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# THE CANADIAN MANUFACTURER

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 OF THE \*  
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# AND INDUSTRIAL WORLD.

Vol. 13.

TORONTO, NOVEMBER 18, 1887.

No. 10.

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VOL. XIII.

TORONTO, ONT., NOVEMBER 18, 1887.

No. 19.

## THE TORONTO ROLLING MILL COMPANY.

IN our issue of Nov. 4, we mentioned the fact that a meeting had been held in this city on the previous day to take action in the matter of establishing iron rolling mills in Toronto. At the hour of going to press it was impossible to give a report of the meeting, but we predicted that the result would be that an extensive rolling mill plant would soon be added to the industries of Toronto. We now take great pleasure in stating that the project is in process of realization. It is thought by the promoters of the enterprise that the establishment of a first-class rolling mill and forge works here, would be a remunerative investment, and of great benefit to the business interests of the city. They find that the tariff protection is ample, the demand by large consumers most encouraging, and the facilities for receiving, manufacturing, and shipping, equal, if not superior, to any other place in the Dominion. No change in our trade relations with the United States would materially affect the results, as in any case the vantage ground would be held, the extra cost of coal being more than offset by the cost of transportation of finished iron, and cheaper raw material. The fact that Canadian-made iron is now sold 10 to 15 per cent. under American prices proves this. Confining the output of the mills to hammered and rolled iron, using chiefly bituminous coal, or charcoal, the projectors of the enterprise feel that there can be no fear of unequal competition. The comparative cheapness of charcoal to other fuel will make the cost of the production of charcoal iron very little, if any, greater than common iron, and its introduction into this market would, no doubt, displace a large portion of the quantity now imported. The making of shafting and special forgings for machinists, engine, steamboat, car and bridge builders, and other works, will, it is believed, prove a very profitable part of the business, as there is but very little done in these lines in the Dominion. The Ontario Bolt Company have offered to give a suitable site of ground, with a fine and sufficient frontage on Lake Ontario, quite near this city. This is already connected by a siding from the Grand Trunk Road, and the Canadian Pacific give a positive assurance that they will build a branch to reach the works as soon as it is required. The proposed works will make from the smallest to the largest sizes of round, square, flat, oval and other shapes of bar iron, and about one-half of the product will be rolled from hammered scrap blooms, most of which will be produced by charcoal knobbling process. It is estimated that the buildings for the works will cost \$6,000 and the machinery, including three trains of rolls, etc., for an output of 60 tons of finished iron per day, will cost about \$60,000. The provisional directors of the company are Messrs. James Worthington, president; I. M. Loeser, secretary; F. B. Polson, J. F. Risley, and Peter McIntyre.

## UNFAIR COMPARISONS.

THE public debt of the United States on November 1st, as shown by the statement of the Treasury Department was, less cash in the treasury, \$1,238,692,701, against \$2,508,151,211 in 1867—twenty years ago. At that time the public debt was \$69.26 per capita, while now it is less than \$22. Then the interest charge was \$3.84 per head, while now it is only 84 cents. The receipts during October were, from the customs, \$18,708,688, internal revenue, \$10,467,515; miscellaneous sources, \$2,626,769. The customs receipts were from duties upon imports, and those from internal revenue from excise taxes upon whisky and tobacco.

Regarding these facts the *Hamilton Times* asks: "Can there be any doubt that the tariff of a country with the financial position of the United States must come down? When the United States is lightly taxed, can Canada hope to compete under heavy taxation?" and holds to the opinion that the very best thing Canadians can do is to abolish their customs duties, accept the advantages of untaxed imports, and let the exports take care of themselves.

That other ultra free trade advocate, the *Toronto Globe*, speaking of the marvellous advances the Southern States of the American Union have recently been making in manufacturing industries, says that "those manufactures would not have grown so amazingly if each of those States had had a monopoly of the markets in which they exist, all others being excluded, or even if they had had only the markets of the Southern States free to them, and were 'protected' in those markets. They have succeeded because the markets of the whole United States were open to them; because they were free to compete in the north, south, east and west, with the long established manufactures of New England and other Northern States," and asks, "Why should not free admission to these markets have a similar effect on our Canadian manufactures?"

It is strange that the causes which have conspired to produce the conditions in the United States above alluded to, and which could never under any combination of circumstances prevail in Canada, are not considered in drawing comparisons between the two countries. The United States never had a distinctive protective tariff policy until the accession of the Republican party to the control of the government, and that country was never remarkable for its rapid growth, large accumulation of wealth and great importance as a nation until these were achieved under the management of that party. Even the Northern States of the Union never displayed any remarkable energy in the directions indicated until the blight of human slavery was removed from them, and after that event

what was known as Mason and Dixon's Line—a compromise between freedom and slavery—was, until the results of the war of the rebellion entirely obliterated and removed it, the demarcation as between the restless energy and go-aheaditiveness of the typical Northerner, full of invention and manufacturing enterprise, and the slow-going, class-divided people of the South. At the North labor was honorable, and a noble rivalry was conspicuous as to who could and would build the most ships, the largest factories, the most extensive industrial establishments, operate the largest numbers of spindles, and give employment to the largest numbers of free workers—men, women and children. The social classes of the South were divided, first, by the color line—as between whites and blacks; second, and by the same line—slaves and those who were not slaves; and third, by the whites who were slave owners from those who were not slave owners—or in their elegant vernacular, “poor white trash.” From the earliest history of manufacturing enterprises in the United States, the North—the location of those enterprises—clamored for “protection” to their industries as against foreign competition, but this was always successfully combatted by the aristocrats and slave owners of the South, who, as free traders, argued then as free traders argue now, that they should be permitted to buy wherever merchandise was the cheapest, regardless of all other considerations. This difference of opinion regarding the policies of the country at one time assumed such formidable proportions that it was thought by many that it would sooner or later result in the disruption of the Union, and such weak and feeble efforts as developed in the occasional enactments of so-called protective tariff laws were the compromises effected between the respective parties.

But even when the United States had attained their greatest ante-bellum importance—during the administration of President Buchanan—their revenues were in a most deplorable condition, and twelve per cent. per annum interest was paid for money with which to carry on the government. This was clearly the result of the free trade or tariff for revenue only policies that had always prevailed.

With the advent into power of the Republican party came war and its train of woe and evil, and it was to meet the emergencies arising therefrom that the highly protective tariff that was then instituted was created. The war destroyed human slavery and abolished class distinctions, and the tariff brought in a revenue that has almost entirely wiped out the war debt and established an order of things that has made the United States the richest and most prosperous nation on the earth, and filled the land with manufacturing and other industrial establishments.

Perhaps the most important feature of general interest in the United States resulting from the destruction of the institution of human slavery there has been the rapid assimilation of such industrial and social ideas by the people of the South as always characterized those of the North, and it is to this assimilation chiefly must be attributed the source of the impetus that is making the South the important manufacturing community that it is to-day, as alluded to by the *Globe*, and nothing else. It is “protection” pure and simple, and the South would have experienced just such a condition of things many long years ago had it not been for the blighting effects of human slavery, and

the insane prejudices arising therefrom and incident thereto, as manifested in the anti-protection sentiments that for so many years dominated the country and retarded its growth and prosperity.

The *Times* stultifies itself when it says that the United States is “lightly taxed,” for its contention has always been that the operation of a protective tariff is to impose burdensome and grievous taxation upon the people. The extent of this taxation is shown in the fact that the revenue of the United States amounts to about a million dollars a day for every day in the year, and still such anti-Canadian journals as the *Hamilton Times*, and the *Toronto Globe*, in their efforts to denationalize Canada, are constantly endeavoring to annex it to the United States.

It is well known that the surplus in the United States Treasury is rapidly increasing, and that the most important question now before the people there is as to how this surplus is to be diminished. While the Republican party as such has always been the prime supporter of protection, the Democratic party has been divided on that question, and the breach is constantly widening. Long before Mr. Cleveland became President the Democrats controlled one branch of Congress—the Lower House—in which all financial measures must of necessity originate, and now in addition to that they also have the Executive, and have had it for nearly three years, yet still they are as far as ever, apparently, from the fulfillment of their promises to bring about such reforms as would bring the current receipts of the government to about what the necessary expenditures are, or should be. True it is that the tariff has been reduced on many articles, and entirely removed from many others, but the trade of the country increases so rapidly that the reduced duties on imports produces more revenue than before, and the opinion of many is, that to accomplish the object in view the tariff should be increased almost or quite to a prohibitory point. The argument of the free trade wing of the Democratic party to effect a reduction of the tariff by saying that the internal revenue taxes on whiskey should be maintained in the interest of temperance, fails in the face of the answer that all internal revenue taxation should be abandoned, and the temperance question left to where it properly and legitimately belongs—the different States as such, which could regulate, even to entire suppression, the use of whisky, as is already done in some of them.

It is strange, as we have said, that while such entirely dissimilar circumstances surround the two countries, it should be expected that the prosperity of Canada should be gauged and measured by the standards of the United States.

#### THE BONUSING CRAZE—A RESULT.

This journal has always clearly defined itself regarding the system of municipal governments bonusing industrial enterprises as inducements to locate within their boundaries. One great objection to the system is that unless equal favors are offered to enterprises already established, injury is done to them inasmuch as the older concerns, as part of the tax-payers, are compelled to contribute to the establishment of rival concerns; and another is, that however meritorious and honest the bonusees may be personally, operating on money, or enjoying franchises and privileges which are very valuable, but which

cost them nothing, their success in business would not be as assured as though they were operating with their own money entirely.

We fail to discern why butchers, bakers, dentists, grocers, physicians, and even lawyers, should not be bonused to the extent at least of having their places of business furnished to them by the municipality free of charge, or even have considerable sums of money given them, as well as other business men who may happen to think that they would be successful in operating foundries, workshops, flour mills, or carriage works. There are many hard-working, industrious and competent dress-makers, for instance, who, if they had suitable places of business for which they would not have to pay any rent, and a few hundred dollars in cash with which to keep going until prosperity and wealth should crown their efforts, would give employment to considerable numbers of sewing women and girls; and there are plenty of blacksmiths, carpenters and bricklayers who, under similar favorable conditions, would also employ large numbers of assistants, and thus add to the general prosperity of the town which might thus favor them. It is very true that those who were already in business in such places, unless they were also equally favored, might not like the arrangement, seeing that as tax-payers they were forced to contribute of their hard earned gains to establish competitors in business and keep them going; and we fail to observe why concerns, some of which are reputed to be worth hundreds of thousands of dollars, should be granted valuable rights and franchises, and large sums of money, and the others go without. It is all wrong. It is commendable in municipal authorities to do what they properly and equitably can to induce capitalists to establish industrial works in their midst, but the unfortunate system of bonusing for the purpose, now so prevalent in some parts of Canada, cannot but fail in accomplishing the desired prosperity, for it is too much like endeavoring to lift oneself over a fence by the straps of his boots.

The town of Markham, Ont., is now undergoing an experience in this direction that other towns afflicted with the bonusing craze would do well to observe. Not long since the Markham authorities granted \$5,000 bonus to a woolen manufacturing company as an inducement to start a mill there. It is true that a mortgage was given by the company on their machinery to secure the repayment of the bonus if the mill should cease to be operated, but the mortgage is found to be valueless inasmuch as it comes in as second to another mortgage for a much larger amount, similarly secured, and behind the \$4,000 lien of the manufacturers who built the machinery. The machinery and fixtures, it is understood, have been removed to another town, presumably on the inducement of a tempting bonus, and the Markham people are in a terrible but impotent rage.

It is to be hoped that the Ontario Legislature at its next session will take this matter in hand and enact a law that will put a stop to this foolish bonusing system, and the people at large should see to it that their representatives in the legislature do their duty in this respect.

THE shoe manufacturers of the United States held a meeting in New York this week for the purpose of organization for mutual protection against what they consider unjust demands of their employees.

## MARINE SUBSIDIES.

In a recent issue of this journal we quoted the St. John, N.B., *Globe* as saying that a great many people were interested in learning what measures could be devised for the purpose of restoring Canadian shipping to its former prestige. The *Globe's* remarks were prompted by the occurrence in Boston of a convention of persons interested in the restoration of the American shipping interests, our contemporary taking the occasion to remark that "Canadian ocean-going shipping appears, under a protective tariff, to be suffering quite as badly as that of the United States." We showed very conclusively that that portion of the shipping of the United States which was employed exclusively in trade within the United States, was protected by laws which gave it that trade to the exclusion of vessels of any other nation; that because of this protection that interest was in a most flourishing condition, and that it was only those American vessels which were employed in international trade, and where the protective laws alluded to could not apply, that we were suffering from competition from foreign vessels. The remedy we suggested was that the United States should liberally subsidize all American-built ships employed in foreign trade, and that Canada should do the same for her own vessels.

We are aware that free traders do not agree with us in these views. They argue that the true policy is to be allowed to purchase ships or anything else wherever they may be bought the cheapest, regardless of all other considerations. The fallacy of this proposition is apparent when it is shown that for many years a number of the European nations enjoyed unrestricted free trade in ships, during all of which time their merchant marine decreased in numbers and efficiency, almost as deplorably as did that of the United States during the two decades succeeding the war of the rebellion. It was not until these European nations resorted to the plan of subsidizing or awarding bounties to their home built sea-going vessels that their respective flags began to be more numerous, and their ships to increase their proportion of the traffic done in the carrying trade of the world. By an Act passed by the French Legislature in 1881, construction bounties were granted upon the gross tonnage of all vessels built in France, amounting to \$11.58 per ton for iron or steel vessels; \$7.72 for composite vessels, and \$3.86 per ton for wooden ships over 200 tons; and for every 225 pounds of machinery placed on board, \$3.32 was allowed. A navigation bounty is also provided for at the rate of 29 cents per ton for each 1,000 miles traveled in foreign trade. This bounty is reduced one cent per ton for each year an iron vessel has been afloat, and one and one-half cents in the case of wooden vessels. Vessels built of iron, according to the plans of the Government, receive 15 per cent. additional bounty. In Italy a bounty is based upon tonnage for iron and steel ships built and registered in Italy at the rate of \$5.70 per ton; \$1.92 for indicated horse-power on machinery; 58 cents per 100 pounds upon boilers, and a bounty upon navigation of 13 cents for every 1,000 miles steamed from Italy to non-European ports. The Spanish Government has a graduated system of bounties, especially favorable to Spanish ships engaged in the West Indian and South and North American trade, and it is stated that under this system the Spanish steamers that ply

between Havana and New York get over \$4,000 from the Government for each round trip.

Until these systems were inaugurated the shipping interests of these countries were in a depreciated and deplorable condition, and the international ocean commerce of the world was carried on almost exclusively in British-built ships. But no nation aspiring to maritime importance can afford to be dependent upon any other nation for its shipping, the reasons for which are obvious; and the several nations alluded to finding that they were building up in times of peace vast industries in Great Britain to the unqualified wrong and injury of both capitalists and workmen at home, also realized the fact that should war ever occur between themselves and Great Britain, they would not be in any condition to replenish their commercial fleets, so necessary under such circumstances. The British system of subsidizing its merchant marine, nearly every vessel of which is capable of transformation into either transports or gun boats at small cost and short notice, has served to create an auxiliary reserve to its navy that would make her the mistress of the seas whenever occasion might arise for her to assert her sway.

#### MUST BUSCOMBE GO?

A FEW days ago the Hamilton papers reported a meeting of the Bricklayers' and Masons' Union there, the most important question discussed being relative to continuing work on an engine house and a bell tower being built for the city. The discussion all hinged on the Buscombe question, and whether the "ethics" of the union in particular, and organized labor generally, would permit the union bricklayers to work on any city job as long as Buscombe was allowed to lay bricks in the city sewers. The union was anxious to learn whether some of the jobs on which the members had been working had been let to the contractors before the trouble with Buscombe commenced. If yes, then the union would kindly permit its members to continue at work building engine houses and bell towers, even if Buscombe did lay bricks in the sewers; but if no, then all work must stop and the city of Hamilton go without engine houses and bell towers, or discharge Buscombe. The union have had a good deal of trouble in getting at the facts, and the members are wrathful at the custodians for not permitting their committee to have access to the city archives and examine the contracts on file to determine their exact date. They felicitate themselves, however, that the work in the sewers where Buscombe is employed will soon be stopped by the approaching cold weather; and the feeling was expressed that when work is recommenced next Spring it will be given by those who may then be in authority to another man.

