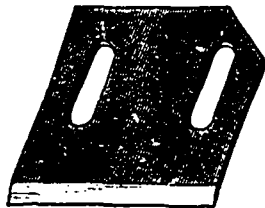
STAVE CUTTER KNIVES.



STAVE JOINTER KNIVES.



MOULDING, TENONING,
 MITREING,
 SHINGLE JOINTER,



And other irregular shapes.

Cheese-box and Veneer, Paper Cutting, Leather Splitting and any special knife made to order. SEND FOR PRICE LIST. ALL WORK WARRANTED.

PETER HAY, - - - GALT ONT.

Millers' and Manufacturers' INSURANCE COMPANY.

STOCK AND MUTUAL.

OBJECTS.

1. To prevent by all possible means the occurrence of avoidable fires.
2. To obviate heavy losses from the fires that are unavoidable by the nature of the work done in mills and factories.
3. To reduce the cost of insurance to the lowest point consistent with the safe conduct of the business.

METHODS.

All risks will be inspected by a competent officer of the company, who will make such suggestions as to improvements required for safety against fires, as may be for the mutual interests of all concerned.

Much dependence will be placed upon the obligation of members to keep up such a system of discipline, order, and cleanliness in the premises insured as will conduce to safety.

As no agents are employed and the company deals only with the principals of the establishments insured by it, conditions and exceptions which are so apt to mislead the insured and promote controversy and litigation in the settlement of losses will thus be avoided.

The most perfect method of insurance must, in the nature of things, be one in which the self-interest of the insured and the underwriters are identical, and this has been the object aimed at by the organizers of this company.

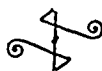
W. H. HOWLAND, Vice-President. **JAMES GOLDIE,** President.
HUGH SCOTT, Managing Director.

Applicants for insurance and other information desired, please address **MILLERS' AND MANUFACTURERS' INSURANCE COMPANY** No. 24 Church Street, Toronto.

Geo. F. Blake Manufacturing Co.,*

BUILDERS OF
SINGLE AND DUPLEX
Steam and Power

Pumping Machinery



BOSTON,
44 WASHINGTON STREET. *

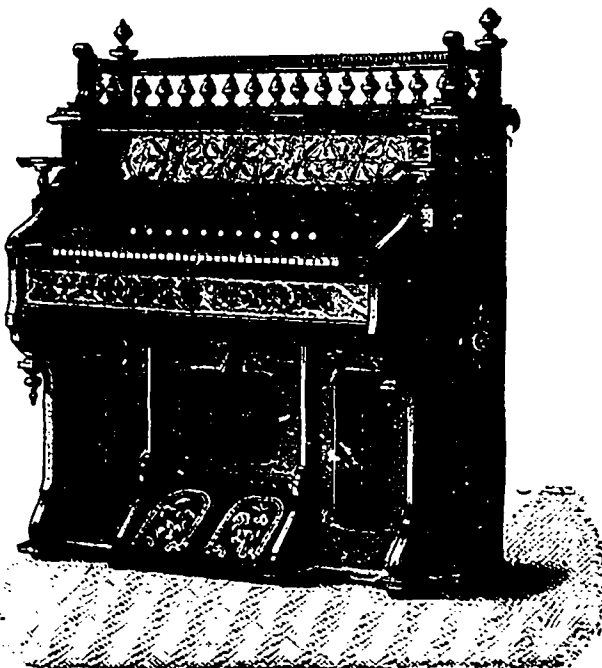
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BELL ORGANS

FOR
Chapel,
Church,
Lodge,
Parlor.

ARE THE BEST



✦
OUR Large Double and Single Manual Organs are the best in the Market, and Musicians should see them before buying elsewhere.

CATALOGUES
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✦
W. BELL & CO.,

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Industrial and Trade DIRECTORY.

Acids and Aniline Dyes.

