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CANADIAN MANUFACTURER AND INDUSTRIAL WORLD

DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

VOL. 25. TORONTO, OCTOBER 20, 1893. No. 8.

CANADIAN MANUFACTURER AND INDUSTRIAL WORLD
DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

ESTABLISHED IN 1880.

Published on the First and Third Fridays of each Month
BY
The Canadian Manufacturer Publishing Company, Ltd.
Room 66 Canada Life Building, King Street West, Toronto.
TELEPHONE 1274.

FREDERIC NICHOLLS, *Managing Director.*
J. J. CASSIDEY, *Editor.*
J. C. GARDNER, *Business Representative.*
J. B. DENBROEDER, *416 Exchange Building, Boston, Mass.* Represents THE CANADIAN MANUFACTURER in the New England States.

SUBSCRIPTION - - $1.00 per year.
ADVERTISING RATES SENT ON APPLICATION.

BAR IRON.

THE quarterly meetings of the different branches of the Association of Iron Workers was held in Montreal last week, but the public was not taken into the confidence of the members, and no official announcement has been made of what was done. We have scanned the commercial reports in the papers of both Montreal and Toronto, and cannot discover that any change has been made in list prices of either wrought scrap or finished iron. As regards this latter article we are told that the price remains on the $1.95 basis, that is, $1.95 for 100 pounds, or at the rate of $39 per net ton. This price applies to certain points, including Montreal, Toronto and Hamilton. Further search discloses the fact that wrought scrap is quoted at $15 to $16 per ton in Montreal, and $8 to $9 per ton in Toronto, a difference of $7 per ton.

In 1892 the imports of wrought scrap iron into Canada amounted to about 36,543 net tons, valued at $433,695, or nearly $12 per ton. The duty upon this article is $2 per ton, which, added to the value, makes the cost in Canada about $14 per ton. The freight and charges would probably increase this amount to $15 or $16, the quoted price at Montreal.

It is evident, then, that the price of wrought scrap originating in or about Montreal is controlled entirely by the value of the article abroad. On the other hand no such influence prevails in Toronto or Hamilton. There are many more industrial establishments in Ontario where wrought scrap originates than in Montreal and vicinity, but not being directly accessible to ships from abroad, foreign scrap does not influence the market, therefore the seller is forced to accept whatever may be offered for his iron. Of course the demand for scrap iron is much greater than the domestic production, but the domestic article is certain to fetch about as much in Montreal as the imported. But this is not the case in Ontario, where there is but one purchaser, who makes his own price of course, as is seen in the quotation of only $8 or $9 per ton in Toronto. Whoever in Ontario has wrought scrap for sale must of necessity sell to the only concern who buys, and must trade on the basis named. Whatever the domestic supply falls short of the demands of this one concern, the deficit must be made up in imported iron; and although this latter quantity costs more per ton than the domestic article, the domestic producer is in no way benefitted thereby.

It should be remembered that scrap iron is not the product of any industry whatever—it is only the salvage obtained from boiler and machine shops, railways, etc. Thus in such establishments, where large quantities of plate and bar iron are consumed, there is an ever increasing accumulation of scrap. The cheapest of this bar iron costs Canadian consumers about $39 per ton—much of it very much more; and as nearly all the best iron used in the country is of foreign make, the consumer pays not less than $13 per ton, on all of his iron that goes into his scrap pile. If Montreal is his market he recovers what he paid as duty—$13 per ton, and a little more, but nothing like what his iron cost him. If Toronto or Hamilton is his market, at the quoted prices he is $4 or $5 short of what he paid as duty, to say nothing of the cost of the iron.

The best quality of bar iron is made of puddled iron, but no puddled iron is made in Canada—it is all imported. But large quantities of bar iron are made here of wrought scrap. The production of puddled iron is a legitimate industry, but it is more expensive to manufacture puddled iron than to make bar iron of scrap; and that is why no puddled bar iron is made. Puddled iron is made of pig iron, bnt there is absolutely no demand in Canada for pig iron for puddling purposes, nor will there ever be as long as wrought scrap is allowed to be imported paying only $2 per ton duty.

Much talk has been indulged in and speculations made looking to the establishment of blast furnaces in Ontario; and a company is now being formed for the purpose of making iron at Hamilton. The Government, too, express a desire that such enterprises shall be established. But if the Hamilton furnace is erected and operated, where would it find sale for its products? We know that no furnace turns out a uniform grade of iron. There is always a variety of iron produced, and while some of it may be well adapted to foundry purposes, more or less of it can only be used for puddling. Who will take it for that purpose? If the mill iron cannot be sold the furnace cannot prove a success, and it would have to cease operations. There are puddling furnaces in Hamilton, but

they will never be put to use as long as the proprietors can make merchant iron of scrap that cost them only $8 per ton.

The solution of this question is in a radical change in the tariff on all scrap iron. If the duty were made practically prohibitory we would soon have a blast furnace industry. The duty on bar iron might remain as it is, but if foreign scrap were kept out of the country entirely the price of bar iron could not be any higher than it is now. If scrap iron were kept out of the country there would immediately arise a demand for pig iron for puddling purposes, and that means that the proposed Hamilton furnace would be kept in blast and other furnaces would be built. It means that having only a few furnaces in Quebec, as is now the case, not only the number but the capacity of them would be increased. It means that the capacity of the Nova Scotia works would also be increased, and that we would make our own pig iron and bar iron also.

The duty on scrap iron should be made prohibitory.

FAIRS.