Must Buscombe go? Every citizen of Hamilton—yes, of Canada, is interested in the question. Is this a free country any way? Are a committee of jawsmiths and agitators belonging to and controlling a labor union to dictate to the authorities of Hamilton who shall and who shall not build sewers, engine houses and bell towers for them? Are unlawful conspiracies, such as this which seeks to force Buscombe, a poor bricklayer, from his humble occupation, to be allowed to flourish and override both law and justice? Have the authorities of Hamilton any sense of justice about them that they allow themselves to be brow-beaten and bull-ragged by such fellows? The

action of these union men is clearly a conspiracy to deprive an innocent man of the rights and privileges guaranteed him by law. Has the poor man no friends who will appeal to the law in his behalf, and have these conspirators arrested, tried, convicted and encased in striped clothing in the penitentiary? Such is the punishment for conspiracy.

O, is it not pitiful,  
In a whole city full,  
Friends he has none.

We have looked in vain to see either of the big daily newspapers of Hamilton speak a word of encouragement to Buscombe, or to denounce his would-be oppressors. We suppose that it is too close to election day for either of them to venture to do so.

#### "KLEPTOMANIA" vs. THEFT.

THE Windsor, Ont., *Review* tells of a woman who recently stole an article of merchandise from a store in that city, but was discharged from custody by the magistrate, who believed that the woman was irresponsible for her acts—otherwise afflicted with "kleptomania"—and who was subsequently up on a similar charge in Detroit. In hearing the case the Detroit magistrate said: "I am not a believer in the theory of kleptomania. When people get to stealing it should be called theft, and proceeded against accordingly. Kleptomania is a good deal like gout. None but the rich can afford to be afflicted with it."

This incident is confirmatory of what was recently said in these pages regarding the way offenders against the law are regarded in Canada, at Windsor, and in the United States, at Detroit. Although smuggling is a violation of the law, as is theft, according to the *Review* "the smuggling bag is in a large majority of the houses along the Canadian frontier, and a part of the bride's trousseau," the sentiment of the people being that it is not immoral to smuggle; and when Windsor "ladies" are caught stealing they are excused on the plea of "kleptomania." Across the line smugglers are punished by imprisonment and wear prison garb, and the thief who is exonerated from blame in Windsor, being a kleptomaniac, is punished as a thief in Detroit for committing a similar violation of law. Canadian law-breakers, it seems, can systematically smuggle goods across the line, or steal merchandise from stores in Windsor, and go unpunished therefor on the grounds that smuggling is not disreputable, and that theft is kleptomania, for which the thief is not responsible.

Morality in that part of the country must be at a very low ebb, but violations of law should be punished, even if the population of a public institution at Kingston be largely increased. Let smuggling be suppressed.

#### GET OFF THE FENCE, PLEASE.

WATER and oil have no affinity and will not mix, and fire and water will not exist in the same place at the same time. On like principles, probably, our worthy contemporaries the *Spectator* and *Times*, of Hamilton, seem to always vary regarding all matters of public importance, but there is one thing concerning which they are agreed and are entirely homogeneous—they both most religiously abstain from any expression of opinion regarding what is probably the most important ques-

tion that has arisen in that city for many a day. We refer to the issue now squarely forced upon the Hamilton city authorities by the Bricklayers' Union there as to whether unaffiliated or non union bricklayers shall be permitted to work in the construction of sewers and doing other similar work for the city, against the remonstrance of the Union. Our worthy contemporaries have from time to time in their local columns given whatever facts may have transpired regarding the matter, but these have always been recited in as few words as possible, and no editorial allusions have ever been made to it by either of them. They discuss Commercial Union and other topics ad nauseam, but these are of no more importance to the working people of Hamilton and to all the people of that city than that as to whether the city authorities shall discharge the man Buscombe on the demand of the Bricklayers' Union, merely because he is non-union man, or unaffiliated with or in arrears of dues to that union. The refusal of these newspapers to recognize the issue, or to discuss it in any way, is simply arrant cowardice. They hermetically seal their mouths and say nothing. Are they afraid to espouse the cause of either side? If they think that the demand to discharge Buscombe is wrong, in justice to that man they should defend him, and insist that the authorities show backbone enough to retain him at all hazards, if they think the Bricklayers' Union in the right, they should urge the authorities to discharge Buscombe, to the end that important city work be not retarded. They should get down off the fence.

#### NATURAL GAS IN CANADA.

It is to be hoped that extensive and intelligent explorations and borings for natural gas will be made in many parts of Canada where there are geological reasons known to exist for its existence, and where no such explorations have already been made. And it is equally to be hoped that in those locations where the gas has already been discovered, efforts will be made to secure it in such volume as will cause it to be utilized in such industrial establishments as may already exist contiguous to the wells, and be the means of inducing the starting of a great many other manufacturing concerns. There are strong indications of the existence of natural gas in both Ontario and Quebec, and the recent rich strikes at Courtright and Port Colborne encourage the belief that the article can be had in many places in large and paying quantities. At Courtright a rich vein was struck by a farmer who was boring for water. The boring tools were blown high into the air by the force of the escaping gas, and it was found impossible to again insert them into the well hole. Experts will put the well in condition so that the gas can be saved and utilized, and already Courtright is being mentioned as being, in the near future, the cite of an important manufacturing town. Boring for gas at Port Colborne has been going on for some time, but a few days ago a rich vein was encountered, and the escaping gas rushes forth with a roar which is said to fairly shake neighboring buildings, and the supply is thought to be inexhaustible. It is being utilized for both domestic and manufacturing purposes, and Port Colborne will soon become an important manufacturing town. We understand that borings are soon to be commenced in or very near Toronto in

search of gas. Experts who have gone over the ground very carefully have found indications of gas, and if the search is as successful here as it has been elsewhere in Canada, Toronto is likely to become quite as important a manufacturing centre to Canada as Pittsburgh is to the United States.

#### CANADIAN TRADE.

THE exports of Canada to the United States during the fiscal year ending June 30, amounted to \$39,523,085, and the imports (for home consumption) to \$34,988,110, a total of \$74,511,795. While the exports are about up to the average of the last few years, there was a considerable falling off in the imports. In 1882 our exports to the United States amounted to \$47,940,711, in 1883 to \$41,688,723, and in 1885 to \$39,752,734, but with these exceptions the exports of the fiscal year recently closed, were greater than during any year since 1880. On the other hand, our imports from that country have been steadily decreasing. In 1880 these amounted to \$29,346,948, since which year they have never been less than \$40,000,000, except in 1881, when they were \$36,704,112. In 1883, they reached the maximum of \$56,032,333, since which time each year has witnessed a decrease on the preceding one. These figures teach that while the value of our exports to the United States is substantially the same from year to year, the Canadian products which they buy being things that they want, and must have, our purchases from them are steadily and rapidly decreasing, because of the fact that as our manufacturing industries grow and widen, they supply the people of Canada with Canadian-made merchandise, to the exclusion of those made in the United States. We take great pleasure in exhibiting this most flattering condition of Canadian industry.

AN idea of the amount of business being done in Toronto at this time is had from the statement of Grand Trunk officials to the effect that about 200 cars a day are unloaded, an average of 750 loaded cars standing in the yards waiting to be discharged of their contents. The Canadian Pacific road and other transportation companies are equally rushed with business.

A COUPLE of weeks ago an unaccountable explosion in St Louis wrecked a couple of houses, and several persons were killed. The press telegrams sent all over the country stated that the explosion was caused by gasoline, although there was no reason for attributing it to that cause, and some of the more thoughtless of our contemporaries were led to denounce the use of gasoline as being too dangerous to be allowed in common use. It is said that a lie will travel seven leagues while truth is pulling on its boots to pursue. In the first place sensational headlines were placed above the telegram announcing the event, and startling importance given to the deadly gasoline, but two days later a press telegram without headlines, and embraced in a half dozen lines of reading matter, stated that the chief of the St. Louis fire department, who had made official examination into the matter, had declared that the explosion had not been caused by gasoline at all, and attributed it to dynamite. It looks as though the telegraphic news gatherers are in league with the anti-gasoline fire insurance companies to "down" gasoline on every possible occasion.

◇ THE ◇  
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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.

*Fiat justitia ruat cælum.* The condemned anarchists have met their deserved fate.

RECENTLY the *Hamilton Spectator* rather sarcastically criticised the *Montreal Herald* for having misused quotation marks, and in the same issue in giving an item of local news, headed its article "An Unsuccessful Suicide." Funny.

It is said that a syndicate of New York capitalists will engage in slaughtering Canadian cattle at some point on the Canadian Pacific road in the North West, probably at Medicine Hat or Maple Creek, and ship the dressed meat to New York.

A SYDNEY, New South Wales, stove manufacturer who has begun business only within the present year, now gives employment to 32 hands. He has lately constructed a stove for a jail at a cost of £400 which is capable of cooking for 1,000 persons a day at an expenditure of 10 to 12 shillings per week.

CAPTAIN JONAS BERGMAN, of West Selkirk, Manitoba, has projected a scheme to bring out seventy-five thousand Icelanders who are still remaining in their native country. It is proposed to charter a steamer or steamers, and not only bring the Icelanders but also their stocks of cattle, horses, etc.

WE are under obligations to Mr. J. W. Sutherland, of *Stoves and Hardware*, St. Louis, Mo. for valuable information concerning the vapor stove question. *Stoves and Hardware* has accomplished a great deal of good in overcoming the prejudices that once existed in the United States against the use of this valuable household utensil.

DETROIT DEALERS are supplying cranberries at \$3.50 per barrel. At Killarney and other points in Algoma, where they are grown extensively, they bring about \$7.00 per barrel.—*Algoma Pioneer.*

WILL some of our Commercial Union friends tell us wherein the agriculturists of Killarney and other points in Algoma where cranberries are grown extensively would be benefited by a removal of the tariff?

THE returns of the British Board of Trade for the half-year ending June 30th, 1887, show a marked decrease in the exports of iron and hardware from Great Britain to Australasia, the values being £1,957,324 against £2,349,486 in the corresponding period in the previous year. Railroad iron and tin plates were the only articles that increased in quantity. The National Policy in Australasia encourages the manufacture of iron and hardware there, and as the infant industries grow apace the importations decrease.

THE completion of the Canadian Pacific Railroad to the Pacific coast is causing some concern on the part of the Russian government. It has, in fact, caused that government to strengthen its eastern fortifications against the possibility of an English approach from the Pacific side. In still another way it has its effect upon Russia by largely stimulating the public desire for a through railway from Russia to the Pacific through Siberia. It is definitely stated in this connection that the government's recently announced policy of stopping railway construction has been abandoned.

A LARGE colored map, 6 feet by 9, showing the canals of Canada and the connecting and competing canals of the United States, as well as the Canadian water power, will shortly be issued by the Department of Inland Revenue. The main map is planned on a scale of three miles to the inch, there being shown in addition an enlarged map of each canal. Tables and other smaller maps in the main map also show canals proposed as well as defunct, profiles, lockages, and tables of comparative sizes of locks. The map was designed by Mr. F. K. Blatch, of the Department, who has been engaged on the work for three years.

DURING the first nine months of 1887 there were started in the Southern States 26 iron furnaces, 80 machine shops and foundries, 17 agricultural implement factories, 32 carriage and wagon factories, 444 mining and quarrying enterprises, 3 stove foundries, 4 natural gas plants, and 56 miscellaneous iron works. All this means great prosperity for the Southern States. Protected by tariff against European wares there is no earthly reason why the South should not become a great manufacturing as well as a great agricultural section. Under free trade all natural resources in the line of minerals would lie undeveloped and valueless. With manufactures there will come prosperity for all.

TWENTY-SIX manufacturing concerns in Philadelphia consume 458,000 tons of coal as fuel per annum, and the question is being discussed among them as to what would be the effect upon the coal monopoly if these consumers were to adopt gas for fuel. Nearly or quite all of these concerns could with an expenditure of from \$20,000 to \$70,000 erect their own gas works. If this were done thereafter the cost of their fuel would not be more than about one third of their present outlay for coal. The Messrs Disston, the great American saw manufacturers, whose works are at Tacony, near Philadelphia, have built their own gas works, whereby they are economizing in their fuel account to the extent indicated.

THE formal opening of the Smellie Brothers' Iron and Steel Works at Burnside, near Dunedin, New Zealand, Australia, occurred on August 20th last, when the Premier of the Province and a large number of distinguished guests were present. These works have been in operation for some time, but have only just been completed by the erection of the plant for the manufacture of Bessemer steel. It is said that the products of these works are fully as good and considerably cheaper than similar metals imported from Great Britain. A popular impression has long prevailed that New Zealand was the abode of

cannibal savages, but the opening of the works here alluded to shows that that far away country is considerably in advance of Canada in the matter of manufacturing its own iron and steel.

WE recently alluded to the fact that a vessel load of spent charcoal from the Moncton, N.B., sugar refinery had been sent to Massachusetts to be used for fertilizing purposes, and took occasion to remark that it was unwise on the part of the farmers there to allow such a valuable material to be carried abroad, as it should have been utilized upon their farms. And now comes the *Medicine Hat, N.W.T. Times* and tells that one man there has cleared \$1,100 during the past season gathering and selling buffalo bones found on the prairie. These bones are even more valuable as food for crops than spent charcoal, and every farmer should have a mill in his barn in which all the bones that he can lay hands upon should be ground. Such mills are not expensive, and we presume they are carried in stock by some of the larger dealers in agricultural machinery.

THE Sydney Iron and Hardware Importer's Association has recently been formed at Sydney, New South Wales, consisting of bona fide importers of these lines of goods, whose objects are for mutual protection against unsound customers; for the interchange of trade information of general value; for the regulation of prices where desirable and possible; for concerted action in the general interests of the trade, and for the promotion of friendly personal relations among members. Perhaps this association might be called a "combination" to boom prices, and denounced as such by the free-traders, but there can be no doubt as to its utility. Such associations exist in all mercantile communities from free trade England to such protective tariff countries as Australia, and it would be a good thing for Canadian manufacturers to encourage them here for similar purposes.

THE Minister of the Public Works Department, New South Wales, Australia, has issued a notice to the effect that as he is desirous that Colonial-manufactured iron should have every fair and reasonable opportunity afforded it to compete with the imported article, it should be specified for in all the annual contracts to be let. He says that a test should be provided irrespective of brand for all iron, and if the locally made article satisfies that test it should be taken in preference if there be no great difference in price. Also, that, whenever possible, it should be mentioned in the specifications in all contracts. This is eminently practical, and the rule should prevail in Canada. But too many contractors discriminate against Canadian made iron and give it the go-by, sending abroad for their materials, even when the cost as regards the domestic and foreign article is the same, or nearly so, and it is to be hoped that hereafter the government, in making contracts, shall insist on Canadian manufactures being always specified and used whenever it is possible to use them.

Kamper should scamper.—*Toronto Globe*.

THE above elegant expression is applied to Mr. Edward Kamper whose name has become prominent of late in connection with a syndicate of capitalists who propose working the extensive and valuable coal and iron ore deposits in Nova Scotia. The *Globe*, true to its anti-Canadian instincts, is

grieved to see any move being made that will redound to the benefit of Canada. The syndicate are not asking for any financial or other assistance from the Dominion government, and the establishment of the works which they propose to erect and operate would give employment to thousands of workmen, and place Canada in a comparatively independent position as regards the manufacture of steel rails, and merchantable forms of steel and iron. All that the syndicate ask, and a most reasonable request it is, too, is that before investing their money in Canada they may have official assurance that there will not be for a specified number of years any changes in the tariff laws that will injuriously affect their business.