THEO. H. EATON & SON, Windsor, Ont.; Detroit, U.S.A.—Importers. Every Description **Pure Aniline Dyes** for Cotton and Woollen Manufacturers. **Dyed Samples** furnished on application. Address all correspondence to Head Office, Detroit, Mich.

Agricultural Implements.

A. S. WHITING MANUFACTURING CO., Cedar Dale, Ont.—Manufacturers of scythes, forks, hoes, etc.

WELLAND VALE MANUFACTURING CO.—Lock No. 2, St. Catharines, Ont., Canada—Manufacturers of axes, scythes, forks, hoes, rakes and edge tools.

Bobbins and Spools

THOMPSON & CO., Sherbrooke, P. Q.—Manufacturers of all kinds of Bobbins and Spools for Cotton and Woollen Mills—Special patterns made to order from sample.

Bridge Builders.

DOMINION BRIDGE CO. (Limited),—Shops at Toronto, Ontario, and Lachine, Quebec. Builders of Steel and Iron Railway and Highway Bridges.

Chemicals.

DOMINION DYEWOOD AND CHEMICAL CO., Toronto.—Importers and Manufacturers. Chemicals for Cotton, Woollen, Paper and Leather Manufacturers.

M'ARTHUR, CORNELLE & CO. (successors to John McArthur & Son), Montreal.—Offer at closest figures chemicals required by soap-boilers, oil refiners, paper-makers, and by manufacturers of woollens, cottons, leather, &c.

Cotton Mills.

HAMILTON COTTON MILLS CO., Hamilton.—Denims, tickings and yarns.

Dyes, Dyeing Drugs and Extracts.

THEO. H. EATON & SON, Windsor, Ont.; Detroit, U. S. A.—Carry full line of Pure Dyeing Drugs, Dye Woods and Extracts adapted for the requirements of Woollen and Cotton Manufacturers. **Paper Makers' Anilines** and Chemicals. Address the Detroit Office.

Dye Stuffs.

M'ARTHUR, CORNELLE & CO. (successors to John McArthur & Son), Montreal.—Supply of best quality at closest prices. Every description of coloring materials required by manufacturers of woollens, cottons, silks, paper, leather, &c. Are sole agents in Canada for the celebrated aniline dyes of A. Perrier, Paris.

LYMAN BROTHERS & CO., Nos. 71 and 73 Front Street East, Toronto—Dye Stuffs of all kinds for Woollen and Cotton Manufacturers; Warps, Shutles, Bobbins, Card Clothing, etc., etc.

Dyewood and Dye Stuffs, Aniline Dyes.

DOMINION DYEWOOD AND CHEMICAL CO., Manufacturers.—Pure Dyewoods, Dyeing Drugs. Sole Agents. English, German, and French Aniline Dyes, for Woollen, Silk Paper, and Leather manufactures.

Edge Tools.

WELLAND VALE MANUFACTURING CO.—Lock No. 2, St. Catharines, Ontario, Canada.—Manufacturers of axes, scythes, forks, hoes, rakes and edge tools.

Emery Wheels.

HART EMERY WHEEL CO., Hamilton.—Manufacturers of every description of Emery Wheels and Emery Wheel machinery.

Gas Engines.

JOHN DOTY, Toronto.—Manufacturer in Canada of the new "Otto" silent gas engine, two, four, and seven horse-power and larger.

Glove Manufacturers.

W. H. STOREY & SON, Acton, Ont.—Manufacturers of fine gloves and mitts in every variety and style.

Hoist and Elevator Manufacturers.

LEITCH & TURNBULL, Canada Elevator Works, cor. Queen and Peter Streets, Hamilton, Ont.—Patent Safety Hydraulic, Hand, and Power Elevators. Telephone connection.

Hubs, Spokes and Bent Goods.

F. W. HORE & SON, Hamilton, Ont.—Manufacturers of wheels, wheel material, shafts, poles, etc.

COWAN & CO., Galt.—Manufacturers of every description of wood working machinery.