Ever since Mr. H. J. Hill became manager of the Toronto Industrial Exhibition it has been claimed by many that that gentleman was the moving spirit of the greatest and most important Fair held in either Canada or the United States; the only rival of approximate importance being the Fair held at St Louis, Mo. That is a much older concern, the thirty-third annual event having just closed. One of the largest and most important attractions of the St. Louis Fair for a number of years has been the displays of agricultural machinery and farm implements, the manufacturers of them vieing with each other in the comprehensiveness of their exhibits, many of them having built large, beautiful and expensive pavilions upon the Fair grounds in which to show their goods and entertain their friends. As at the Toronto grounds, a suitable lawn is appropriated for the use of such machinery as required it—traction engines, etc. The St. Louis Fair grounds are farther away from the centre of the city than what our Fair grounds are from the centre of Toronto, and more difficult of access. But the Fair held there has always proved a success. The most important permanent affair of the sort in the country—perhaps it would be quite safe to say the only one—within a city three times the size of Toronto, and in the heart and centre of a large and productive agricultural section, and u[illegible] most excellent management, it would have been surprising if the Fair had not proved to be eminently successful. Although the Fair is held for only one week in the year, there are many permanent attractions on the grounds, including a zoological collection. The race course is one of the finest in the country, faced by an elegant grand stand and club house; and the cattle pens, stables, etc., are of large capacity, constructed in the most modern style. There are fine and commodious buildings about the grounds sufficient to accommodate all who may wish to exhibit.

Some years ago the manufacturers, other than those of agricultural implements, vehicles, etc., who had patronized the St. Louis Fair, discovered that the expense of showing their products there, where the public were admitted on but five days, was too great for any advantages that might be derived from the event; and this feeling led to the erection of a very large Exposition building in the very heart of the city where such manufactured products might be shown to better advantage, the season to extend over a period of forty days. This building covers two city blocks, and was first opened to the public ten years ago. There is a large plant in an adjoining block where steam power is generated sufficient to drive all the machinery in the Exposition building requiring it, the steam being conveyed under the separating street; the managers supplying every possible facility to the exhibiting manufacturers. During the continuance of the Exposition the doors are kept open both day and evening, and every inducement offered the public to enter.

Notwithstanding the withdrawal of this important element from the St. Louis Fair, it continued to thrive and maintain its importance until the present year; but now we learn that the lustre of it is considerably dimmed because of the non-appearance of a very large number of the agricultural implement exhibitors who have heretofore patronized it. This is a matter of general regret; and the circumstance may be attributed partially to the prevailing hard times in that country, and partly to the fact that many of the absent exhibitors have their products on view at the World's Fair at Chicago. It may be that this condition will not prevail next year; but it is certain that as liberal as the management of the St. Louis Fair have been to exhibitors, there were not sufficient inducements offered for them to appear there this year.

On the other hand the St. Louis Exposition building was erected with special reference to the display of machines and machinery, and ample inducements are always offered to manufacturers to make displays of their products. The ground floor is constructed with special reference to the heavy machinery it has to accommodate, while the upper floors are quite sufficient to bear any lighter machinery. In many instances it is stipulated that the machinery must be in motion at certain hours, and such things as type-making machines, printing presses, lithographic presses, shoe-making machines, steam pumps, brick machines, iron and wood-working machinery, looms for weaving all sorts of fabrics, from fine laces and embroidery to heavy tweeds, and a hundred other machines may all be seen in full operation.

These facts may be regarded as suggestions to the management of the Toronto Industrial Exposition. They have now established most excellent accommodations for horses, cattle and all sorts of stock. They have now one of the largest and most comfortable grand stands on the continent, facing a race track just to the liking of Mr. Christie, the vice-president, who so dearly loves a horse race. There is a fine and commodious building for the special accommodation of the exhibitors of musical instruments, and the Horticultural Building, the Apiary Building, and the building for the display of vegetables and farm products seem to be quite as commodious as the necessity requires. But none of the buildings used for the displays of the products of manufacturers are what they should be, and Machinery Hall is entirely too small, too badly arranged, too deficient in steam power and in facilities for anchoring heavy machinery, to meet the requirements of the manufacturers who use it. If Machinery Hall were four times as large as it now is, or even much larger, all the space could be used to advantage, making it infinitely more satisfactory to exhibitors and interesting to visitors. With sufficient and well-arranged accommodation, a hundred different sorts of machin-

ery and a hundred different processes of manufacture should be shown in operation in Machinery Hall every day and evening during the continuance of the Fair. The manufacturers have waited long and patiently for better accommodations, and now that other features of the Fair have been completed, and other interests satisfied, it is to be hoped that the Fair management will turn their attention in the direction here suggested.

AN IRON BASIS.

On another page will be found a communication from a correspondent at New Glasgow, N. S., re "Iron Development in Pictou County, N. S.," which gives some valuable information regarding the iron resources of that province.

It is now just about two hundred years since iron was first made in Pennsylvania. The only record we have of this production is the following :

"A certain place here is, where some begun
To try some mettle, and have made it run.
Wherein was iron absolutely found,
At once was known about some forty pound."

A few years ago England was an easy leader in the production of iron, with the United States a good second. It was thought that she would hold first place for many years to come, but the wonderful growth of the iron industry in the United States during the past few years has been almost beyond belief, until we find that they have now outstripped their rival.

The total number of completed furnaces in the United States in 1891 was 569, which produced 9,273,455 net tons of all kinds of pig iron, of which the New England States produced 34,497 tons, the Middle States, 4,883,187 tons, the Southern States, 1,914,042 tons, and the Western States, 2,441,729 tons. This is an annual production of one ton for every six inhabitants. That the per capita consumption of iron in Canada is far less than this the following facts will make clear :

The consumption of iron and iron products, including steel, in Canada, is about 600,000 tons per year—the production of iron and steel from native ores only about one-tenth of that quantity. In the year 1892 we imported into Canada 36,543 tons of wrought scrap, valued at $433,695; 68,918 tons pig iron, valued at $886,485; 3,100 tons of blooms, etc., valued at $56,186, and 7,500 tons of bar iron, valued at $231,468. Continuing the enumeration of other forms of imported iron, it would be found that the grand total of manufactured and partially manufactured articles of iron and steel of all kinds imported into Canada during 1891 amounted in value to $13,826,492 of which $3,838,519 worth of steel rails which came in free of duty. Considering all this, and the great possibilities there are in the growth of the iron business in Canada, it is evident that with proper encouragement in the way of duties we could make boiler and ship plate, girders, iron ships and steel rails. Who is bold enough to place a limit on our capabilities to manufacture all these things? We should recognize the fact that iron is the basis of national prosperity.