THE Barrie town council is invited to loan the sum of \$25,000 to a manufacturing company at the rate of five per cent. In return the company undertakes to put \$25,000 of its own into its business and to employ sixty men. The municipal loan appears to be taking the place of the bonus. If the interest and capital are duly collected it is less objectionable than the actual gift. Still, all should be served alike. If Smith can borrow from the public, why not Brown?—*Toronto Mail*.

SURE enough, why not? If it is right, just and equitable for a town to loan \$25,000 to a concern who propose to invest a like amount in a manufacturing enterprise, why not loan to any applicant an amount equal to that which he proposes investing in business there? And why stop at the manufacturing business? Why not also loan money to grocers, dry goods men, druggists, hotel and boarding house keepers, newspapermen, and any others who desire to embark in business and are not able to raise but half the necessary amount? These all might be viewed as important business enterprises, but our opinion is that municipal corporations are not created for such purposes.

THE Canadian Pacific Railway is developing quite a large traffic in manufactured cotton goods between New England points and China and Japan. The *Boston Journal* cites the case of the recent shipment of some 3,000 bales of cotton cloth to China via the Boston and Lowell railroad to Newport, Vt., thence per the Canadian Pacific to Vancouver, and by steamer to Yokohama and Hong Kong. This shipment made a train of 26 cars, which ran through to the ship's side at Vancouver, some 3,200 miles from Boston. By this route, says the *Journal*, "cotton goods can be shipped from New England even without the expense of the dressing which the English manufacturers apply to their packages shipped through the Suez Canal. Instead of that we can ship the cloth in ordinary bales or boxes, because, the voyage being a short one, and wholly in a northern latitude, the condition of the goods on arrival will be the same as when they left the factory. The time required for the shipping of the goods from the New England rail to Shanghai is about thirty days; the time from England via the Suez Canal to the same port is about 53 days.

THE work on gully drains will stop to-morrow night, for the reason that it has been completed and the money provided for the purpose is all expended. Mr. Buscombe will then be discharged from the city's employ. It is on his account that the Bricklayers' Union refuses to allow any of their members to work on any job for the city. As soon as he has been discharged, it is believed, that the union will give their consent to their members to go on any city work that they may be wanted for. Contractor Cripps can then have all the men he

wants for the building of the new fire alarm bell tower, which should be hurried forward without delay. Up to date only the foundation has been laid—*Hamilton Times*.

It is suggested, as a means of settling the difficulty between the bricklayer's union and the city, that David R. Gibson organize Buscombe and his assistants into an assembly of the Knights of Labor.—*Hamilton Spectator*.

THE probability is that the infamous fight that has been waged against Buscombe by the Bricklayers' Union of Hamilton, will be successful, and that this poor man will be kept in enforced idleness henceforth although he is a competent and efficient workman, ready, able and willing to work. The Hamilton city authorities have allowed themselves to be brow-beaten by these conspirators, to their shame be it said.

A CASE somewhat novel as well as important has just been decided at Little Falls, New York. The case was brought by Minnie Brown, an employe in the knitting mills, in which the Knights of Labor were locked out by the Manufacturers' Association. Miss Brown claimed that she was induced to quit work on the promise of one Orlo Bates that she should be paid her wages during the time the lockout lasted. She quit work and received some money, but not an amount equal to her wages, and hence brought suit for the balance. Bates claimed that he was acting for the Knights of Labor organization, and was not personally responsible, but the court decided otherwise, and the jury rendered a verdict in favor of Miss Brown for \$67.50. If this verdict is sustained by the higher courts, to which it will probably be appealed, as in it a question of vital importance to unionists is involved, it cannot but have a most significant bearing on the future of strikes. Cases similar to that of Miss Brown are very frequent, and if the courts hold that a claim for wages can be maintained against parties promising wages to strikers, no unionist with any property from which such claims can be collected will be willing to be a party to any such arrangement.

A CORRESPONDENT of the *Hamilton Spectator* complains that, being in want of some repairs for his cook stove, on application at a foundry where such things were made was surprised at being charged eight cents a pound for them. He states that the iron of which these repairs are made costs the foundryman about  $\frac{3}{4}$  cent a pound, and that "by a very simple and inexpensive process" it is converted into an article for which he was required to pay an advance of 700 per cent. He calls the matter "the result of a combination," and thinks that Commercial Union would remedy the evil. The complainant is either very ignorant or intentionally unjust. In the first place pig iron, of which stove repairs are made, is worth much more than  $\frac{3}{4}$  cent a pound, even when it is bought in hundred ton lots. Good foundry irons in Pittsburgh are worth from \$21 to \$24 per ton; and equal quality of Scotch pig is worth as much or more than what the Hamilton grumbler mentions, when laid down in Canada, not including the duty. The "simple and inexpensive process" that he speaks of involves the investment of very large capital in buildings, machinery, pig iron, fuel, etc., and the employment of a very high grade of skilled artisans. The *Toronto Mail*, commenting on the matter, says that what seems most remarkable under the circumstances is

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the fact that some Conservatives stand by the "combinations" so loyally. It really seems that some people would grumble even if they knew they were to go to heaven the next minute.

SUGAR is dearer in Canada than in any other civilized country. Ordinary brown sugar such as is used in cooking—is sold in England at one penny per pound. Sugar is three and a half cents a pound dearer in Canada than in England. The reason is that a very heavy tax is imposed on the importation of sugar. Do you think that tax goes into the public treasury? If you do you are very much mistaken. The three and a half cents on each pound goes into the pocket of the Montreal refiner! That is the National Policy. You pay three and a half cents extra on every pound of sugar you use in order that a refiner in Montreal may realise a fortune and give employment to some 300 men. Now, we are not joking these are all facts, and does it not occur to you that you are a precious ninny to be beguiled into paying five cents a pound for sugar worth two cents under the delusion that it is a National Policy which loyal subjects ought to support. Give us British sugar at a penny a pound, and let National Policy and Redpath go to Hong Kong. Them's our sentiments. *Bobcaygeon Independent.*

This statement is entirely unfettered of the chain of hard, concrete fact. If it is true that sugar is 3½ cents a pound dearer in Canada than in England, it is not true that the 3½ cents goes into the pocket of the Canadian refiner, and the *Independent* either knew that in making that statement it was suffering from an artificial recollection of misleading statistics, or that it really, yes, really didn't know what it was talking about. There is no sugar produced in Canada, and all importations of the article pay duties which go into the public treasury. The "precious ninnies" are those who swallow such stuff as that fed to them by the *Independent*.

ILLUSTRATIVE of the depreciation of the value of land in England, it may be stated that a farm in Lincolnshire was recently offered for sale, and the highest bid was £1,400, although there was a mortgage of £5,000 on the property. The price offered was £14 an acre, the land originally costing £100 an acre. During the fortnight ended 15th October 132 farms, with an aggregate of 20,000 acres, were offered for sale in Cumberland and Westmoreland. Less than half the price current ten years ago were offered.—*Port Hope Guide.*

Two large farms in North Hants, Eng., have just been let rent free, the only conditions being that the buildings are to be maintained and the land properly cultivated, and the tenants are to pay tithes, rates and taxes.—*Toronto Mail.*

We request the careful attention of Mr. Goldwin Smith, Mr. Erastus Wiman, Mr. Valancey E. Fuller, the *Toronto Globe*, and the *Mail* itself to the above items of specific news regarding the wonderful depreciation in the value of farming lands in England. And we also request the attention of the "hopeless and helpless" farmers of Canada to the same those of them who can only see hope and help for their condition in the ignis fatuus of free trade. Here we see that farming lands in one of the best counties in England, which were originally worth \$500 an acre, going a begging at only \$70 without a purchaser; that only a month ago 132 farms, averaging nearly 150 acres each, located in two other wealthy counties there offered for sale at less than half what they were worth ten years ago, and two other farms, most favorably located in yet another part of England, actually let out "rent free," the tenants only being required to pay taxes. If such conditions prevail among the agricultural classes in England, where free trade prevails, and

where land owners are glad to let their farms to any who will pay the taxes on them, what might not Canadian farmers expect if free trade prevailed here also? British farmers have the opportunity to buy manufactured goods unrestrictedly in the cheapest market in the world, and if such privilege implies prosperity they should certainly all be rich and prosperous, but the facts show differently, and all over the kingdom the farmers are in the sorest distress.

*The Canadian Lumberman*, published at Peterboro', Ont., comes to us clothed in an entirely new dress and thoroughly remodelled, and presents as handsome a typographical effect as any trade journal in the country. *The Lumberman* is published in the interest of the lumber trade and allied industries of Canada, and is always prompt in giving full and timely information on all subjects touching these interests.

*The Canadian Grocer* is a new advocate for public favor, published in Toronto by the Grocer Publishing Company, limited, Mr. J. B. McLean being the secretary-treasurer and manager. Mr. McLean is an experienced newspaper man, long and most favorably known in this city, which fact guarantees both the accuracy of any information that the columns of the *Grocer* may contain, and the freshness and interest of the same. During the remainder of the year the *Grocer* will be issued monthly only, but beginning with the coming year it will appear once a week.

AN iron column 23 feet long and weighing over 6,000 pounds, part of a new lighthouse being built, was recently landed at Bishop Rock, England, and a storm coming up, was left lashed by a half-inch chain at each end to strong eyebolts. Three days afterward the workmen returned and found that the column had been tossed up by the waves twenty feet to the top of the rock, where it was swaying about like a piece of timber. Two days afterward, when they were able to land, the workmen found that a blacksmith's anvil, weighing 150 pounds, which they had left in a hole 3½ feet deep and only 2½ feet in diameter, had also been washed by the waves completely out of the hole.

*The Ottawa School of Art and Science* commenced its session a few weeks ago, and there are now nearly seventy people in attendance. The subjects taught have all a direct bearing on the application of art to Canadian industries, and it is gratifying to observe that so many young men and women are making special study in this direction. Mr. Stalker, who has charge of the school, is a competent and accomplished gentleman, and an enthusiast in his work. Many of his pupils who sent industrial designs to the London Colonial and other exhibitions, where they were most favorably noticed, as well as those to whom were awarded the medal of the Canadian Manufacturers' Association, are still studying with Mr. Stalker.

*The Brantford Telegram* accused the established carriage makers of that city of opposing the bonus to the new carriage works for the reason that they got no bonuses themselves. Mr. A. Spence writes in reply: "I can say for myself, and I believe I can speak equally for the other carriage makers, that I would neither accept a bonus nor exemption, and when I fail to make my business pay, I will step down and out without soliciting any aid in the way of bonus. If selfish motives consist in defending our pockets against others putting their hands in and using our capital to build up a business to compete with us, then we acknowledge that we are governed by such motives and principles as you ascribe to us." Mr. Spence has the best end of that argument.

THE use of iron and steel in place of wood in the construction of railway car bodies is urged now and then in this country, and has been employed to some extent in countries where the climate is unfavorable to the preservation of wood. An English company recently secured an order for 325 iron cars for one of the railroads in India, and another manufacturer is building 300 similar cars for another railroad in that country; referring to which the *Indian Railway Service Gazette* feelingly remarks that "carriages built that way will not be very attractive in the merry months of May and June." The idea of traveling in iron vehicles with the tropical sun beating down upon them and converting their interiors into ovens is certainly not a cheerful one.—*The Railway Age.*

THE far-reaching consequences of the doctrine of evolution are strikingly set forth in "The Factors of Organic Evolution," an essay by Herbert Spencer just published by Mr. J. Fitzgerald, 24 East Fourth street, New York. As commonly apprehended, this doctrine is supposed to be a theory to account simply for the differ

ences between species, but in fact it applies to life in all its phases—not less strictly to psychology, ethics, sociology, than to physiology and anatomy. In a word there is no department of human knowledge or of philosophical speculation that has not been revolutionized since the publication of Darwin's Origin of Species. The work before us, published at a merely nominal price, should be in the hands of every one who would think the thoughts of the age in which we live.

The New York *Evening Sun* reminds us of the "gilded codfish" that hangs in the main hall of the Massachusetts State House on Beacon Hill. The *Sun* should not forget that when the codfish was selected as an emblem, it meant more than it does to-day. It meant that the fisheries were then the leading industry of the Eastern States. But things have changed since then. King Cotton has come East and asserted his supremacy, and now instead of the gilded codfish there should be an immense spindle,—not a gilded one, but a substantial, solid, American-made spindle,—which should be labeled: "This little instrument, even improperly protected, has made our Government rich, and fed, clothed, and educated our operatives better than those of any other nation, and left our manufacturers enough with which to defeat free trade whenever it has ventured to lift its head. The spindle made England the greatest nation on earth, and it is rapidly making New England even more powerful. Let us protect the spindle, the loom and shuttle will care for themselves."—*Wade's Fibre and Fabric, Boston, Mass.*

The New York *World* has for some weeks maintained a special correspondent in the anthracite coal regions of Pennsylvania, whose business it has been to picture in lurid colors the degraded condition of the Hungarian and other miners in these places. This enterprise is all right if the facts cited are not used to force false conclusions. If the employers are to blame for importing Hungarians and for underpaying them and other miners for their labor let them receive all the condemnation the *World* can give them. We are no friend to Hungarian labor anywhere, nor to greedy and cruel employers of any kind of labor. But the *World*, and the papers which copy its correspondent's letters, are guilty of contemptible deception when they charge upon our Protective policy the degradation which exists in the anthracite coal regions. Anthracite coal is on the free list, and has been for many years. When the *Chicago Tribune* heads one of the *World's* letters with such phrases as the "Crime of the Tariff-Protected Coal Barons of Pennsylvania" it should be told that it is simply lying. There is absolute Free Trade in anthracite coal.—*Philadelphia Bulletin.*

The Ontario Rolling Mills Company, Hamilton, Ont., have been experimenting in their works for some time past in the use of petroleum for fuel instead of coal, and by the improved methods of applying it, which have been ascertained through these experiments, it is probable the system may be adopted in the company's extensive works. About a dozen trials have been made during the past few months with increasingly favorable results, and if other tests that they are making prove as satisfactory the company will probably decide to abandon the use of coal in favor of petroleum. The experiments that are being made are on two 40-horse power boilers, and the oil used is the residuum left over after the naphtha and coal oil have been drawn off from the crude petroleum. The advantage in cost is chiefly secured in lessening the cost of labor in running the engines in large establishments such as these rolling mills, where fifteen furnaces are in use. No firemen are needed, as the engineer can regulate the supply of fuel himself. The heat given off is intense, and one of the objects of the experiments is to find out if the boilers and furnaces will stand it. If the company decide to adopt it, oil will be used for the six auxiliary engines and in a number of the inside furnaces in the works.

MR. EDWARD KAMPER, whose name has come rather prominently before the Canadian public of late in connection with the Kamper syndicate, which proposes to work the coal and iron deposits in Nova Scotia, expresses himself as being hopeful of the success of the contemplated enterprise. Before entering upon it, however, no company desire to know whether there is a sufficient quantity of ore, and whether the quality is good enough to warrant the expenditure of some two or three millions of dollars in plant. With the object of obtaining information on these points, the company have sent a number of engineers to Nova Scotia to examine the deposits, who have been instructed to ship some 200 tons of ore to the works in France, where they will be converted into steel. If it is found that the ore is of good quality, a suitable spot to commence operations will be selected. Mr. Kamper states that it will probably take two or three months to gather the information required, and if they get no satisfactory promises by that time from the Government they will withdraw entirely. If the Government gives its assistance,

they would probably be able to commence operations at the beginning of next spring. He believes that the industry would prove of immense advantage to the country, and that Nova Scotia would become as important a mining and manufacturing district in Canada as Pennsylvania is in the United States. It would give great impetus to railroad business and increase the value of land in the neighborhood of the mines. It would be impossible, however, to start large works like these without protection from the Government. Mr. Kamper states that Sir Charles Tupper had led him to understand that as the duty in the United States was about \$17 per ton on iron, the duty here would be about \$13, which, he thought, would be quite sufficient. The company did not want any regular subsidy, but would be satisfied with an order for steel rails. Instead of giving a subsidy of \$3,200 per mile to companies for rails the Government could give an order to the company for these rails. Mr. Kamper says that if the industry is established it will open up employment for a very large number of hands. The first workmen would necessarily have to be Frenchmen, who would teach the Canadians, and they would bring probably 2,000 of them here, who, with their families, would make from six to seven thousand people. After that they would employ Canadian. The capacity of the works would be about forty to fifty thousand tons of iron a year, and within two years, it is claimed, all the steel rails needed in Canada would be made in Nova Scotia. The company will not be an entirely French one, but will include a number of influential Canadians. The offices of the company will be in Montreal, and a number of the directors will be Canadians.