H. R. IVES & CO., Montreal.—Hardware manufacturers and founders; iron railing and ornamental iron-work a specialty.

JOHN BERTRAM & SONS, Dundas.—Machine tools and wood working machinery. Toronto wareroom, 58 Yonge St. Agents—The Polson Iron Works Co.

Montreal wareroom, Craig St. Agents for Quebec—The Machinery Supply Association, Montreal.

THE OSHAWA MALLEABLE IRON CO., Oshawa, Ont.—Manufacturers of malleable iron castings, to order, for all kinds of Agricultural Implements and miscellaneous purposes.

SMITH'S FALLS MALLEABLE IRON WORKS, Smith's Falls, Ont.—Manufacturers to order of refined malleable iron castings from air furnace. Agricultural and other heavy castings a specialty. Carriage castings in stock.

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JOHN DOTY, Toronto.—Engines and boilers of every description and capacity, also shafting, pulleys, and hangers for factories.

Knife Works.

THE WHITMAN & BARNES MANUFACTURING CO., St. Catharines, Ont.—Manufacturers of mowing and reaping machine knives, sections, guard plates, cutting apparatus complete, spring keys and cutters, etc.

Knitting Mills.

S. LENNARD & SONS, Dundas.—Manufacturers of plain and fancy hosiery.

Manufacturers' Supplies.

E. JENCKES MANUFACTURING CO., Pawtucket, R. I.—Sole manufacturers of Hicks Improved U. S. Standard Ring Travellers. Belt hooks, gimlet pointed wire goods, spinning rings, cotton banding, twine, &c. Manufacturers' supplies. Leather belting and lace leather. Special agents for Jos. Noone's sons cloths.

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M'ARTHUR, CORNELLE & Co (successors to John McArthur & Son), Montreal.—Afford best value in pure olive and lard oils, also in all other leading lines of vegetable, animal, and mineral oils for factory use. Invite special attention to their celebrated crown diamond "engine" and "machinery" oils.

Paper Manufacturers.

WM. BARBER & BROS., Georgetown—Manufacturer of book and fine papers.

THE TORONTO PAPER MANUFACTURING CO., Cornwall, Ont.—Manufacturers of engine sized superfine papers, white and tinted book papers, blue and cream laid and wove foolscaps, account book, envelope and lithographic papers, etc., etc.

Saw Manufacturers.

R. H. SMITH & CO., St. Catharines.—Manufacturers of all kinds of saws, plastering trowels, straw knives, etc. Solo manufacturers for the Dominion of Canada of the celebrated "Simond's Saw."

Scythe Snaths.

THE DOMINION SNATH COMPANY, Sherbrooke, Que.—Manufacturers of Patent Swing Socket, and every variety of Scythe snath.

Tanners' and Wool Pullers' Supplies.

THEO. H. EATON & SON, Windsor, Ont.; Detroit, U.S.A.—Supply at lowest prices all Chemicals used by Tanners and Wool Pullers. Special Anilines for Sheep Skin Dyers, Wool Mat Manufacturers, etc., etc. Address correspondence to Head Office, Detroit, Mich.

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BUTTERFIELD & CO., Rock Island, P.Q.—Manufacturers of Taps, Dies, and all Screw Cutting Tools.—Telegraph Office, Derby Lane, Vt.

Wire Works.

B. GREENING & CO., Hamilton, Ont.—Manufacturers of wire ropes, cloth and general wire workers.

TIMOTHY GREENING & SONS, Dundas, Ont.—Manufacturers of the strongest description of steel wire cloth, malt kiln floors and general wire weavers. Telephone connection.

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MUNN & CO., of the **SCIENTIFIC AMERICAN**, continue to act as Solicitors for Patents, Caveats, Trade Marks, Copyrights, for the United States, Canada, England, France, Germany, etc. Hand Book about Patents sent free. Thirty-seven years experience.