DIVES AND LAZARUS.

A few days ago the following press telegram from London was published in the daily papers:—

At St. James' palace on Saturday in the presence of 50 guests the Lord Mayor presented to the Duke and Duchess of York the corporation's gift of a service of plate and a diamond and pearl collarette. The service consists of 1,200 pieces, and contains nearly 5,000 ounces of silver.

On the same day the Montreal Witness published the following telegram dated at London:—

Throughout Warwickshire and Worcestershire the effects of the coal famine become more acute daily. Factories are closing constantly because they have not sufficient coal to keep their fires going, and thousands of men are being thrown out of work in this way. The supplies of the gas companies can last only a few days longer. Even the farmers are suffering and many of them have been compelled to cease threshing. Many letters from managers of collieries and from other persons connected with the mining industry are published in the newspapers, claiming that the talk of starvation wages is simply a phrase of the leaders. One letter published in The Standard says thousands of miners, as regular as pay day comes, are leaving in the saloons as much money to pay their drink bills as farm laborers earn in a week. It also says they indulge in luxuries.

On the same day the London correspondent of the New York Times cabled a message to that paper which is of too great length to be reproduced here entire, but the salient points of it are given:—

Last week it seemed as if the story then to be told of the disaster of famine that was desolating whole broad counties of industrial England was as bad as anything could possibly be in the existing state of civilization. Moreover there appeared to be hopeful streaks of light in the sky. But to-day we are on the threshold of the eleventh week of this unparalleled calamity, and not only are the heavens blacker than ever, but the distress is multiplying itself like a malignant outbreak of cholera after a rainfall. It is said now that fully 300,000 men, women and children in Lancashire alone are dependent from meal to meal on public charity, which would bring the whole army up to three-quarters of a million. The relief measures are beginning to show signs of success, but they are still ridiculously incommensurate with the gravity of the awful crisis. A little more than $30,000 only has been raised thus far in London, although several columns are devoted daily to strenuous appeals. Tho good order attending this vast social convulsion as a whole continues to be a most remarkable feature of it. In all Lancashire, where 86,000 miners have been idle over two months, not ten Police Court cases have arisen. As the slowly moving public get further information as to the merits of the case, the lock-out takes on the likeness of a shameful and bloodless gambling corner. Mine-owners have been in the habit of selling three-quarters of a year's future output by contract and saving a quarter for the open market. There is plenty of competition for these huge contracts to municipal gas companies, steamship and railway lines, etc., and this year some of these have been at impossibly low prices. The city of Birmingham, for example, got its year's coal for its gas works at the lowest price in 20 years. Then the owners needed two things to recoup themselves upon the remaining quarter of their output. One was to cut down the annual wage outlay 25 per cent.; the other to send house coal prices booming upward. A ten weeks' lock-out served both purposes admirably. The incidental facts that millions of workers have been cruelly hurt on the one side, and millions of consumers plundered on the other, do not matter at all to these gentlemen.

A remarkable feature of this situation is that in Lancashire alone there are fully 300,000 men, women and children in a

starving condition and dependent upon public charity for the bread which saves them from death, the whole army of miners and their families, numbering three-quarters of a million souls who are in this distressing condition, while at a function in St. James' palace, in the presence of a select assembly of invited guests, the Lord Mayor of London presents to the Duke of York the corporation's gift of a service of plate consisting of 1,200 pieces and containing 5,000 ounces of silver, and a diamond and pearl bauble of unmentioned value. Lazarus and Dives—Dives and Lazarus. The Montreal Witness' telegram attempts to make it appear that the suffering in the mining districts is not as great as some represent it to be, and managers of collieries and those interested in the mining industry testify to the fact that miners visit the saloons, and that some of them actually indulge in luxuries, though, considering the fact that the miners are not at work it is rather obscure as to the source from whence the money comes with which to pay for beer and and "luxuries" whatever that may mean. It is in evidence that although there are hundreds of thousands of people in England at this time in suffering and want, they are orderly and law abiding. And while this speaks well for them, it cannot be doubted that the time will come, and that at no distant day, when patience will cease to be a virtue, and when a social and perhaps political revolution will grow out of the oppression and bad management practised by the mine owners. It does not seem to be quite the correct thing, for those who may have a legal right, to pursue the course they have adopted to shut out of employment the thousands of men who know no other occupation, who have no other occupation open to them, who have no financial ability to go elsewhere in search of work, who have wives and children crying for bread. Dives may take pleasure in being arrayed in purple and fine linen, faring sumptuously every day, but it does not follow that Lazarus will content himself with laying at the rich man's gate, his only comfort being derived from the dogs which lick his sores. The coal pits should be opened and the miner allowed to resume work.

AS TO SUSPENDERS.

Recently the Toronto Globe published a letter from the J. R. Stouffer Co., of Berlin, Ont., who manufacture suspenders, complaining that they could not compete in the Canadian market with foreign manufacturers, although there is a duty on imported suspenders, because the Canadian web, of which suspenders are made, is only about 10 per cent. lower in price than what similar web can be imported for plus the duty added, and that they have to import their buckles and other trimmings on which there is also a duty. They ask: "How, then, is it possible for suspenders to be manufactured as cheaply here as they can be in the United States, when the cost of material averages 20 per cent. more." To this the Dominion Suspender Company, Niagara Falls, Ont., make answer to the effect that they make suspenders quite as cheaply as they are made in the United States. They say that they have grown up to be a large concern with sufficient capital and every facility for successfully manufacturing suspenders under the auspices of the National Policy, and that they want that policy to be maintained because the tariff keeps out to a certain extent foreign suspenders, giving to them the home market.