The W F Cochrane Roller Mills Supply Company, whose head offices are at Hamilton, Ont., are building a large factory at Dundas, Ont., for the manufacture of the Cochrane patent roller mill machinery, the tools, etc., for the same being now in course of construction at the Canada Tool Works of Messrs. John Bertram & Sons, Dundas. Mr W F Cochrane, the inventor of the process here alluded to, has a mill in operation in Peterboro', Ont., where the product of Manitoba spring wheat is about 93 per cent. clear, bright flour. This mill is what is known as a 100 barrel mill, that is, its output with ordinary roller machinery was 100 barrels of flour per day, but with the Cochrane process it is producing flour at a higher rate than 200 barrels per day. Among the greater advantages claimed for the process are that the mill can be driven with a third less power, and can do twice as much work with the same number of rolls as by the ordinary process. In a 120 barrel mill it takes only one 6½ inch belt to drive it, whereas the present system requires fourteen 6½ inch belts, with all attendant pulleys, shafts, tighteners, bridging and gears. What it required fifty six pulleys to do, three now does the work. Three feet of shafting in this mill does the work of fifty eight feet in other mills. The second advantage is, that while it saves a large amount in motive power, it increases the capacity of the mill to nearly twice its former capacity, even with using the old rolls. The third advantage is its cheapness of construction. It can be built for one half the cost other roller process mills can be built for. The fourth advantage is that the belt tension, not being on alternate rolls, as in the old system, but on one pulley only, the rolls are kept in train with perfect uniformity. This gives an even granulation, a higher proportion of middlings, more patent flour and greater profit to the miller. There is one more advantage. In other roller mills the feed rolls and the speed rolls are not uniform. Thus, if a belt slips and the speed rolls slacken in speed, the feed roll still continues pouring down the usual quantity. The consequence is that the speed roll is overburdened, the succeeding rolls are given too much work, and a large part of the flour goes to enrich the bran bin. In this mill the slightest variation, so much as one revolution, occurring in the speed roll, is transmitted to the feed roll instantly. Last week a delegation of the Toledo, Ohio, Business Men's Association visited Peterboro' for the purpose of inspecting the machinery in operation there, and witnessing its working, the result being that Mr. Cochrane has sold out his right of manufacturing in the United States to a company composed chiefly of gentlemen in Toledo, for \$200,000 of paid up stock, the capital stock being fixed at \$400,000. Mr. Cochrane states that a mill with seven double sets of rolls and all necessary driving machinery ready for operation can be built at a cost not exceeding \$1,100, while other mills cost about \$1,500. There are said to be some 18,000 or 20,000 flouring mills now in operation in the United States which will be compelled to adopt this system or be forced out of business. As we have before stated, a company has been formed to manufacture this machinery in Canada. Mr. Cochrane reserves to himself the patent right to the process in Great Britain, France, Germany and Russia, in which countries he is now applying for patents. He is a Scotchman by birth, a lawyer by profession, a mechanical genius by instinct, and a resident of Washington, D.C., United States.

# Manufacturing.

THE CANADIAN MANUFACTURER

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

THE Retort Gas Burner Co., of Montreal, has been incorporated with \$99,000 capital.

MR. T. P. PEARCE, Marmora, Ont., is building an extensive lumber mill at that place.

MR. H. C. HARRISON, Norwood, Ont., is about starting an extensive sash and door factory.

MR. JAMES BENOR, Campbellford, Ont., has his new sash and door factory nearly ready for work.

THE Queen Manganese Co., St. John, N B., are making large shipments of ore to Liverpool, Eng.

THE Sorel Boot and Shoe Company, Montreal, with a capital of \$50,000, are applying for incorporation.

It is stated that some of the quartz taken from the Sudbury, Ont., mines assays as high as \$30,000 to the ton.

MESSRS. HAY BROS., Listowel, Ont., will build a large roller mill at Neepawa if a liberal bonus is offered them.

MR. JOHN CAMERON, of Minnedosa, Man., is negotiating for the purchase of the McIntosh saw mill at Rapid City.

MESSRS. D. McLACHLAN & SON, St. John N.B., are building four large locomotive tenders for the Intercolonial Railroad.

MESSRS. GOLDIE & McCULLOUGH, Galt, Ont., are building a 70-horse power steam engine for the Oshawa Roller Mills.

AN anthracite coal mine is being opened near Cannore by a company organized by Mr. Brickendorf.—*Calgary Herald*.

MR. W. J. MINORE, Peterboro', Ont., has bought out the Hall Biscuit Works at that place, and will operate the same.

THE brick and tile manufacturers in Toronto made during the past season 21,000,000 of bricks and 350,000 drain tile.

MR. J. E. GOULD, of Uxbridge, Ont., has just contracted with the Grand Trunk Railway Company for supplying 300,000 ties.

THE woollen mills of Mr. Thomas Waterhouse at Palmerston, Ont., were destroyed by fire Nov. 11th. Loss about \$11,000.

MESSRS. JAS. HARRIS & CO., St. John, N.B., have just completed two Russell snow plows for use on the Intercolonial Railroad.

MESSRS. BRONSON & WESTON, Ottawa, are applying for incorporation under the name of the Bronson & Weston Lumber Co.

THE large lumber mills of Messrs. Hurdman & Co., Hull, Que., near Ottawa, were destroyed by fire Nov. 6th. Loss about \$60,000.

MR. JOHN GLASSFORD, Chatham, Ont., has begun the manufacture of parlor organs, and is said to be turning out some fine instruments.

THE Harrison Planing Mill and Sash Factory, at Owen Sound, Ont., was totally destroyed by fire on November 1st. Loss, about \$10,000.

MR. GEORGE BROOKS, of Barrie, Ont., is building a saw mill at Melville Bay, on the Lake Huron shore, about 12 miles above Providence Bay.

MESSRS. BICKELL & BRAY have recently become the proprietors of the flouring mills at Petrolca, Ont., having bought out Messrs. Sheperd & Sons.

THE saw mill of Messrs. Reynolds & Secord, at Reynoldsville, Ont., near St. Catharines, was totally destroyed by fire Nov. 7th. Loss about \$15,000.

MR. CRICKSHANKS, of North Coaticook, Que., has leased suitable buildings there and is making necessary preparations for starting a knitting factory.

MESSRS. E. BROAD & SON, St. Stephen, N.B., have recently added steam power to their axe factory and otherwise increased the capacity of their works.

MR. A. IRWIN, Blenheim, Ont., during the months of September and October manufactured 100,000 barrels for the flour, apple and bean trade of that town.

THE extensive woollen mills of Mr. S. V. Wilson at Union village, near London, Ont., were totally destroyed by fire on Nov. 5th. Loss about \$15,000.

MR. THOMAS COOKSON, Hamilton, Ont., has invented and manufactures a wire rope machine which he claims will revolutionize the method of making wire rope.

THE extensive woollen and cotton mills of Messrs. Harvey, McQuesten & Co., Hespeler, Ont., are advertised to be sold at auction on the premises on Nov. 22nd.

THE Dutton, Ont., *Enterprise* now operates its presses with power from its own petroleum engine, the only one, it says, in the western part of the Province.

MESSRS. MOORE & MCGARVIN, Acton, Ont., have been approached to consider bonuses to move elsewhere with their trunk manufactory.—*Dundas Standard*.

THE Christy Lumbering Company, of Muskoka, have purchased the Strickland limits north of Minden, and have commenced operations in the township of Hindon and Oakley.

THE wheel and spoke manufacturers of Ontario were assembled in convention in London, Ont., Oct. 28th, for considering matters affecting their trade. The attendance was very large.

THE anthracite coal company have an engine and boiler and a considerable amount of machinery at the station, on the way to the coal mine, for its further development.—*Calgary Tribune*.

MR. ROBERT HARRISON, Cavan, Ont., is adding a sash, blind, door and chair factory to his lumber mill, and is building a 50x30 foot extension to his works to accommodate his enlarged business.

MESSRS. MILLER & WOODMAN, Milford, N B., are building what is said to be the largest shingle mill in the Province. It will be 165 feet long and 80 feet wide, and there will be 20 shingle machines in it.

THE Knechtel Furniture Co., Hanover, Ont., are now employing more than 100 hands in their factory, against only about 60 or 70 less than a year ago. They have recently made considerable additions to their works.

THE Canadian Locomotive and Engine Co., Kingston, Ont., have contracted with the Dominion Government for the immediate construction of 14 new locomotives for the Intercolonial Railway, the cost of which will be \$140,000.

By the completion of the Joggins Railway, the output of coal at the Joggins is to be immediately doubled, and instead of the men being idle in winter their number, now 70, is to be increased to 140.—*Amherst, N.B., Gazette*.

BUFFALO bones look worthless on the prairie, but yet the gathering of them proves quite an industry. Mr. James Sanderson has cleared \$1,100 so far this season shipping bones to the east.—*Medicine Hat, N.W.T., Times*.

MR. THOMAS TESKEY, Welland, Ont., has bought a church building in that town and will fit it up for a canning factory. It will be ready for operations next season, and will give employment to quite a large number of hands.

THE timber is being laid on the ground at Magog for a new cotton factory, and the Magogites are quite jubilant over this addition to their industries.—*Coaticook (Que.) Observer*. We were about to remark, "Why"—but we refrain.

MR. H. L. WHEELER, Sherbrooke, Que., has invented an arrangement by which the sagging down and getting out of shape of coat collars is prevented. It is a conformator consisting of a steel spring to be worn under the collar.

THE Toronto Engineering Company, Toronto, in which J. H. Venables and J. B. Cloudesley were interested, have settled with their creditors at 80 cents on the dollar 50 per cent. cash, and the remainder at two and four months.

It is said that Mayor Howland, of Toronto, will be at the head of a company about being formed for the purpose of resuscitating and operating the salt wells at St. Catharines, Ont. The wells are the property of Sir W. P. Howland.

It is understood that the stock in the Saw and File Manufacturing Company is all, or nearly all, taken up. Negotiations are going on for the lease of the Lundy tannery, which has not been used for a number of years.—*Peterboro Review*.

MESSRS. WILFRED SKATFE, J. O. Lafrinier, J. O. Villeneuve, Alphonse Desjardines, Arthur Desjardines and Louis Tranchemontague have applied for incorporation as the Berthier Beet Root Sugar Factory, with a capital stock of \$100,000.

MR. SHEPARD, of the Phoenix Canning Factory, Welland, Ont., will double the capacity of his works before next year's canning season. This is a permanent business which gives employment to quite a large number of women and children.

A COMPANY has been formed in Halifax, N.S., to operate a line of steamers between that city and Boston. Two steamers are now being built on the Clyde, Scotland, which will have accommodations for 400 passengers and cost \$200,000 each.

MR. T. PUGH, mining engineer of Bellaire, Ohio, has gone to Banff to supervise the setting up of the new coal mining plant there. Judging from the analyses he has seen he says the coal must be equal to the best Pennsylvania anthracite.

A COLOSSAL stick of timber from Puget Sound has been contributed to the Mechanics' Exhibition at San Francisco. Its length is 151 feet, and it is 20x29 inches through. It is believed to be the longest piece of timber ever turned out of any saw mill.

THE Ewen Cannery, near New Westminster, B.C., is claimed to be the finest and most complete works of the kind in the world. Its capacity is 1,800 cases of salmon per day, and during the season recently closed the total pack amounted to 22,000 cases.

MESSRS. KERR BROS., Walkerville, Ont., are building the compound engines that are to propel the new excursion steamer being built at Windsor, Ont. They have also contracted to build three expansion engines for steamboats, one of them being for Toronto.

THE Nova Scotia coal output will be ten per cent. greater this year than last year. Notwithstanding the lateness in the opening of navigation at Cape Breton ports, the Cape Breton mines have already shipped 60,000 tons more this season than they did last year.

MESSRS. FULLER & HILL, Bolton Centre, Que., manufactured over 60,000 butter tubs during the past season. Their works have been shut down for more than a month owing to low water, and orders for several thousand tubs could not be filled on this account.

THE Osborne-Killey Manufacturing Co., Hamilton, Ont., are building pumping engines for the water-works of that city, the duty to be required of which will be to lift 100,000,000 foot pounds per 100 pounds of coal fuel consumed. These engines are nearly completed.

THERE is great excitement in and around Sudbury over the reported discovery of gold. It is said that in blasting for other metals a vein of gold bearing quartz was struck of great richness and extent, and the whole neighborhood is worked to fever heat about it.—*Algoma Miner*.

MR. WM. LANE, Windsor, Ont., is building what is said to be the first steamer ever constructed at that place. The vessel will be 131 feet long and 30 feet beam, and will be capable to accommodate about 700 excursion passengers. She is expected to make 25 miles per hour, and will cost \$25,000.

THE new rubber works being erected at Granby, Que., are said to be of colossal magnitude. The flume is about half a mile in length and over six feet in diameter. It is put together in sixteen sections, each section having eight hoops of inch round iron. The cost of building the flume alone is \$3,500.

MESSRS. ROWLIN & Co., Hamilton, Ont., have purchased and will operate the machinery recently used in the works of the Guelph Fertilizing Co. for the manufacture of sawed bones for button making, and fine bone meal for fertilizing purposes. This machinery was built in England at a cost of £400 sterling.

IT is now decided to utilize the West Farham sugar factory as woolen and cotton mills, for which purpose the town council has agreed that as soon as the company commence operations the directors should receive a bonus of \$25,000 on condition that they agree to employ not less than 300 hands. *Quebec (Que.) Observer*.

THE Dominion Show Case Co., Toronto, have occupied their new and commodious factory at West Toronto Junction, heretofore described in these pages. They have a large showroom, warehouse and offices at 40 Yonge street, which is much more conveniently located for business than was their old place on Adelaide street.

THE McLeod Gazette has received information concerning a rich find of anthracite coal in the Crow's Nest Pass of the Rocky Moun-

tains. There is said to be a 16 to 18 feet vein of it in sight. Twenty men are at work developing it. The coal is said to be quite equal to the Banff anthracite, and there are unlimited quantities of it.

MR. J. B. DOBOLS, a fireman of the Montreal Fire Department, has invented a contrivance by which the lamps on the fire apparatus are attached to a swivel in such a manner that no matter at what angle the shafts are placed the lamps are always in the desired position. The arrangement is being applied to all the hose reels of the department.

THE property of the Dry-dock, Foundry & Shipbuilding Co., Colliwood, Ont., has changed hands, Mr. Geo. E. Keith, of Toronto, becoming the proprietor. Mr. Keith has already made extensive repairs to the dry-dock in the shape of a new pumping engine, and since taking the management of the affair has been doing a rushing business.

MR. THOMAS McDONALD, late of Messrs. McDonald, Kemp & Co., Toronto, having sold out his interest in that concern, will engage in the manufacture of a few special lines of metallic goods, among which will be wash boilers, galvanized buckets, stove elbows, etc. We learn that Mr. McDonald has not yet selected a site for his works, but it will probably be either in Toronto or Oshawa, Ont.