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TO ADVERTISERS!

For a check for \$20 we will print a ten-line advertisement in one million issues of leading American Newspapers and complete the work within ten days. This is at the rate of only one fifth of a cent a line, for 1,000 Circulation! The advertisement will appear in but a single issue of any paper, and consequently will be placed before One Million different newspaper purchasers—OF FIVE MILLION READERS, if it is true, as is sometimes stated, that every newspaper is looked at by five persons on an average. Ten lines will accommodate about 75 words. Address with copy of Ad. and check, or send 30 cents for Book of 272 pages. **GEO. P. ROWELL & CO.**, 10 SPRUCE ST., NEW YORK.

We have just issued a new edition (the 16th) of our Book called "Newspaper Advertising." It has 222 pages, and among its contents may be named the following Lists and Catalogues of Newspapers:—

DAILY NEWSPAPERS IN NEW YORK CITY, with their Advertising Rates.

DAILY NEWSPAPERS IN CITIES HAVING more than 150,000 population, omitting all but the best.

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A SMALL LIST OF NEWSPAPERS in which to advertise every section of the country; being a choice selection made up with great care, guided by long experience.

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BARGAINS IN ADVERTISING IN **DAILY** Newspapers in many principal cities and towns, a List which offers peculiar inducements to some advertisers.

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THE BEST LIST OF LOCAL NEWSPAPERS, covering every town of over 5,000 population and every important county seat.

SELECT LIST OF LOCAL NEWSPAPERS, in which advertisements are inserted at half price.

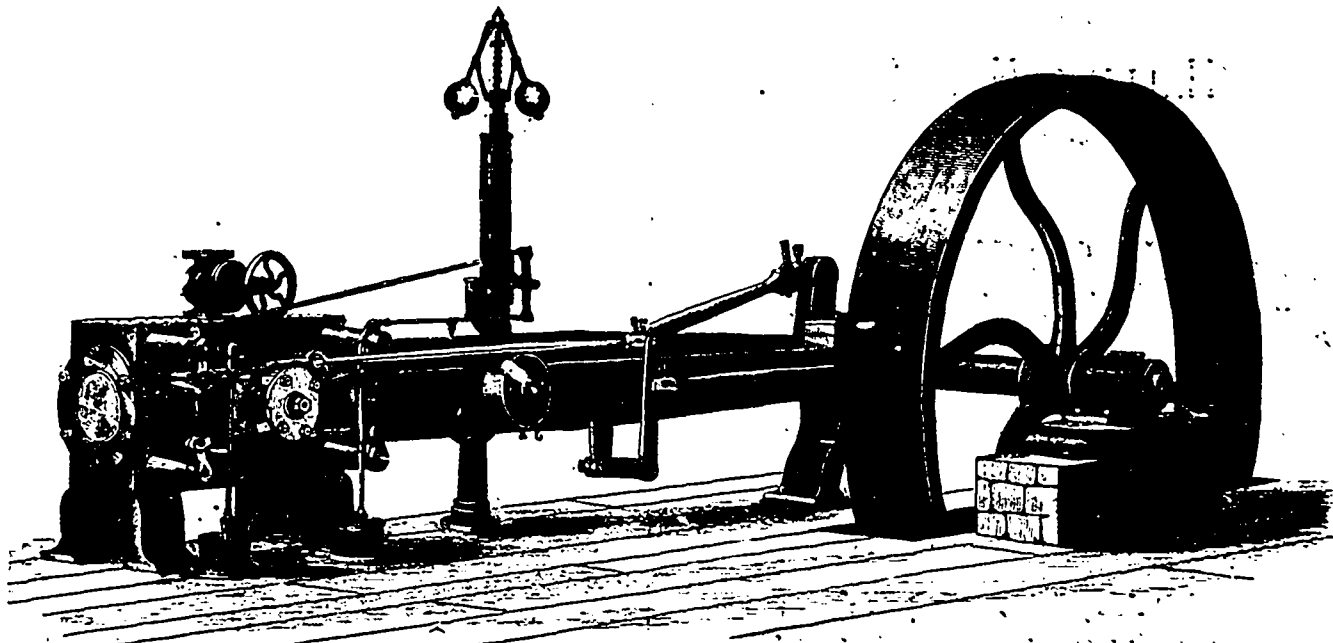
54-VILLAGE NEWSPAPERS in which advertisements are inserted for \$41.40 a line and appear in the whole lot—one-half of all the American Weeklies.