Now, if it is a fact that the Stouffer company cannot manufacture suspenders as cheaply in Canada as they are made for in the United States, as they intimate; and if it is a fact that the Dominion Suspender Company can and do do that very thing, the failure to do so cannot properly be charged against the National Policy, but rather against the business methods of the Berlin concern. The Dominion Suspender Company claim that the goods they make in Canada are quite equal, both as respects price and quality, to what is made in the United States. This is not disputed, and it is susceptible of proof. If, then, this is the case, why should the tariff duty on raw materials be abated in the interest of an unsuccessful concern?

The Globe in discussing the matter advances the argument that because the Dominion Suspender Company have brought their business to this flourishing condition is at a point when protection can safely be withdrawn from it—that the reduction, or even the abolition of the duty will do this company no harm, while the other concern will receive benefit from a lowering of the duties on its materials. This is sophistry. If the Dominion Suspender Company can and do sell their goods to Canadian consumers quite as cheap as American goods of similar quality can be sold to American consumers, no lowering of duties, or even the entire abolition of them could possibly make suspenders any cheaper in Canada than they now are. The proposition, however, is virtually to open the doors of the Canadian market to the great detriment of a successful concern, with the hope that the influx of raw material along with the American finished produc., would bestow some sort of an unexplained benefit upon the unsuccessful concern. With the duty on suspenders removed suspenders would be no cheaper in Canada than they now are, but it would likely result in the loss of a valuable Canadian industry.

The Globe in printing the letter of the Dominion Suspender Company, is careful to remind it that the Canadian newspaper industry is not protected, therefore it will decline to further notice the company at its own expense. No doubt the Dominion Suspender Company are abundantly able to pay any advertising bills they may incur; but their letter in the Globe was in reply to an attack made upon it in that paper. It is not true, however, that the Canadian newspaper industry receives no protection "while there are stiff duties on presses, type and paper." If these "stiff duties" are a serious detriment to the success of Canadian newspapers, why are they not published say in Buffalo, where the Canadian duty would not affect them? It is ridiculous for the Globe to advance this silly argument. It knows that it has the very highest and most effective sort of protection in that an American newspaper could never be made to circulate as a Canadian journal.

MR. McMULLEN'S CHAIR.

In a recent speech to his constituents Mr. McMullen, M.P., in dealing with the tariff, mentioned as an illustration that while in Chicago recently a relative had made him a present of an easy chair. At the frontier he had to pay a customs duty of 35 per cent. on it, or $16.85. Controller Wallace in his speech at Mount Forest on Saturday took up this incident, and dealt most unfairly with Mr. McMullen's illustration. His own words show that he was aware that the chair was a gift to Mr. McMullen, yet in a strain presumably intended to be

humorous he dwelt on that "gorgeous, magnificent easy chair," whose value he figured out at $48.15.

The Controller of Customs seemed to think that instead of presenting him with one chair at $48, Mr. McMullen's friend should have made the gift one of 120 chairs at 40 cents apiece. It might be pointed out that the duty would still have been $16.85, so that in no case would Mr. McMullen have escaped the insatiable tariff. The Controller then went on to hint that Mr. McMullen had tried to smuggle the chair, and to declare that in no country was furniture cheaper than in Canada. The latter assertion at once suggests the reflection that a protection of $16.85 should not in that case be required on an article valued at $48.15. Although aware that Mr. McMullen had received the chair as a gift, Mr. Wallace persistently represented him as having bought abroad a luxurious article of furniture which he might have bought in Canada. Surely this is unworthy of a man holding Mr. Wallace's position.—Toronto Globe.

Mr. McMullen, in a strain that he presumably intended or hoped his hearers would believe, endeavored to impress upon the minds of his hearers that because there is a duty of 35 per cent. on Yankee chairs when imported into Canada, the price of Canadian chairs must necessarily be 35 per cent. greater than it would be if there was no such duty. If he did not intend to convey this idea why did he illustrate his argument by alluding to a personal matter and telling about the value of his own chair which he brought from Chicago, and upon which he had to pay duty. If Mr. McMullen had not indulged in his personal illustration, thus giving the facts to the public, Mr. Wallace would have had no opportunity to criticize the matter as he did. The fact is, Mr. McMullen attempted to create a false impression regarding the cost, or value of chairs in the United States and in Canada. He desired to create the impression that chairs are 35 per cent. dearer in this country than they are in the United States. No doubt if Mr. McMullen had desired to purchase an easy chair he would have done so at home, well knowing that he could have done so for as little money as it would have cost him in Chicago. He did not purchase the chair, however—it was presented to him by friends abroad; and it is in rather questionable taste for him to advertise to them, through a public political speech, that he had to reach down into his own pocket for money to pay the duty before he could repose his wearied bones upon it at home.

The Globe, however, endeavors to assist Mr. McMullen in deceiving the people in this matter. Mr. McMullen endeavored to deceive them by trying to make it appear that the price of the home-made chair is increased 35 per cent. because of the tariff. The Globe knows that this is not the fact, and it knows that the people know it also, and therefore it does not attack the tariff just as Mr. McMullen does, but it attacks it nevertheless by suggesting that if chairs are as cheap in Canada as in the United States, no tariff protection on the article is required.