THE contract has been let to Mr. Robertson for the erection of machine shops for the Erie & Huron Railway Company on their property in close proximity to the station. The work has been commenced and will be proceeded with without delay, and the completion may be looked for at an early date. The shop will give employment to a number of skilled mechanics.—*Chatham, Ont., Planet*.

THE Beaver mine has shipped in silver ore and concentrates \$153,000 worth since the beginning of August. This leaves the company about \$130,000 ahead on the transaction, or about at the rate of \$600,000 a year. The capacity of the mill will very quickly be doubled, and if the above mentioned result is not sufficiently startling he will be a staid man who can retain his equanimity.—*Algoma Miner*.

THE great success attending the boring for natural gas at Port Colborne, Ont., has incited quite a furor in that part of the country, and pools are being formed to bore for gas at several places along the line of the Welland canal, particularly at St. Catharines and Merriton. Drilling for coal has been commenced in Grimsby, near St. Catharines, a Pennsylvanian expert having declared that coal exists there.

MR. G. P. MAGAN, of Toronto, has been awarded a contract by the Grand Trunk Railway Company to supply all of the white oak timber for car-building and ties for track-laying, etc., for 1887 and 1888. This is the largest contract of this kind ever awarded to one man by the company, being for the entire divisions west of Niagara River and Toronto to Windsor and Sarnia, and Lake Erie to Georgian Bay and Lake Huron.

WHEN digging a well on the farm of Mr. J. Buigley, of Verulam, near Lindsay, Ont., a strata of rock was struck that gave promise of coal oil being found in the vicinity. The well was sunk through nine feet of gravel when the rock was exposed, and a strong smell of coal oil was developed. A piece of the rock was taken to Lindsay, and the *Post* says that inspection certainly verifies the supposition that the seam is oil bearing strata.

THERE is a boom in anthracite coal mining in the North-west. A mine is being opened near Cammore, and a rich find is reported in the Crow's Nest Pass, just beyond the summit, a vein of between sixteen and eighteen feet being in sight. The coal is said to equal the Banff product and in unlimited quantities. The mine at Banff is getting in some new plant and business will "hum" at that point this season.—*Winnipeg Commercial*.

THE Joggins railway, just formally opened, is not a coal railway, simply or principally. It connects the Intercolonial Railway with a large lumber producing region and with the fine agricultural district on the River Hebert, which produces 6,000 or 7,000 tons of hay, about 50,000 bushels of potatoes, and 20,000 bushels of grain. It is said that the capacity of the mills on the river is about 12,000,000 feet of lumber.—*St. John, N.B., Sun*.

MESSRS. E. F. MOSLEY & Co. have been voted a bonus of \$15,000 and exemption from taxation for 20 years by the municipal authorities of St. Hyacinthe, Que., as an inducement to erect their proposed tannery there. It will be remembered that this concern operated a tannery at St. Henri, Que., which was recently destroyed by fire. The authorities of this latter place have refused to offer any inducements for the rebuilding of them.

THE excavation for the Halifax, N.S., dry dock is well nigh completed, and about 150 feet of the concrete walls have been laid. Every appliance known to modern handicraft in the conduct of large contracts is in operation at these works and the progress is very rapid. The coffer dam is a complete success and none of the harbor water can find an entrance into the excavation. The dock will be finished and ready for service within two years.

In our last issue we stated that Mr. W. Baxter, late of the Canada Jute Company, Montreal, would assume the management of the new bag works of the J. A. Converse Cordage and Plaster Works, of that city, of which Messrs. A. W. Morris & Bro. are proprietors. On the occasion of Mr. Baxter quitting his old place, he was entertained at a banquet given in his honor by his old associates, on which occasion he was presented with a costly diamond pin.

R. A. GREGORY'S mill, at Carleton, after some repairs, has resumed work, which will be continued about a month longer. Adams & Gregory's mill will run until the first of the year, when it will close down for repairs. Hayford & Stetson's mill will only run about a month longer. The Clark mill, it is expected, will run a few weeks yet. Warner's shingle mill is running night and day, giving employment to about 25 men.—*St. John, N.B., Sun.*

MESSRS. ROBIN & SADLER, Montreal and Toronto, manufacturers of leather belting, have just received an order from Messrs. E. P. Allis & Co., Milwaukee, Wis., for all the belting which will be required in the large flouring mill which they are now building at Keewatin, Man., for the Lake of the Woods Milling Co. These mills are among the largest in the Dominion, and the quantity of belting that will be required to supply them will be very large.

A MATTER of much interest to the phosphate industry of Canada has just been made public by the discoverer, Mr. L. S. Shirley, of New Bedford, Mass., which bids fair to revolutionize the business so that the bulk of the production can be used in its almost original form. By this process the phosphate can be rendered semi-soluble by treating it under pressure with certain gases, and tests by solution in water have shown as high as 28 per cent. as being immediately available.

MESSRS. PLANT & McVITTIE, of Paris, Ont., have purchased the P. P. Cope foundry, at Norwood, Ont., and have taken possession. They are practical and efficient workmen, Mr. Plant having been superintendent of the David Maxwell Machinery Works and Mr. McVittie, foreman moulder in the same establishment. Besides making plows and stoves and doing general jobbing, which was carried on by Mr. Cope, the new firm will add the manufacture of mowers, etc.

MESSRS. PILLOW, HERSEY & Co., Montreal, have applied for incorporation under the name of the Pillow-Hersey Manufacturing Co., with capital stock of \$800,000. This is one of the largest and most important manufacturing concerns in Canada, and embrace in their products every description of cut nails, tacks, brads, railway and pressed spikes, horse shoes, carriage, tire and other bolts, coach screws, hot pressed and forged nuts, felloe plates, liming and saddle nails, tufting buttons, etc.

MESSRS. HANRAHAN BROS., Ottawa, have recently placed in their abattoir a set of Knowles pumps from which two streams can be thrown in a few minutes on any portion of their extensive premises. The boiler used is in a separate building and also supplies steam for purifying tallow. Should an alarm be given at night a pressure of 62 pounds can be obtained in a few minutes. A hose reel and hose, together with four nozzles, make up the total compliment of the fire brigade's resources.

THE Ottawa Street Railway Company intend ordering four new cars to be delivered next spring, from New York, to replace some of the older cars now in use, and which are very much dilapidated. Including the new car recently purchased, the company will have next summer four entirely new cars, larger and much more comfortable than those now in use.—*Ottawa Journal.* Why not have these cars built in Canada? Why go to New York for cars that ought to be made at home?

THE gentlemen who are endeavoring to establish a saw and file works have met with encouragement in their canvass for stock. Several capitalists who are largely interested in property have agreed to take stock provided other property owners will do the same. If each of these prominent men would take just enough to encourage the industry there would be no difficulty in getting a start made. The town is ready to put up the building when sufficient stock is subscribed.—*Peterborough Review.*

THE greatest attraction in this neighborhood at present is the gas well on the farm of Mr. Edward Lee, about two miles from here.

The gas has been issuing from the well for over two weeks, and still continues unabated. It ignites very readily and burns with a flame about two feet long, but can be extinguished at pleasure. No effort has yet been made to turn it to practical account, but no doubt Mr. Lee will find some way of utilizing this valuable find.—*Tapteytoon (Ont.) correspondent of the Dundas Banner.*

THE Shaw tannery at Grand Lake Stream consumes twenty cords of bark daily and about four hundred and fifty sides of sole leather are turned out every twenty-four hours. Two steamers are run in connection with the tannery and are kept busy during the open season transporting bark and other supplies. During the present year the steamers have brought to the tannery upwards of seven thousand cords of hemlock bark. The tannery is under the management of C. W. Clements.—*St. Stephen, N.B., Courier.*

THE Acton "Bag and Trunk Company" are desirous of moving from that village, and have been in correspondence with Mayor Henry, expressing their desire, if possible, to locate in Brantford. They state that they are not bonus hunting, but would like reasonable inducements. The firm employ between 75 and 100 hands. The mayor has written them that if they are desirous of prompt action he will call a public meeting for the purpose of laying any request they may make before the citizens. *Brantford Courier.*

A TRAIN leaves St. John to-day for the Joggins, Cumberland county. The Joggins railway company enables us to say that St. John does what no other city in the Dominion can do. It turns out a train, consisting of an engine, tender and three cars, including a passenger car, all being the work of private firms. Government or corporation works in other cities can do this, but nowhere else can it be done by private firms. In the present instance the locomotive was constructed by Fleming & Son and the cars by James Harris & Co.—*St. John, N.B., Sun.*

THE Canada Atlantic Railway Company have recently received from the Pullman Car Company, Pullman, Ill., a train of twenty-five new freight cars. This is the first instalment on an order for five hundred box cars to be used for carrying lumber from Ottawa to Boston. The balance of the cars are expected to be delivered at an early day. This will make a total of 1,200 cars now owned by the Canada Atlantic Railway Company and used for the lumber carrying trade from Ottawa, besides one thousand cars used for the grain business from Ottawa to New York.

A LOT of specimens of magnetic iron ore from Sandy Point, St. George's Bay, Newfoundland, have recently been sent to England. The deposit is said to be very extensive, the ore cropping out upon the face of a hill running with well defined walls clear to the top. It runs then backward for a long, but as yet unascertained, distance. The lode is over 100 feet wide and thousands of tons of ore could be taken off the face of the lode in sight. A number of men are prospecting, having strong reasons for assuming that coal will be found at no great distance from the deposit of iron.

WE understand that Mr. P. P. Cope gives up possession of the foundry and adjoining shops, having sold out some time ago. The gentlemen taking charge come well recommended, having been for some years foremen of a large manufacturing establishment in the west. We extend our best wishes to the new firm.—*Norwood, Ont., correspondent of Peterboro Review.* This is just as clear as mud. "The gentleman taking charge" should feel flattered that his name has been so effectually suppressed, notwithstanding the fact that he comes "well recommended." But why this vague mess?

THE firm of McDonald, Kemp & Co., Toronto, has been dissolved by the withdrawal of Mr. Thomas McDonald, the senior member, who will engage in other business. Mr. W. A. Kemp, a brother of Mr. A. E. Kemp, the junior member of the firm, has bought an interest in the concern and is admitted to partnership. The firm name of McDonald, Kemp & Co. will not be changed at present. This firm are probably the largest manufacturers of stamped and pieced tinware, etc., in the Dominion, and are the sole manufacturers in Canada of the celebrated Walter's patent metallic shingle.

THE Chatham Manufacturing Company, Chatham, Ont., built 1,800 of their "Standard" wagons during the past year, shipments of them to distant points including British Columbia, Manitoba, New Brunswick and South America. They have recently filled an order for 500 of these wagons to go to the North-West. The Chatham wagon has been adopted as the standard by the Dominion Government, and all Chatham wagons conform to the standard. This concern also manufacture railway platform baggage trucks, farm

and other dump carts, the celebrated Maine bob-sleigh, patent Champion hay rack, etc.

MR. A. BERRY, of Waterloo, Que., has invented an automatic pneumatic car lamp extinguisher, and an experimental trial was recently made with it on a Canadian Pacific coach with satisfactory results. A reservoir under the car is filled with compressed air by the action of the brakes, and closed by a valve, connecting with pipes leading over the car and into the chimneys of the lamps. To it are attached a system of weights so arranged that on the car losing its perpendicular from any cause, accidental or otherwise, the valve is opened and a current of air liberated, which at once, through the pipes, extinguishes the lamps.

MESSRS. BRONSON & WESTON and other Ottawa lumbermen are reported to have a big project in hand. Their representatives are seeking information in the United States relative to the establishment of a factory in Ottawa for the manufacture of paper pulp out of the waste pine and spruce ends and boards. Tens of thousands of boards and loose ends are annually sold at the mills in Ottawa for kindling wood at a very low rate. Several factories in the United States are now converting this waste into paper pulp, from which paper of excellent quality is made. Sawdust, however, cannot be used for this purpose because the fibre is not long enough.

It will be remembered that the McClary Manufacturing Co., extensive manufacturers of stoves, heating apparatus, etc., whose foundry and works are at London, Ont., made a large exhibit of their products at the Colonial Exhibition in London, Eng., last year. An agreeable result of that display was to acquaint the people of Great Britain with the excellence of McClary stoves, and a large and growing trade has been built up therefrom. Ever since the exhibition alluded to this concern have been making regular and frequent shipments to different points in the kingdom, and they are constantly in receipt of orders from them for these goods. Last week the company made two considerable shipments to England and Scotland in fulfilment of such orders.

A VERY singular incident was noted in connection with recent mill fire in Carlton, Mich. The building was burning fiercely, but the big engine which drove the machinery continued to run all through the blaze and by that means was saved from destruction, though there was not a wall standing on any side of it when the fire had finished. The pumps were also running, and kept the boiler supplied, so there could be no explosion. It was a peculiar spectacle to see the engine driving away at a slashing speed in the midst of the flames, but the motion somehow saved it from fire. All the rest of the machinery was a total loss.—*American Miller*.

HON. DR. PUGSLEY, who left for Ottawa last night, will visit New York before his return for the purpose of visiting several capitalists there who contemplate the erection of large iron smelting works and a locomotive factory in St. John. The scheme has been under consideration for some time, and Dr. Pugsley expects to return the 20th inst. with authority to approach the common council on the question of a site. It is said that the works will be located on the shore of Courtenay bay, and that the proposition will include a plan of bridging the bay. Several hundred thousand dollars will be invested in the undertaking.—*St. John, N B, Sun*.

Two members of the firm of Messrs. Dubs & Co., locomotive builders, of Glasgow, Scotland, have bought a controlling interest in the Canadian Locomotive and Engine Co., Kingston, Ont., and will assume active management of that company's works on December 15th. The capital stock of the company is \$200,000, of which the gentlemen from Glasgow own \$150,000. Messrs. Dubs & Co. employ about 2,000 hands in connection with their Glasgow works, and it is understood that they will at once send out a corps of their most skilled workmen to take charge of the Kingston works. The concern will also engage quite extensively in building iron vessels in connection with the locomotive works.

A NEW fast express locomotive and tender, built for the Grand Trunk Railway at the company's works at Hamilton, is described as being of more than ordinary size and power. The cylinder is 19x24 inches, with wheels six ft. in diameter. The boiler is one of the largest ever built for a locomotive in this country. Its external diameter is 56 inches. It has 262 tubes or flues, and possesses 1,410 square feet of heating surface. The total weight of the locomotive, exclusive of the tender, is 93,000 pounds. The tender is fitted on wrought iron trucks, carried on wheels 42 inches in diameter, with steel tires. There is space for 3,000 gallons of water and from four to six tons of coal. The designs were by Mr. C. K. Donville, Mechanical Superintendent of the company's works, and all the drawings and details were carried out by Mr. W. Poland.

AN item has been going the rounds of some of the papers to the effect that "The people of Oshawa are making another big effort to induce a company to purchase the Joseph Hall Works." We are informed that this is not the fact, as the people of Oshawa have not made any such effort. It is true, however, that Mr. Thomas McDonald, late of Messrs. McDonald, Kemp & Co., Toronto, recently made a conditional agreement to purchase the buildings of the Joseph Hall Machine Works, in that town, for the purpose of conducting a somewhat similar line of business to that which he had been engaged in in Toronto, the condition being that the town of Oshawa should give him a bonus of \$10,000, and exemption from taxation for a certain length of time. The town is inclined to grant the considerations asked, but the matter, we understand, has not yet eventuated.

STOVE makers will be interested in the action taken at a meeting of the presidents, car builders and engineers of the various railroads in the West, held in Chicago, on October 19th. About fifty persons were present, all of whom were of the opinion that the coal stove in passenger cars "must go," but to provide a convenient and comfortable substitute puzzled the meeting. The majority, however, were in favor of heating the cars with steam drawn from the boiler. A committee was appointed to meet Eastern railroad men in New York and adopt a uniform system of heating passenger cars on all trunk line roads. Resolutions condemning the coal stove were adopted.—*American Manufacturer*.