Sent to any address for **THIRTY-CENTS.**



THE GALT FOUNDRY,

Engine and Machine Works.



THE HARRIS-CORLISS STEAM ENGINE

Is the most perfect Cut-off Engine made. For Economy of Fuel, Regulating of Speed, Accessibility of all its Parts, it has many Imitators, but no Equals, and is Unsurpassed.

While many Engines of the same class have been invented, built, tried and abandoned, the Harris-Corliss has steadily gained in public favor, and is now

Without a Successful Rival.

PLEASE NOTICE SOME OF THE ADVANTAGES OF THE HARRIS-CORLISS ENGINE:

1st—**The Steam is admitted at Boiler pressure** to the piston by the main valve and is cut off at the same point, the load determining through the regulator, when the supply of steam shall be cut off. This is the only Engine that thus admits steam at full boiler pressure.

2nd—**The success of the Harris-Corliss Engine** lies in the simplicity and precise action of the governing elements; the Governor is an independent mechanism, with no extraneous load, and free to instantly respond to all variations in the angular velocity of rotating parts.

3rd—**No parts of the regulating medium enter the steam chest** and thereby be out of sight of the engineer, and subject to the corrosive action of steam and the oil used for lubricating the valves and piston.

4th—**Regularity of Speed** under varying loads of steam pressure.

5th—**Recessed Valve Seats** which avoid the liability of wearing shoulders on them.

6th—**Stop Motion on Regulator** of Engine which effectually stops the Engine whenever the regulator by any means fails to perform its work, thus preventing the Engine from running away.

7th—**Having four Valves** either can be adjusted independently of the other with the greatest ease.

8th—**The increased amount** of power it develops.

We would draw special attention to **our new and improved Adjustable Pillow Block**, which is pronounced by all practical men who have seen it to be the very best in Canada.

COWAN & CO.,

Galt, Ont., Canada.

Manufacturers of Engines, Boilers and Wood-Working Machinery—all kinds, new Patterns, highly finished.

THE
Dartmouth Ropework Co.

HALIFAX, NOVA SCOTIA.

MANUFACTURERS OF

MANILLA, SISAL AND
TARRED RUSSIAN CORDAGE,
MARLINE, HOUSELINE,
HAMBROLINE, SPUN YARN AND OAKUM.

SPECIAL ATTENTION GIVEN TO

Binder Twine.

BEAVER LINE.

The Canada Shipping Co.'s Line of Steamers,
BETWEEN
MONTREAL AND LIVERPOOL.

Comprising the following First-Class Clyde-built, Full-powered Iron Steamships:

Ship Name	Tonnage
LAKE ONTARIO, Capt. Wm. Bernson	5,300
LAKE SUPERIOR, Capt. Wm. Stewart	5,000
LAKE HURON, Capt. H. Campbell	4,100
LAKE WINNIPEG, Capt. M. L. Trautman	3,300
LAKE NEPIGON, Capt. P. D. Murray	2,300

SUMMER SAILINGS, 1887, WILL BE AS FOLLOWS:

FROM LIVERPOOL:		
Lake Ontario	Friday, July 15	
Lake Nipigon	" " 22	
"Thanemore	" " 29	
Lake Winnipeg	" Aug 5	
Lake Superior	" " 12	
Lake Ontario	" " 19	

FROM MONTREAL:		
Lake Winnipeg	Tuesday, July 10	
Lake Superior	" " 20	
Lake Ontario	" Aug. 2	
Lake Nipigon	" " 9	
"Thanemore	" " 16	
Lake Winnipeg	" " 23	
Lake Superior	" " 30	

*SS. Thanemore does not carry passengers.