But protection is required. The Globe admits that chairs are as cheap in Canada as in the United States, and it knows the fact that because of protection the Canadian manufacturers of chairs virtually possess the home market, shutting out the foreign article; and when chairs are imported, as in Mr. McMullen's case, the amount of duty collected goes directly into the Dominion treasury. Why, then, does the Globe and Mr. McMullen desire to have the duty on chairs removed? It is not that the dozen or so manufacturers in Canada may have access to the sixty-five million American market, but that the thousand or so manufacturers in the United States may have access to the Canadian market. The people of Canada would not be benefitted by the change, nor would our manufacturers, but the American manufacturers would reap all the benefit by having their market widened to the extent of five million consumers.

Mr. Wallace showed these facts, and that is what hurts Mr. McMullen and the Globe; and all this virtuous indignation at the so called dragging of a private matter into a public discussion is simulated.

A SATURDAY HALF-HOLIDAY.

A MOVEMENT is on foot in Toronto for the purpose of securing to working people, as far as practicable, a Saturday half-holiday; and an association of citizens has been formed for the furtherance of that end. The association have appointed a committee to collect information, receive suggestions and report upon the subject generally. The committee are anxious to secure the co-operation of all influential classes of the community, including the manufacturers, who are large employers of labor; and the wish is expressed that whatever may be done towards the accomplishment of the object in view, it shall be in a manner that will create the least possible friction and interruption of business, and will be in harmony with the interests of all classes of the community.

The character of those who have become interested in this move, and the manner in which they have addressed themselves to it, are guarantees of sincerity and honesty; and it is to be hoped that in investigating the matter they will have due regard for the interests of all concerned. We say "investigating" because we suppose that before those who are becoming identified with the move, and who desire to do all they can with propriety do to obtain the half-holiday for working people, will penetrate into the matter and discover if there are any other interests that may be adversely involved.

We understand that the proposition is to ask the Ontario Government to make half of every Saturday a statutory holiday; and by this, we suppose is meant that there shall be a general suspension of business on those occasions such as is observed on the Queen's birthday, Dominion Day, Christmas, Easter, etc., when employers are supposed to be quite willing that the employees shall have the half day off without loss of wages on that account, and when employes are quite willing to be thus favored. If such legal holiday is instituted it would, of course, apply to all working people and not to particular classes of them—to the girls in a clothing factory as well as to bricklayers; to the female clerks in stores as well as to the laborers on the street; to all alike and without distinction.

If this is the correct view of what the movers in this project hope to accomplish, while it would undoubtedly be a pleasant event for the employes, it might not be so acceptable to the employers. If the Government is requested to create this statutory holiday it would be understood to mean that it could not be enjoyed without the intervention of the law; and the question arises: Would it be in the interest of all concerned to enact such a law? With the exception of the street car men, perhaps, the different trades declare that through their unions and organizations, they are able, to some extent, to abbreviate their hours of labor; and this they have done almost univer-

sally. In most trades ten hours is esteemed a day's work, or sixty hours to the week; and in some instances where the working hours are shortened on Saturday, the difference is made up by the addition of extra time properly apportioned through the other days of the week. In most trades, and under many circumstances no particular inconvenience arises in the practise of this method; but it would be entirely impracticable in many other occupations. Where it is practicable there does not seem to be any necessity for a law to enforce it; and where it is not practicable the enforcement of the law would work a grave injury and injustice, or the law would be evaded. Therefore we think the Government would hesitate to enact such a law.

If, on the other hand, the object is to force employers to grant a half-holiday, or if it is granted for them, and at the same time they are to be compelled to pay for a week's labor of sixty hours where only fifty-five hours' service had been rendered, there would be an inevitable clash between employees and employers which would result in much harm.

In some trades, no doubt, employers would be quite willing, except during the very busy season, to dispense with work on Saturday afternoons, for which time, of course, no pay would accrue to the workmen; but there are other trades and occupations where Saturday afternoons are the most busy time. Could the Government make a law that could be enforced where clerks in stores would be dismissed at noon when the hours of the day from then until perhaps nine or ten o'clock, meant more business and more profit from the business than twice the number of hours in any other day of the week?

These are the questions that those who are interesting themselves in having Saturday afternoons made a statutory holiday must consider in the light, not only of the comfort of working people, but also in that of justice to the employers of labor.

EDITORIAL NOTES.

THE Industrial Exhibition Association, the citizens of Toronto and the thousands of strangers who visited the city during the two weeks of the recent Toronto fair are under many obligations to the Toronto Railway Company for making the Fair the success it proved to be. But a few years ago access to the Fair grounds was a tedious and tiresome matter. If the attempt was made to reach there by the then existing street car service, it was usually via Queen street to Strachan avenue, thence afoot a distance of about a mile to the eastern entrance, or via King street to Strachan avenue, in bob-tailed cars, or further along Queen street to the subway, thence along Dufferin street to the western entrance, a walk of more than half a mile, all the cars being drawn by horses. The Grand Trunk Railway afforded some relief, as it does now, by running frequent trains to the grounds from Union Station; and a slower but more pleasant route was by ferry steamers from Yonge and York streets to the water entrance of the grounds. Long before the close of the displays at night the crowds would begin a stampede in hope of being able to reach home by midnight; and usually it was near that hour before all the visitors could be successfully disposed of. Now, thanks to the Toronto Railway Company, it is possible for the spectators to remain on the grounds until "God Save the Queen," played by the band, gives notice that the programme is ended; and in a half hour the grounds are vacant and the gates closed. A service giving a train of motors and one or more trailers, at the rate of seventy-seven trains per hour is what was furnished; and although during the two weeks hundreds of thousands of people were transported to and from the grounds, many whom had never before seen an electric car, no accident whatever occurred.

REV. DR. WITHROW, of Toronto, was recently in the city of St. Louis, and while there, speaking of this city and of its unique position in that it has the most quiet Sundays of any city in the world, said to a newspaper man:

Two years ago an enterprising American firm bought a thirty years franchise for street cars in our city. They put electric cars on the tracks and asked a popular vote on whether or no they could run their cars on Sunday. This was decided in the negative by a majority of 4,000. The running of the cars on Sunday would mean an annual profit of $100,000 to the company, so last month they paid for another ballot—when a great many of the citizens were away. They were again defeated by 1,000 votes. There was a hot fight, and the company was publicly charged with polling 1,500 illegal votes.