THE Port Colborne Natural Gas Company, Port Colborne, Ont., have sunk their well to a depth of 1,500 feet, and have obtained a supply of gas of extra quality sufficient for lighting and for all the fuel they can supply. Pipes are now being laid to furnish the new custom house and post office building, and it is expected the Welland canal will be lighted for three miles down and the harbor also with it. Their greatest flow was had at about 800 feet. Mr. Richardson, the principal stockholder in the company, has commenced a new well on his own premises for natural gas, and has no doubt of obtaining sufficient to run his beehive manufactory. Messrs. Cronmiller & White, brewers; John Reeb, lime burner; Knoll Bros., millers; George Augustine, carpenter, and Neff & Son, machinists, intend sinking wells for fuel to run their businesses. The light from the gas is very brilliant.

MESSRS. JOHN BERTRAM & SONS, proprietors of the Canada Tool Works, Dundas, Ont., are calling attention to a new gap lathe with inverted V shears manufactured by them. They inform us that these lathes are built in lots of not less than twelve, thereby ensuring accuracy of detail and interchangeability of parts. These tools are extra heavy and strong, and should command the attention of machinists. In their list will be found descriptions of lathes, planers, drills, bolt cutters, punches and shears, boiler rolls, slotting, milling and cutting-off machines, shafting lathes, pulley turning and boring machines, wood planing and matching machines, moulding, mortising and tenoning machines, hand and scroll saws, wood turning lathes, etc. They also manufacture complete sets of machinery for locomotive and car works, agricultural implement works, cabinet and furniture factories, etc.

NOT the least of the important minerals to be found in the northern townships, says the *Napanee Beacon*, are the extensive deposits of asbestos. The mineral is only found in Italy and Canada. The Italian asbestos is not, however, equal to the Canadian, and this fact places our asbestos at a premium. The inference is that the men who hold asbestos mines in Canada are going to make money, for as an article of commerce it is coming into more general use every year. The *Trade Bulletin* says there is great activity in the mineral, and that on Thursday sales were made of 200 tons for shipment to the United States, besides which about nine or ten cars are on the way from the mines for shipment to European ports. The volume of business in rock asbestos at Canadian mines during the past season is considerably in excess of that of last year. The sales which have taken place during the past few days have been at advanced prices, and quotations for this market are \$75 per ton for No. 1 and \$50 for No. 2.

THE Grand Trunk Railway Company has decided to test the new system of heating the cars direct from the locomotive, abolishing the stoves which have been so disastrous to wrecked trains. The "Martin" system will be shortly tried on the Cornwall branch and the "Sewall" system on the Ottawa section. The apparatus has been severely tested on the Maine Central railway, and the results are stated to have been most satisfactory. Steam is taken from the locomotive and transmitted through pipes the whole length of the train. The arrangements are very simple and effectual. The coupling of the pipes is perfect, allowing free passage without any obstruction, and the system has proved its adaptability at all degrees

of temperature. The cars are thoroughly independent of one another. A single valve in the center of each car regulates the degree of heat. The pipes are also arranged for the drainage of condensed steam to prevent freezing. It is the intention to ultimately adopt the system on all trains if the present experiment proves successful.

THE John Abell Engine and Machine Works, Toronto, have obtained the Canadian right to manufacture the Reliance alarm gauges with Wright's improvement, the patents of which are owned by the Reliance Gauge Company, Cleveland, O. They are now making the necessary preparation to manufacture these gauges, and will soon be ready to offer them to the trade and to all steam users. These gauges are so constructed that should the water from any cause whatever get either too high or too low for safety, a shrill whistle will be sounded until the boiler is relieved, and it is claimed that they are the only combined high and low water alarm gauges made. There is nothing complicated in their construction, and nothing to get out of order. The whistle valves and connections are high and dry above the water, where they will not corrode or be interfered with by sediment. They contain no fusible metal, stuffing boxes, packing, bunglesome "baskets" or brackets on which sediment can collect, or which stick at the very time when they should act. Beside the automatic alarms, these gauges combine the try cock, and the glass column, making three approved gauges in one, each working independently, thus forming a most compact, complete, convenient and safe, as well as most neat and attractive combination. These gauges are on view at the Permanent Exhibition of Manufactures of Messrs. Nicholls & Howland, Toronto.

YESTERDAY afternoon, the Canadian Locomotive Works, of this city, disposed of one half of their capital stock to the celebrated locomotive builders, Dubs & Co., of Glasgow, Scotland. The original shareholders expect a great increase in the value of their property by the admission of this firm, which is to Great Britain what the Baldwin Locomotive Company, of Philadelphia, is to the United States. The Glasgow firm is the oldest in the empire and employs over 2,000 men continuously. They ship engines to all parts of the world—Japan, China, Mexico, India and South America receiving their workmanship. The active management of the company in this city will be assumed by them on or about the 25th of December next, when Ald. Harty will retire from his position of superintendent. Messrs. Dubs & Lorimer, the principals of the firm, who have been in the city during the past week, left to-day for Liverpool, by New York, and will sail on Wednesday next. Upon their arrival at Glasgow they will send out a superintendent, or assistant and a draughtsman to take possession, with the least possible delay. They examined the premises adjoining the company's works with a view to purchasing and undertaking marine work extensively. Should such be decided upon, as Glasgow is the greatest ship building city in the world, no difficulty will be experienced in drawing supervising artizans from there. At the Glasgow works considerable marine work is done by the firm of Dubs & Co. The admission of this firm to the Canadian Locomotive Works will be a benefit to mechanics in the city and a boom to Kingston. At present the company has a contract for the building of twenty-six locomotives; and, about the middle of next month, more men will be employed. If the contemplated improvements are made, it is expected that the force will be doubled.—*Kingston (Ont.) News, Nov. 10th.*

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1st.—Birch Hill Road to Pugwash Junction .....	13 miles.
2nd.—Pugwash Junction to Pugwash .....	5 miles.
3rd.—Pugwash Junction to Wallace Station .....	7 miles.
4th.—Wallace Station to Mingo Road .....	17 miles.

### Tenders for Grading, Bridge and Culvert Masonry, Fencing, Etc.

SEALED TENDERS, addressed to the undersigned and endorsed "Tender for Oxford and New Glasgow Railway," will be received at this office up to noon on Friday the 18th day of November, 1887, for the grading, bridge and culvert masonry, fencing, etc.

Plans and profiles will be open for inspection at the office of the Chief Engineer of Government Railways at Ottawa, and also at the office of the Oxford and New Glasgow Railway at Wallace, Cumberland Co. Nova Scotia, on and after the 10th day of November, 1887, where the general specification and form of tender may be obtained upon application.

No tender will be entertained unless on one of the printed forms, and all conditions are complied with.

This Department does not bind itself to accept the lowest or any tender.

A. P. BRADLEY,  
Secretary.

Department of Railways and Canals,  
Ottawa, 20th October, 1887.

Established 1825.

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Armstrong, J. B., Manufacturing Co., Guelph, Carriage Materials.  
 Armstrong, J. A. & Co., Guelph, Ont., Carpets.  
 Automatic Refrigerator Co., Ottawa, Ont., Harrahan's Patent Automatic Refrigerators.  
 Barium, The Wire and Iron Works, Windsor, Ont., Wire Goods of all descriptions, Hailing, Cresting, Fencing, etc., etc.  
 Barber & Ellis Co., The, Toronto, Ont., Manufacturing and Wholesale Stationers, Account Books, Office Sundries, etc.  
 Bertram, John & Sons, Dundas, Ont., Iron and Wood Working Machinery.  
 Blake, George F., Manufacturing Co., Boston, Mass., Steam Power Pumping Machinery.  
 Bueckh, Charles & Son, Toronto, Ont., Brooms, Brushes, Woodenware, etc.  
 Breithaup & Co., Berlin, Ont., Leather.  
 Brush, George, Eagle Foundry, Montreal, P.Q., Blake Stone Crusher  
 Bostwick, George F., Manufacturer in Canada of Amberg's Cabinet Letter Files  
 Buines, Geo. W., Montreal, National Water Purifier  
 Bitten, John, Pittsburg, Pa., Automatic Fire Escape.  
 Clare Bros. & Co., Preston, Ont., Stoves and Furnaces.  
 Cowan & Co., Galt, Ont., Wood Working Machinery, Engines and Boilers  
 Creelman Bros., Georgetown, Ont., World's Star Knitting Machinery.  
 Crompton Corset Co., Toronto and Berlin, Ont., Corsets.  
 Canadian Harness Co., Toronto, Harness and Saddlery  
 Ching, J. Lionel & Co., Sydney, N.S.W., "Duzong" Oil and Ointment, and "Duzong" Ivory Tusks and Hide.  
 Duperow Bros. & Co., Toronto, Varnishes, Japans, etc.  
 Dalley, F. F. & Co., Hamilton, Ont., Extracts, Essences, Blacking, and Grocers' Sundries.  
 Dominion Baby Carriage Co., London, Ont., Baby Carriages and Rattan Furniture.  
 Donald Produce Co., Norwich, Ont., Evaporated Fruits.  
 Dwyer Engine Co., Toronto, Ont., Engines, Boilers, etc.  
 Dominion Barb Wire Co., Montreal, P.Q. (C. A. DeLisle Western representative), Barb Wire, Plain Wires and Wire Rope.  
 Dovereourt Twine Mill's, Toronto, Ont., Twines and Cordage.  
 Dominion Starch Works, Walkerville, Ont., Corn Starch and Laundry Starch  
 Dominion Show Case Co., Toronto, Ont., Show Cases.  
 Ellis & Keighley, Toronto, Ont., C. C. C. Spices.  
 Elliot & Co., Toronto, Ont., Manufacturing and Wholesale Chemists and Druggists.  
 Ellis, P. W. & Co., Toronto, Ont., Manufacturing and Wholesale Jewellers.  
 Fenwick & Selater, Montreal, Que., Files and Mill Supplies.  
 Finch W. S. Toronto, Wood Filter and Preserver.  
 Gate City Stone Filter Co., New York, Water Filters.  
 Gillies, John & Co., Carleton Place, Ont., "Shipman's" Coal Oil Engines and Steam Launches.  
 Globe Tobacco Co., Windsor, Ont., and Detroit, Mich., Tobaccos.  
 Goodhue & Co., Danville, Que., Leather Belting and Lace Leather.  
 Grand & Toy, Toronto, Ont., Tucker Automatic Letter and Document Files  
 Grand River Knitting Mills, Co., Paris, Ont., Smyrna Rugs and Knit Goods.  
 Graysugar Refining Co., Walkerville, Ont., Syrups and Glucose.  
 Gray, Wm. & Sons, Chatham, Ont., Carriages and Sleighs.

Gillett, E. W., Toronto and Chicago, Yeast and Baking Powder.  
 Gardner, W. R., Montreal (successor to H. H. Warren), Manufacturer of every description of Hammers.  
 Hudson Bros. (Limited), Sydney, N.S.W., Australian Timber and Cabinet Woods.  
 Hamilton Industrial Works Co., Hamilton, Ont., Wringers, Mangles, etc.  
 Hart Emery Wheel Co., Hamilton, Ont., Emery Wheels and Emery Wheel Machinery.  
 Hay, Peter, Galt, Ont., Machine Knives.  
 Hearle, J. G., Montreal, Que., Toilet Soaps and Perfumery  
 Howland, H. S., Sons & Co., Toronto, Ont., Hardware Specialties.  
 Howland, H. S., Kleinburg, Ont., Flour.  
 Hemming Bros., Toronto, Ont., Fancy Plush Goods and Jewellers' Cases.  
 Herman, J. W., Toronto, Boiler Water Purifier.  
 Ingersoll Door Guard Co., Ingersoll, Ont., Patent Door Guards.  
 Ives, H. R. & Co., Montreal, P.Q., Fencing, Cresting, Stoves and Hardware Novelties.  
 Jardine, A. & Co., Toronto, Ont., Coffee, Spices, and Pure Gold Baking Powder.  
 Kerr Bros., Walkerville, Ont., Water, Steam and Gas Valves of Improved Pattern.  
 King, R. W. & Co., Georgetown, Ont., Power Knitting Machinery.  
 Leslie, James, Montreal, Que., Woollen and Cotton Mill Supplies.  
 Metaskill, D. A., & Co., Montreal, Que., Varnishes and Japans.  
 Miller Bros. & Mitchell, Montreal, Que., Beauty's Steam Power Hammer.  
 Munderloh & Co., Montreal, Que., Watchmen's Clocks.  
 Morris, A. W. & Bro., Montreal, Que., Cordage and Binder Twine.  
 Morrison James, Toronto, Steamfitters and Plumbers' Supplies.  
 McLaren, The J. C. Belting Co., Montreal, Mill Supplies.  
 Montgomery, L. B., Toronto, Mill Supplies.  
 North, Wm. & Sons, Leeds, England, Teazels.  
 Northey & Co., Toronto, Ont., Steam Pumping Machinery.  
 Northumberland Paper Co., Campbellford, Ont., Straw Board and Tarred Paper.  
 Ontario Bolt Co., Toronto, Ont., Bolts, Nuts, Spikes, etc.  
 Oshawa, Stove Co., Oshawa, Ont., Cooking and Heating Stoves.  
 Pepper, T. & Co., Guelph, Ont., Carriage and Wagon Axles.  
 Pillow, Hersey & Co., Montreal, Que. (Geo. A. MacAzy, Western representative), Nails, Tacks, Bolts, etc.  
 Ramsay & Son, Montreal, Que., Plate and Stained Glass, Paints, Oils, etc.  
 Robin & Sailer, Montreal, Que., and Toronto, Ont., Leather Belting and Lace Leather.  
 Rumpel, Geo., Berlin, Ont., Felt Hats and Shoes.  
 Simpson & Co., Berlin, Ont., Furniture.  
 Smith, R. H. & Co., St. Catharines, Ont., every description of Saws.  
 Stahlbaum & Co., Preston, Ont., Office Desks, Chairs, School Furniture, etc.  
 Storey, W. H., & Son, Acton, Ont., Gloves.  
 Slight, H., Toronto, Florist.  
 St. Thomas Featherbone Co., St. Thomas, Ont., Featherbone Corsets, Whips, etc.  
 Toronto Rubber Co., Toronto, Belting, Fire Hose, Etc.  
 Toronto Novelty Manufacturing Co., Toronto, Ont., Ironing Boards.  
 Teller, Rothwell & Co., Montreal, Stove Polish, etc.  
 Watts, A. & Co., Brantford, Ont., Household Soaps.  
 Warren, H. R., representing The Meriden Britannia Co., Hamilton.