The steamers connect at Montreal by direct rail for all points in Canada, Manitoba, North-West Territories and United States, to which through tickets are issued.

These steamers are built in water-tight compartments, and of special strength for the North Atlantic trade.

In the passenger departments the most perfect provision has been made to ensure the comfort and convenience of all. In the Cabin the State-rooms are large and airy. The Steerage is fitted with the most approved Patent Canvas Berths, and is fully ventilated and heated by steam.

An experienced Surgeon is carried by each steamer, also Stewardesses to attend to the wants of females and children.

RATES OF PASSAGE:

Montreal to Liverpool—Saloon, \$40, \$50 and \$60. Round Trip Tickets, \$80, \$90 and \$110, according to steamers. Intermediate, \$30, Steerage, \$20.

For Freight and other particulars, apply. In Belfast, to A. A. WATT, 3 Custom House Square; in Queenstown, to N. G. SKIMMER & Co., in Liverpool, to R. W. ROBERTS, 21 Water St.; in Quebec, to H. H. SEWELL, 125 Peter St.

H. E. MURRAY,
General Manager,
1 Custom House Square, Montreal.

HAMILTON
COTTON COMPANY

MANUFACTURERS OF

THE STAR BRAND

COTTONADES, DENIMS, TICKINGS.

Star Brand—BEAM WARP.
" HOSIERY YARN.
" BUNDLE YARN.
" CARPET WARP.
" BALLED KNITTING YARN.

First Prize, Silver Medals, for Beam Warps and Denims,
Toronto, 1881.

General Agents,—

F. McELDERY & CO.,
204 MCGILL STREET, MONTREAL.
22 & 24 COLBORNE ST., TORONTO.

ONTARIO BOLT CO., TORONTO,

MANUFACTURE

Thrashing Machine Teeth,
Machine Bolts,
Bolt Ends and Blank Bolts,
Bridge Rods and Bridge Rivets,
Coach Screws and Skein Bolts,
The Superb Carriage Bolt,
The Prize Carriage Bolt,
The Eclipse Carriage Bolt,
The Prize Tire Bolt,
The Eclipse Sleigh Shoe Bolt,
The Prize Plough Bolt,
Best Whiffletree Bolts,
Best Shaft and Step Bolts,
Best Eccentric Head Spring Bolts,
Best Elevator Bolts,
Best Norway Shackle Bolts,
Best Railway Track Bolts,
Black Iron Rivets,
Boiler Rivets,
Railway Spikes,
Pressed Spikes,
Hot Pressed Nuts,
Bridge Bolts and Rag Bolts.

PLATE GLASS

136 Cases 1-4 inch O. G. Stock Sizes.
97 " " " Silvering Quality.

We beg to advise having made very large purchases of *PLATE GLASS* before the recent extraordinary *ADVANCE* in prices.

Our *MR. PHILIPS* was fortunate enough to arrive in *EUROPE* and place large orders one week previous to the formation of the *EUROPEAN MANUFACTURERS' COMBINATION*.

We are now receiving weekly shipments, and are well prepared to place *SHOP FRONTS* in any size at a slight advance *ON COST*.

Send Sizes and Get Quotations.

COBBAN MANUFACTURING CO.
TORONTO.

HEINTZMAN & CO.

MANUFACTURERS OF



GRAND,
SQUARE,
AND UPRIGHT
PIANOFORTES.

SEND FOR ILLUSTRATED CATALOGUE.

Warehouses, 117 King St. West,
TORONTO.

MACHINERY.