The defeat of the Sunday street car question evidently gave the good gentleman much pleasure. He says the running of cars on Sunday would mean an annual profit of $100,000 to the railway company. When it is considered that it costs a great deal of money to operate electric street cars, not less than from ten to twenty per cent. of the gross receipts, and that eight per cent. of the gross receipts accrue to the city, and go into the city treasury, it is evident that the gross earnings for carrying passengers on Sundays should be about $130,000 per year. Car fare tickets cost on an average less than four cents each, or twenty-five for one dollar, therefore $130,000 would represent not less than 3,250,000 rides in one year on Sunday street cars. There are fifty-two Sundays in the year, and this means that an average of not less than 62,500 people would ride on Toronto street cars every Sunday if they were permitted to do so.

AN Order in Council was passed on September 14, ordering that the towns of Petrolia, Woodstock, Welland, Chippawa, Lindsay and Collingwood, in the Province of Ontario, be added to the list of places designated by Order in Council of the 26th June, 1893, as places at which petroleum may be imported in tank cars into Canada.

WHEN oleomargarine was first introduced into the United States as a substitute for butter it excited much prejudice, and many predicted that it would never obtain a foothold in that country. Its manufacture went on from year to year, gradually gaining friends. In 1886 it was deemed of sufficient importance to be taxed by the government, but in spite of this burden the product has increased right along until now it is contributing upwards of $1,000,000 per year to the support of the government. From 1886 to 1893 the production amounted to 281,649,514 pounds, the product of the last named year being 65,065,875 pounds upon which internal revenue amounting to $1,301,317 was paid, the tax being two cents per pound.

AS soon as Minister of Finance Foster and Controller of Customs Wallace find time it is to be hoped that they will

take up the matter of removing the duty on jewelers' sweepings. There is no duty on gold and silver bullion coming into Canada, and it is worse than ridiculous to impose a duty of 20 per cent. upon sweepings. The Government have been memorialized in this behalf time and again. If an Order in Council is necessary to put sweepings on the free list it should be passed without delay.

It now appears that the Ways and Means Committee does not propose to ask Congress to admit lumber free of duty. This exemption from customs-taxation is only, apparently, to be extended to squared timber. If this is to be the policy of the United States Government the Ottawa Cabinet should have no hesitation whatever in reimposing the export duty on logs sent from Canada to the States. This would be in accordance with the wishes of the majority of the lumbermen in the Georgian Bay district; its adoption was particularly requested by a deputation of farmers that waited on the two controllers at Lindsay the other day, and it would be greatly in the interests of the country.

If the Americans will admit our lumber free of toll to their markets, there can be little doubt that all the pine sent from this country to the States will be sent there in the form of boards, because it can be more cheaply sawn here than there. But if our neighbors will not allow our millmen to compete with theirs on equal terms, if they insist on retaining the import tax on lumber, then our Government should at once clap a prohibitive export duty on logs. We must retain for our own people the profit of manufacturing our own timber.—Toronto News.

Right you are. One of the worse blunders ever made was the removal of the export duty on logs. One of the wisest things that could be done would be to reinstate it.

Until a few weeks ago the factory of the Hamilton Whip Company, at Hamilton, was in active operation, giving employment to quite a large number of employees. Although there is a tariff duty on whips, the company had to pay duty on some of their raw materials. It is well known that American whips are constantly being smuggled into Canada, and that they were being sold in Montreal, Toronto and other places at less than what such goods could be bought for in the United States. The Government were aware of this fact, but the imposition was not broken up—no decisive efforts have ever been made to suppress the illicit traffic, and now a valuable Canadian industry is driven to the wall in consequence. It is to be regretted that such an event should be allowed to occur.

A citizens' committee are passing around the hat for contributions of fifty cents and upward to raise money enough to send to England and purchase dials for the St. James Cathedral clock. This is patriotism. As good and serviceable clocks and dials can be make in Canada as anywhere else in the world.

The report of Prof. Bolles, Chief of the Pennsylvania Bureau of Industrial Statistics, gives the latest illustration of the uselessness and expense of labor strikes. During the year 1892 Pennsylvania had an unusually small number of strikes, as the total was only 26, not including the Homestead trouble. Of these 13 were in the iron and steel trade. The whole number of persons engaged in the strikes was 4,208, and the number involved 7,414. Only three strikes succeeded; 4 partly so, while the others failed. The total loss incurred by the employes was $373,246, and the employers' loss, so far as ascertained, was $50,985. In an estimate of the loss by the Homestead trouble it is stated that the striking employes lost about $1,250,000 in wages alone, while the state was put to an expense of $440,256 for transportation and maintenance of troops. These figures show the great loss incurred by strikes. It has been demonstrated that even successful strikes are in reality a loss to the strikers, and where they have resulted in total defeat the losses have been much greater. From a labor union authority comes a much more decided showing of the manner in which money may be wasted in strikes. An official statement made by the Order of Railway Telegraphers shows that the organization during 1892 collected from its members $51,486 for a protective fund and expended it all with the exception of $2,005. Four strikes cost the organization $47,259. All of these strikes were failures and the members of the organization who had no concern in them were taxed to afford them support.

The way to find the gold value of the silver dollar when the price of silver is given is to multiply the market value of silver by $77\frac{1}{2}$; this gives the gold value of the silver dollar. The factor $77\frac{1}{2}$ is the result obtained by dividing $371\frac{1}{4}$, the number of grains of silver in a dollar, by 480, the number of grains in a troy ounce.