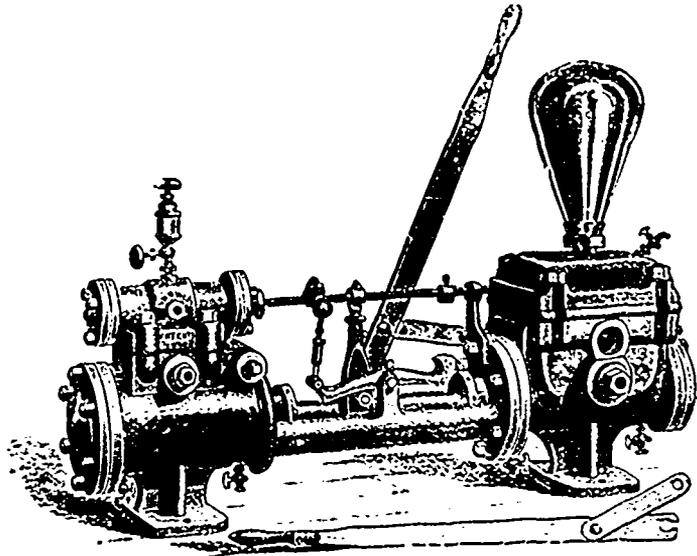
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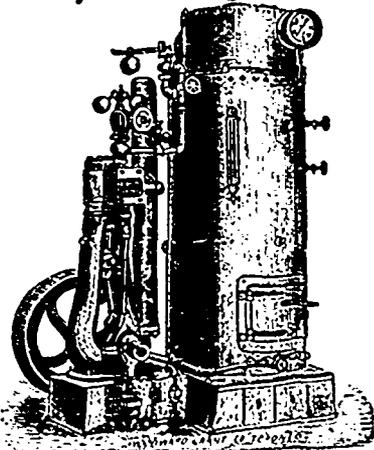
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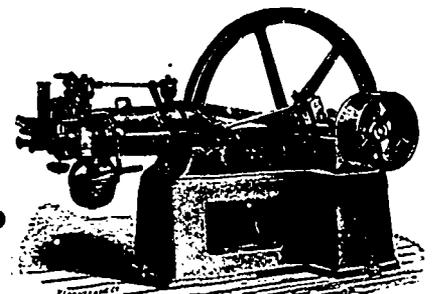
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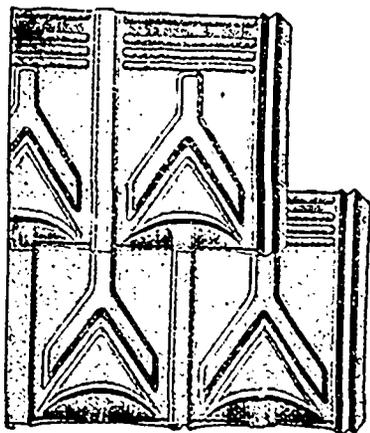
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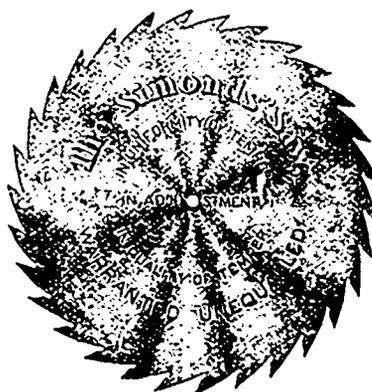
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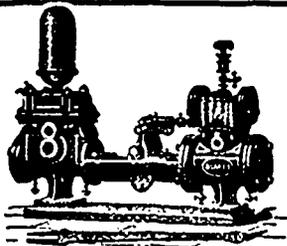
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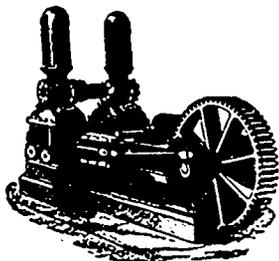
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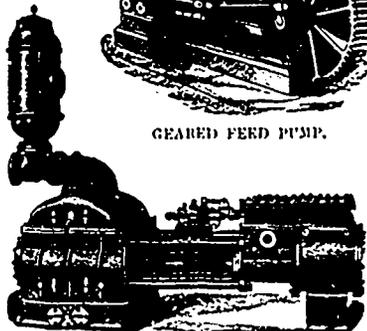
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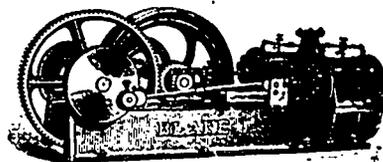
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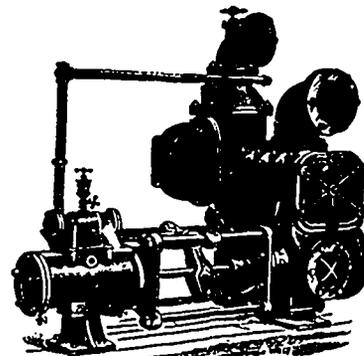
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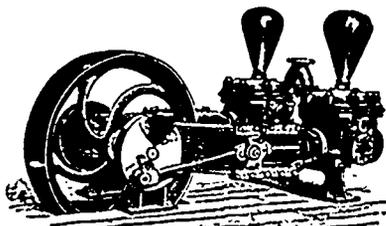
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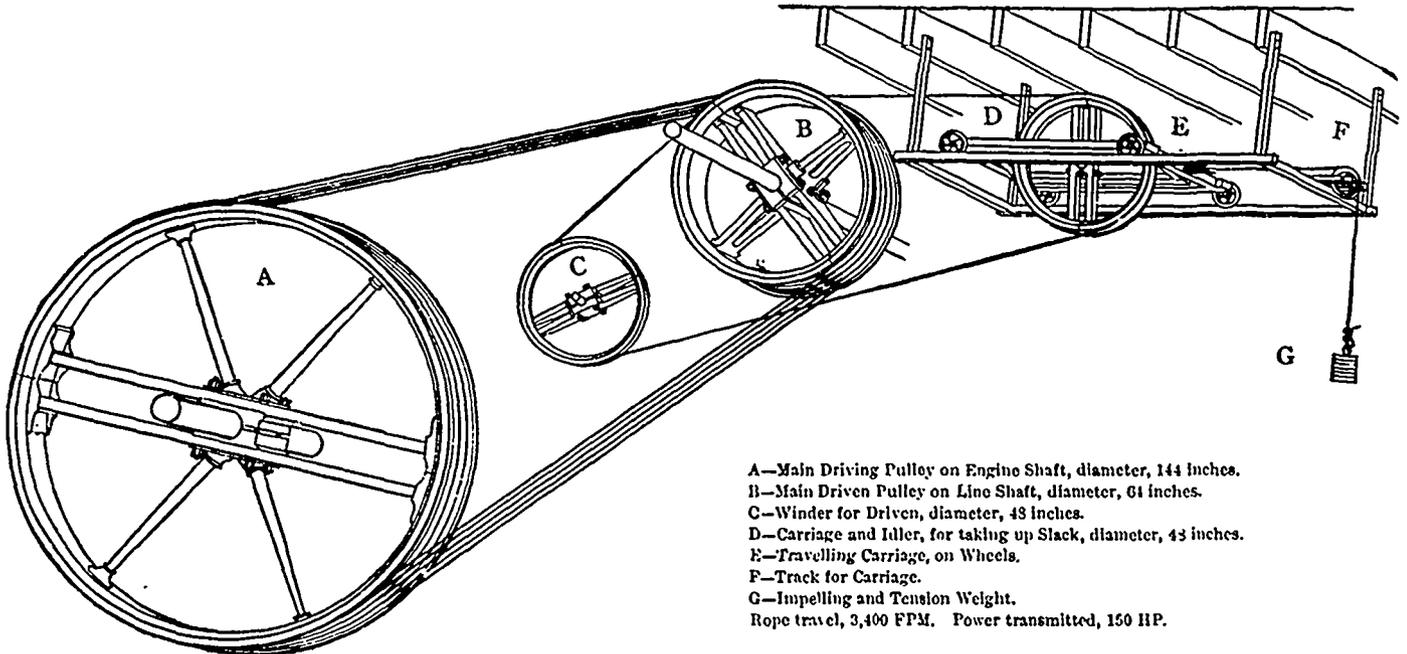
## THE TRANSMISSION OF POWER BY ROPES AND THE DODGE PATENT WOOD PULLEYS.

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 with the carriage pulley, D, are each single grooved. The

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.

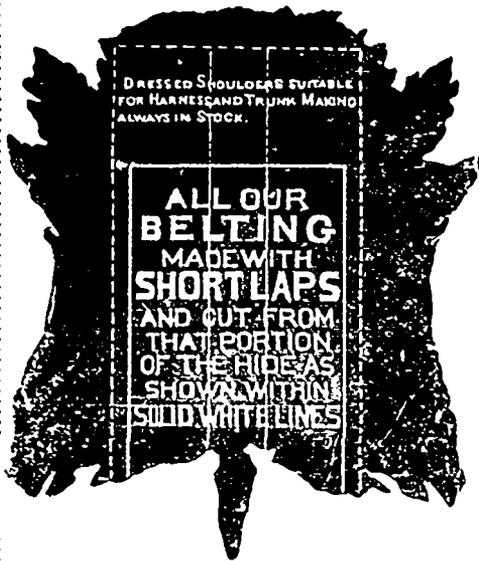
The rope shows no signs of wear, and looks as though it would last for years to come.

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,  $\frac{3,420 \times 150}{32} = 1,408 + 106$  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 =  $3\frac{1}{2}$  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 pounds.]—*Power and Transmission Journal.*



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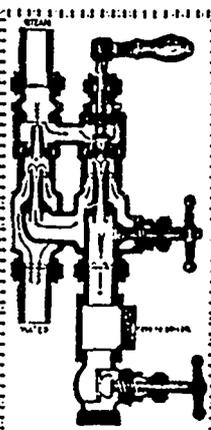
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Duncan Bell, Montreal;

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# JAMES MORRISON,

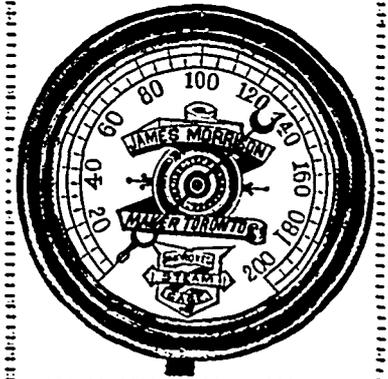
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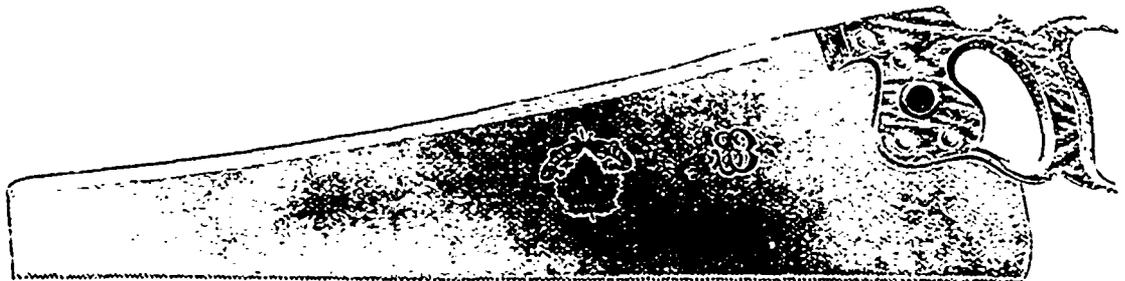
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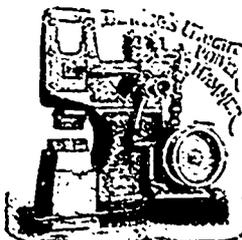


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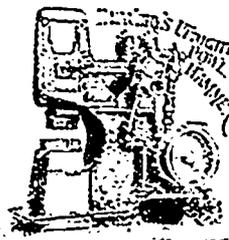


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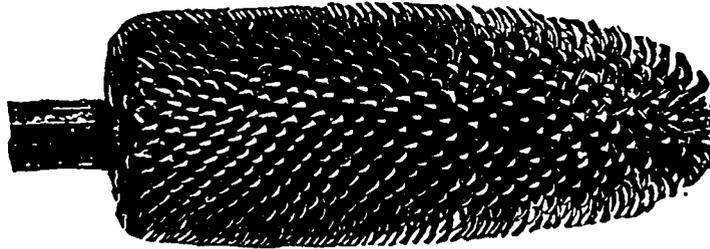
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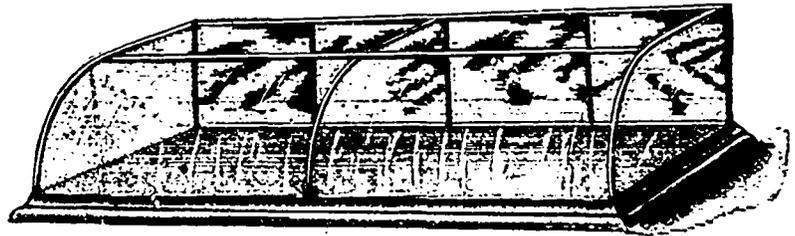
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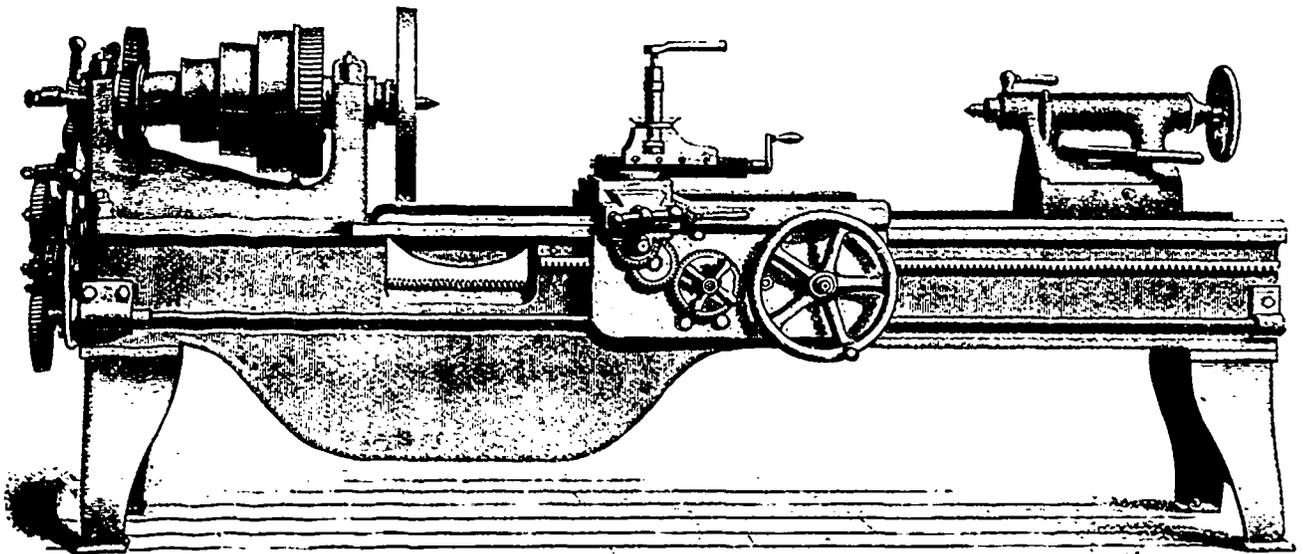
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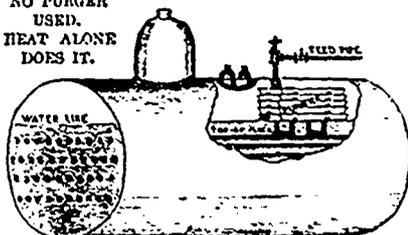
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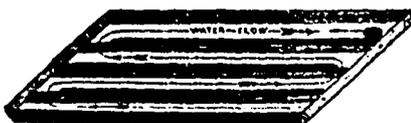
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THESE PANS CAN BE REMOVED, CLEANED AND REPLACED WITH VERY LITTLE TROUBLE, AND IN A VERY SHORT TIME, WITHOUT EMPTYING THE BOILER OF HOT WATER, WHICH MEANS A SAVING OF TIME, LABOR AND FUEL.