Steam Engines,
Steam Boilers,
Pumping Machinery.
Lathes, Planers,
Drilling Machines.
Machinists' Tools and Supplies.
Shafting, Hangers, Pulleys.

Machinery Supply Association,
Cor. BLEURY & CRAIG STS.
MONTREAL.



HART
Emery Wheel
COMPANY
(LIMITED),
Hamilton, Canada.

MANUFACTURERS OF
EMERY WHEELS

FOR
FOUNDRIES, MACHINE SHOPS,
SAW MILLS, & PLANING MILLS.
SEND FOR CIRCULAR.

Also
MANUFACTURERS
OF —

**EMERY WHEEL
MACHINERY.**



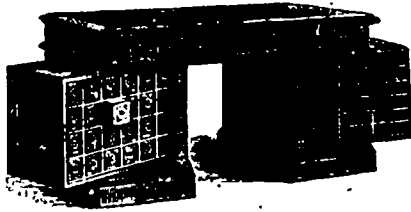
Illustrated Price List sent on Application.

W. STAHLSCHMIDT & CO.

PRESTON, ONT.

MANUFACTURERS OF

School, Office, Church and Lodge
Furniture.



ROTARY DESK

No. 50.

Send for Circulars and Price List. Name this
paper.

S. Lennard, Sons, & Bickford,

DUNDAS, ONT.,

PATENTEES OF THE "ELYSIAN" SEAMLESS HOSIERY,

Manufacturers of Plain and Fancy
Hosiery, Caps, Ties, Sashes,
etc., etc., etc.,

To the Wholesale Trade only.

Represented in Eastern Ontario, Que-
bec, Nova Scotia and New Brunswick,
by

F. W. NEWMAN & CO.,
21 Lemoine St., Montreal.

In Manitoba by
PEDDIE & CO.,
WINNIPEG, MANITOBA.

In Western Ontario by
S. LENNARD,
Senior Member of the Firm.

ESTABLISHED 1820.

EAGLE FOUNDRY.

GEORGE BRUSH,

14 TO 84' KING AND QUEEN STREETS, MONTREAL,

Maker of

STEAM ENGINES,
STEAM BOILERS,
HOISTING ENGINES,
STEAM PUMPS,
CIRCULAR SAW MILLS,
BARK MILLS,
SHINGLE MILLS,
ORE CRUSHERS,
MILL GEARING,
SHAFTING,
HANGERS AND
PULLEYS,
HAND AND POWER HOISTS FOR
WAREHOUSES, &c., &c.,
and Agent for

"Water's" Perfect Steam Engine Governor, and
"Heald & Sisco's" Centrifugal Pumps.

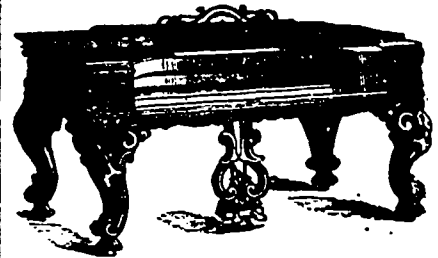


EVERY REPUTABLE DEALER KEEPS
THEM.

Insist on having the Genuine, and see
that they bear our name.

LANSDOWNE PIANO CO.

UPRIGHTS
- AND -
SQUARES



The Leading Canadian Pianos

STRICTLY FIRST-CLASS. Correspondence Solicited.

86 York St., Toronto.

Established 1872.

THE ACCIDENT

INSURANCE CO. OF NORTH AMERICA.

NEW FEATURE,

JOINT INSURANCE

FOR PARTNERSHIPS

IMPORTANT TO MANUFACTURING FIRMS.

MEDLAND & JONES,

GENERAL AGENTS,

Corner Adelaide and Victoria Streets,

TORONTO.

J.M. LAUGHLIN'S SONS.

GROWERS
MERCHANTS,
AND EXPORTERS OF

SHANEATELES FALLS
N.Y.

AMERICAN TEASELS.