Recently the Council of Trades and Labor Unions, of Detroit, Mich., issued a Columbian Labor Day Souvenir, the most striking literary feature of which was a paper entitled "The Lesson of Labor Day," the closing sentence of which we quote: "To be better men and women in our homes and workshops; to be thoughtful and considerate of those unable to help themselves; to lend a helping hand in times of trouble and distress; to acquaint ourselves with the principle underlying the movement; to study the gospel of the brotherhood of man; to live so as to be better citizens and consequently better union men; to defend freedom of thought, whether expressed by tongue or pen; to always be one more in the grand phalanx of labor's hosts on each successive anniversary, marching to the music of higher wages, shorter hours and better conditions. This is the lesson of Labor Day."

The Industrial Fair at Toronto this year, from a financial point of view, was the most successful in the history of the Association. The Fair as a whole, however, cannot be termed a successful one. What with catchpenny fakes, etc., the exhibition proper is being yearly robbed of its legitimate results. —Petrolia Advertiser.

So much for depending upon the Toronto daily newspapers for reports of the fair. Without doubt the Fair was a fine and satisfactory success, both financially as well as an exposition of the material greatness of the country, particularly in the line of manufactures. In a recent issue of this journal mention was made of some 230 different exhibits including machines and machinery of different sorts, but no mention was made of any one of them in the Toronto daily papers except it was paid for at so much per line. On the other hand what the Advertiser calls "catchpenny fakes" received the most liberal notices in the papers. The methods observed by the Toronto daily papers towards manufacturers who exhibit at the

Fair is exceedingly illiberal, mean and selfish. The greatest fakes at the Fair were these so-called enterprising newspapers.

THE Department of Railways and Canals has awarded the contract for steel rails for the Intercolonial railway, to the amount of 2,500 tons, to J. R. Hutchins, of Montreal, and a similar quantity for the same road to Charles Cassils, of Montreal. The contract for 1,000 tons for the Prince Edward Island railway and 300 for the Wina or branch has been awarded to W. H. Daunt, of England.

This is an Ottawa telegram which appeared in the Empire a few days ago. The facts are briefly stated, but they disclose a situation that ought not to exist in Canada, but which will exist until the tariff is made to force a change in the circumstances. There are probably two million tons of steel rails now in use in Canada, no ton of which was made here. As far as the article is concerned we are as helpless and dependent upon others as a new born babe. A duty of say $10 per ton on rails, and a bonus of say $5 or $10 per ton on the production of rails in Canada, would soon give us the industry.

UNITED STATES Consul Edward Bedloe, writing from Amoy, China, to the State Department, says:

A fortune lies in store for the man who will discover some process for cheaply making wood proof against white ants. These pests are the curse of existence in Amoy and every other tropical or sub-tropical city. Their voracity is incredible. They ate the framework of a new door in this consulate in three weeks. In the same period they almost consumed a large and handsome cabinet in the courtroom and a heavy pine settee in the anteroom. Their work is invisible. They attack the wood from a mere point, through which they bore to the interior and there eat everything till only a shell or film of wood remains. Wood [illegible] will successfully resist these insect pests must be thoroughly charged with some powerful chemical, both poisonous and non-evaporable. A solution of corrosive sublimate, chloride of zinc, arsenic or antimony, would seem to meet the want. But how to force these into the fibres until the latter are saturated, and to do so at a merely fractional cost of the wood itself, is a problem that confronts the inventor.

This statement should attract the attention of some Canadian inventor, who should discover a practicable and effective method of treating wood, and of Canadian manufacturers who would make the timber into furniture for the Amoy market.

THE workingman, taking his cue from a good deal that is published on the subject, is likely, hereafter, to consider himself a good deal of a capitalist, after all. He is told that the lack of currency is largely due to his withdrawing his savings from the banks, and that this is, in a great measure, the cause of the present unsatisfactory condition of trade. We believe that the influence of the hoarding of money by workingmen is very much overrated, but no doubt it helps to make a bad matter worse. Capital, we are told, is timid, always, and the workingman who holds his little savings in hand can scarcely be more to blame than the man of large means who does the same thing. But the workingman is, perhaps, the most interested party, and we are glad to know that if a little frightened at first about the safety of his savings he is the first to recover, and that his money—what he has—is going back into circulation, through the banks, thus helping the currency question as far as it can help it, and earning him something in the way of interest. As has been pointed out it does not require a great amount of currency to pave the way for steady work for a workman, and in putting his money into the proper channels he may himself be the one provided with work.—American Machinist.

A LARGE iron mill failed in Pennsylvania the other day, after losing about $150,000. No stockholder ever got a dollar from his investment, and, as the business was managed honestly, but without sufficient skill, the conclusion is unavoidable that workingmen employed by the concern got all, or nearly all, of that large sum of money. About one-third of all the failures in this country are failures of manufacturers, but it rarely happens that the creditors are the workingmen. They, usually, get their wages regularly, even if the proprietors get nothing and the outside creditors suffer loss. And it is a familiar experience that nearly all such concerns occasionally run without profit, and often at a loss, while the employed men get their wages precisely as they do in times of great prosperity.