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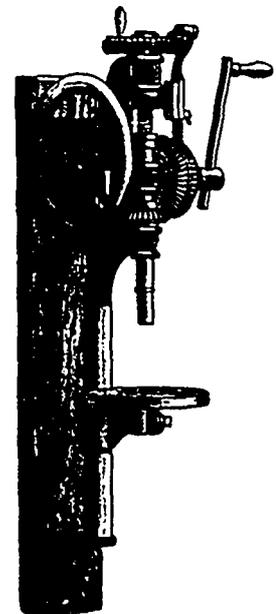
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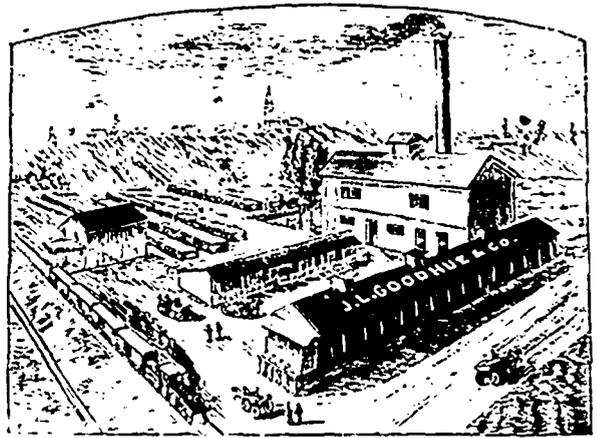
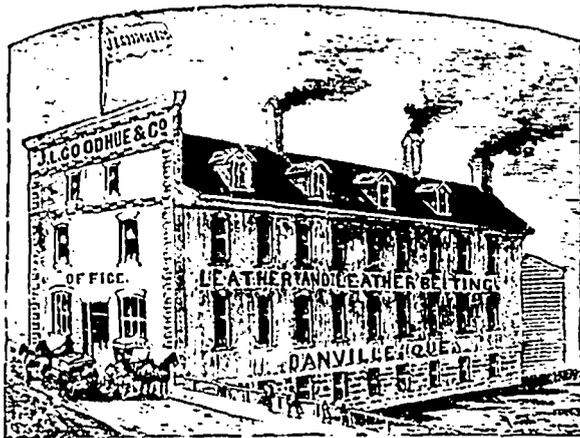
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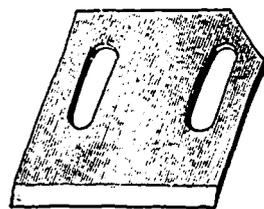
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And other irregular shapes.



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

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Best brands of Crucible Cast, Siemen's-Martin, and Bessemer Steel and Charcoal Iron Rope. Cast Iron Wheels for transmitting power. Moulders, Bellows, Brushes and Riddles; Iron and steel Wire Cloth, all grades and strength. Perforated Zinc, Iron and Steel, all sizes. Bank and Office Counter Railings. Wire Guards, all kinds. Sand and Coal Screens; Sofa and Chair Springs. Blind, Furniture and Fence Staples. Dildine's Adjustable Wire Sieve. Ornamental Wire Work, &c.

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Consumption, Asthma, Bronchitis, Dyspepsia, Catarrh, Hay Fever, Headache, Debility, Rheumatism, Neuralgia and all Chronic and Nervous Disorders.

"The Compound Oxygen Treatment," Drs. Starkey & Palen, No. 1529 Arch Street, Philadelphia, have been using for the last seventeen years, is a scientific adjustment of the elements of Oxygen and Nitrogen magnetized, and the compound is so condensed and made portable that it is sent all over the world.

DRS. STARKEY & PALEN have the liberty to refer to the following named well-known persons who have tried their Treatment:

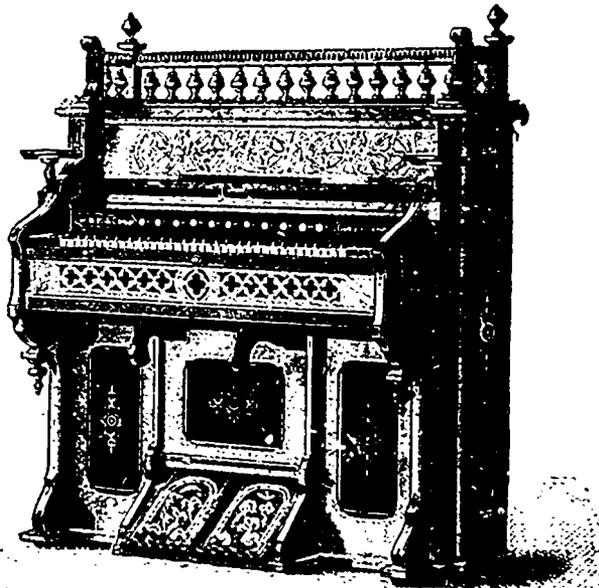
Hon. Wm. D. Kelley, Member of Congress, Philadelphia; Rev. Victor L. Conrad, Editor "Lutheran Observer," Philadelphia. Rev. Charles W. Cushing, D.D., Rochester, N.Y.; Hon. Wm. Penn Nixon, Editor "Inter-Ocean," Chicago, Ill.; Rev. A. W. Moore, Editor "The Centenary," Lancaster, S.C.; W. H. Worthington, Editor "New South," Birmingham, Ala.; Judge H. P. Vrooman, Quenemo, Kan.; Mrs. Mary A. Livermore, Melrose, Mass.; Judge R. S. Voorhees, New York City; Mr. F. C. Knight, Philadelphia; Mr. Frank Siddall, Merchant, Philadelphia; Hon. W. W. Schuyler, Easton, Pa.; Edward L. Wilson, 533 Broadway, N.Y., Editor Philadelphia "Photographer"; Fidelity M. Lyon, Waimea, Hawaii, Sandwich Islands; Alexander Ritchie, Inverness, Scotland; Mrs. Manuel V. Ortega, Fresnillo, Zacatecas, Mexico. Mrs. Emma Cooper, Uvilla, Spanish Honduras, Central America; J. C. Abb, U.S. Vice-Consul, Casablanca, Morocco; M. V. Ashbrook, Red Bluff, Cal.; Ernest Turner, Nottingham, England; Jacob Ward, Bowral, New South Wales, and thousands of others in every part of the world.

"Compound Oxygen—its Mode of Action and Results," is the title of a new brochure of two hundred pages, published by Drs. Starkey & Palen No. 1529 Arch St., Philadelphia, Pa., which gives to all inquirers full information as to this remarkable curative agent, and a record of several hundred surprising cures in a wide range of chronic cases—many of them after being abandoned to die by other physicians. Will be mailed free to any address on application by addressing:

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## ARE THE BEST

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

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**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.

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We have just issued a new edition (the 16th) of our Book called "Newspaper Advertising." It has 272 pages, and among its contents may be named the following Lists and Catalogues of Newspapers—

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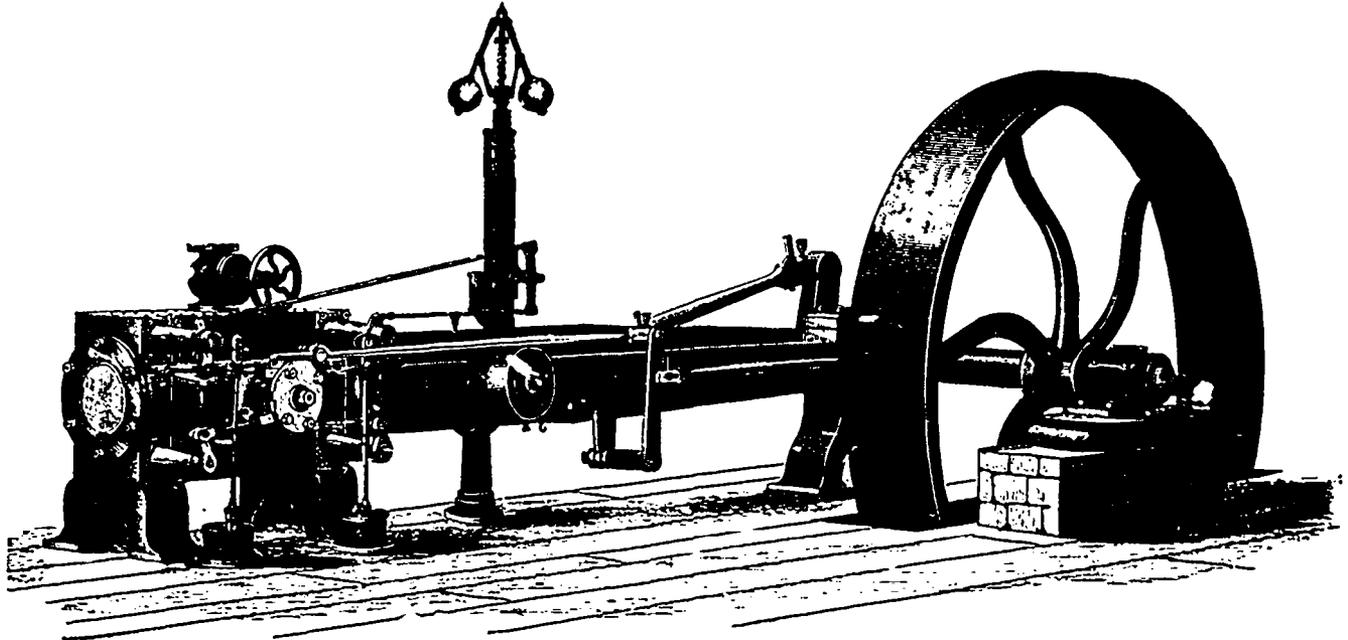
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Sent to any address for **THIRTY CENTS**.



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## 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, lugly finished.



**Notice to Contractors.**  
**SAULT SAINTE MARIE CANAL.**

CONTRACTORS intending to tender for works of construction of the canal proposed to be formed on the Canadian side of the Sainte Mary's River, are hereby informed that tenders will be received about **JANUARY NEXT**, and that the most favorable time to examine the locality will be between the present time and the early part of November next.

When plans, specifications and other documents are prepared, due notice will be given. Contractors will then have an opportunity of examining them and be furnished with blank forms of tender, etc.

By order,

**A. P. BRADLEY,**  
Secretary.

Department of Railways and Canals, }  
Ottawa, 24th August, 1887.

**Maw & McFarlane**  
**DUNDAS, ONT.**

**IRON FOUNDERS, ENGINEERS AND MACHINISTS,**

MANUFACTURERS OF

**Drop Hammers,**  
LIFTERS, DIE SINKERS AND PRESSES.

*CORRESPONDENCE SOLICITED.*

**TORONTO LITHOGRAPHING CO.**  
Globe Building, Toronto

MAKE A SPECIALTY OF

**Fine Color Work**

CHROMO ADVERTISING  
CARDS and NOVELTIES

also do a Superior Class of Wood Engraving

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**DICK, RIDOUT & CO., Proprietors.**

MANUFACTURERS OF

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COTTON  
AND  
JUTE

**BAGS**

FOR ALL  
PURPOSES.  
★  
ALSO

BAG PRINTING EQUAL TO THE BEST AMERICAN WORK.

HESSIANS FOR MATTRESSES AND BALES,  
COAT CANVASES, TWINES, ETC.

**11 & 13 FRONT STREET EAST, - TORONTO.**

Storage Accommodation Bonded or Free. Warehouse Receipts Issued.

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**COTTON COMPANY,**

MANUFACTURERS OF

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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.

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22 & 24 COLBORNE ST., TORONTO.

**BEAVER LINE.**

The Canada Shipping Co.'s Line of Steamers,

BETWEEN

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

	Tons.
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. Tranmar	3,300
LAKE NEPIGON, Capt. P. D. Murray	2,300

**SUMMER SAILINGS, 1887, WILL BE AS FOLLOWS:**

FROM LIVERPOOL:		
*Thanemore	Wednesday,	Oct. 5
Lake Winnipeg	"	" 12
Lake Superior	Friday,	" 21
Lake Ontario	"	" 28
Lake Huron	Wednesday,	Nov. 2
FROM MONTREAL:		
Lake Superior	Wednesday,	Oct. 5
Lake Ontario	Tuesday,	" 11
Lake Huron	"	" 18
*Thanemore	Saturday,	" 22
Lake Winnipeg	"	" 29
Lake Superior	Tuesday,	Nov. 8
Lake Ontario	"	" 15
Lake Huron	Saturday,	Nov. 19

\*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.

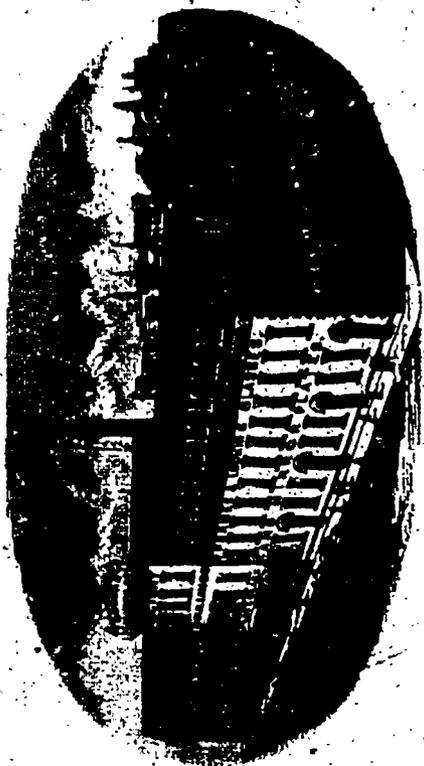
**RATES OF PASSAGE:**

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. SMYTH & Co.; in Liverpool, to R. W. ROBERTS, 21 Water St.; in Quebec, to H. H. SWELL, 125 Peter St.

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

**Cobban Manufacturing Co's** Factory & Head Office: Toronto.  
 Branch: 455 St. Paul Street, Montreal.



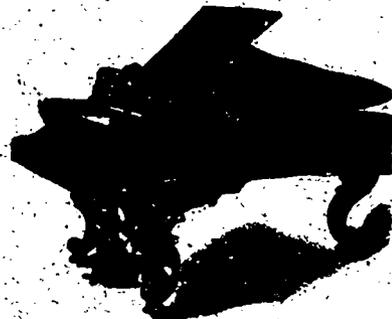
MANUFACTURERS OF  
 Mantles, Over Mantles and Mirrors in Finest Hardwoods, Mouldings, Picture  
 Frames and Looking Glasses. Mirror Plates: British, French, German,  
 Shocks. Plate Glass Beveling and Silvering a Specialty.  
**CLOSE PRICES. LIBERAL TERMS.**  
**TORONTO.**  
**MONTREAL.**

**ONTARIO BOLT CO., TORONTO,**  
 MANUFACTURE

- Threshing Machine Teeth,
- Machine Bolts,
- Bolt Heads 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,
- Frosted Spikes,
- Hot Frosted Nuts,
- Bridge Bolts and Bag Bolts.

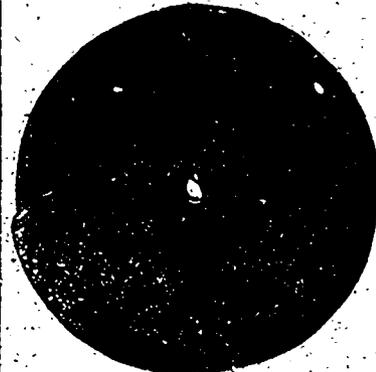
**HEINTZMAN & CO.**

MANUFACTURERS OF



**GRAND,  
 SQUARE,  
 AND UPRIGHT  
 PIANOFORTES.**

SEND FOR ILLUSTRATED CATALOGUE.  
 Warerooms, 117 King St. West,  
**TORONTO.**



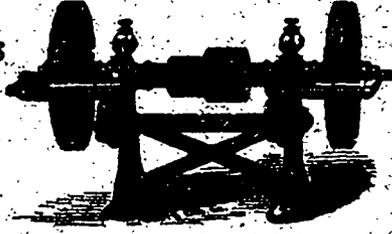
**HART  
 Emery Wheel  
 COMPANY  
 (LIMITED),  
 Hamilton, Canada.**

MANUFACTURERS OF  
**EMERY WHEELS**

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

Also  
 MANUFACTURERS  
 OF—

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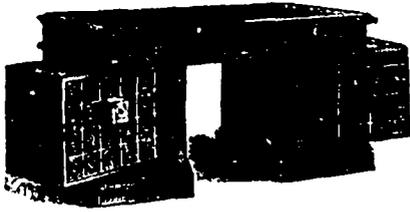
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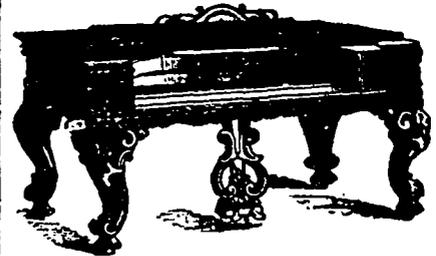


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