THE Controller of Customs, Hon. N. Clarke Wallace, has sent us an Analytical Index to the Existing Customs Tariff, a substantially bound volume of 285 pages, replete with information pertaining to every phase of the tariff. Collectors of customs, merchants and manufacturers who have dealings with the department, importers of every class of goods have at some period or other struck snags when they have come to enquire what is the rate of duty upon certain articles. The index to the tariff proper contains about 3,700 items, and time and again it has occurred that when the rating for duty of a certain article is required, no reference to the article would be found in the index, and it is just possible that a request had to be made to Ottawa for a ruling as to the rate of duty. The departmental officers have gone carefully through the tariff, they have extracted from the item its subsidiary parts and placed every article mentioned under the proper headings in the analytical index. Moreover, the departmental rulings as to the rates of duty on articles which are not enumerated in the tariff are also collated. The total number of headings contained in the new analytical index is about 5,900, an increase of about 2,200. Then there are eight octavo pages containing an alphabetical list of articles which have been ruled as coming under item No. 547 as being unenumerated, and therefore dutiable at 20 per cent. Following this comes 32 pages of articles in respect of which departmental decisions as to rating have been given since March 28, 1890. This list will be of great value, as hitherto the rulings have only been published in a scrappy way by departmental circular or in the newspapers. The compilation also contains all the customs orders in council which relate to the tariff; the values of foreign currencies as proclaimed by the Governor in council and at present observed; tables of sterling money, computed at their statutory equivalent; a table of proclaimed equivalents of foreign coins; the relative measurements of French metres and English yards; the approximate values of packages of various descriptions for the guidance of collectors, and sundry other items of information relating to the tariff, including certain sections of the Customs Act specially prepared for the convenience of collectors. This volume cannot fail to be of the greatest value to all those who have to do business with the Customs Department, whether at headquarters or as represented by its officers at the several ports of Canada.

ACCORDING to the Street Railway Gazette, a successful method of utilizing the old double-reduction motors has been adopted by the street railway company at Great Falls, Montana. The

plan is to use them for supplying stationary power. Their operations for different purposes are thus detailed: "At one place it was desired to run a pump for keeping clear an excavation. Instead of going to the trouble and expense of putting up a steam plant the parties doing the work decided to rent power from the railway. One of the old Thomson-Houston F-30 double-reduction motors was set up, the gearing taken out and a pulley put on in place of the pinion on the armature shaft. It was then belted direct to the pump. As the pumping load is constant the series winding of the motor was no disadvantage. About 12 horse power is required by the pump. This motor has been running constantly, with but a few minutes' rest during the twenty-four hours. At another place one of these veterans is at work driving a rock crusher. As the load varies so greatly, the fields of this machine were re-wound to make it a shunt motor in order to keep the speed constant. Another shunt machine is furnishing power to a small foundry. The speed of these motors is about 1200 revolutions per minute. Sheds are built for the protection of those doing out-of-door service. The extreme simplicity of the work of installing them and the small amount of attention they require commend them to all for use in such classes of work. The one running the 10 horse power rock crusher is in operation ten hours a day and the company receive for its service $100 a month, or about $10 a horse power."

THE most serious street railway accident of the month occurred on the electric railway between Cincinnati and Avondale September 3rd. One person was immediately killed and a score were more or less dangerously injured. The Avondale road where the accident occurred has a down grade for over a mile. Defective brakes were the cause of the accident. The motorman and conductor being unable to check the speed of the cars jumped and received slight injuries. The majority of the passengers were less fortunate. The need of better brakes for electric cars which are run on steeper grades and at higher speeds is forcibly apparent from the number of accidents of this character. Both the safety of the passengers and the protection of the traffic of the street demand it.—Electrical Industries.

THERE can be no conflict of interests between employer and workman when both parties desire to be just, because their interests are actually, in all particulars identical. The man who has a little money to invest in starting a manufacturing business cannot make any movement forward without employing other persons to help him. The workman who has nothing but his labor and his skill, cannot rightly use them unless he can find a man with money enough and brains enough to organize and conduct a business. The parties are mutually dependent, and both of them have a vital interest in the success of any undertaking in which both together are engaged.

THE most common complaint of the workman is that he does not get a fair share of the profits made, and he is apt to regard his employer as greedy and selfish, which, indeed, is often true of employers. But it must be clear, upon reflection, that no one employer has power to fix wages for his men, unless he possesses a monopoly of some kind, such as ownership of a peculiar patented article might give him. He cannot afford to pay wages any higher than those paid by men in similar business, for, if he shall be more generous, he will soon be compelled to close his doors. Nor can he arrange to pay less, for then his best workmen will go where wages are better, and he will again encounter failure. Necessarily, to get along at all, he must pay the prevalent or market rate, and that is fixed by influences which cannot be controlled unless by extraordinary, and practically impossible, combinations of employers.

A CORRESPONDENT at Halifax, N.S., writes us a letter, which appears elsewhere, in which he criticizes what was said in our last issue re St. John, N.B. He seems to feel troubled because he thinks that we stated that St. John was the only Canadian port open all the round. But we did not say that, neither did we intimate that Halifax was not the most lively, energetic and wide awake city on the Atlantic coast. We know there are no flies in Halifax not a fly. Halifax is all right; and we are awaiting the announcement of the arrival there of steamers drawing fifty feet of water when they are built. What we did say regarding St. John was that in addition to the facilities offered by the connection of the Canadian Pacific railway with that harbor, those of the Intercolonial railway's connection with the Grand Trunk made St. John the only Canadian port open all the year round which is the terminus of two competing trunk lines. If Halifax is the terminus of two competing trunk lines of railway we are not aware of the fact, but will be glad to announce it on the authority of our somniferous correspondent.

AN electric funeral car is a California innovation. About nine miles from San Francisco are four large cemeteries and a crematory, and it was to bring them near the city that an electric railroad company introduced the new hearse. Its first patron was a benevolent organization, one of whose members had died. At the time appointed for the mourners to leave the city the electric funeral car, appropriately draped in black, was in readiness. The body was lifted from an undertakers' wagon to the car, and the bearers took their seats in a section reserved for them. The conductor clanged the bell twice, the motorman clanged his gong to clear the track of interested spectators, and the funeral procession started, the mourners in electric cars following the hearse. The run from the starting point to the cemetery was made in an hour. The car was switched off on a track inside the cemetery gates, and the pallbearers lifted out the coffin. Then the funeral procession was reformed and moved slowly off toward the chapel.

THE Penberthy Bulletin is a neat little publication issued by the Penberthy Injector Company, Detroit, Mich., which is sent regularly to every engineer in Canada who will send in his name and address, and also that of the concern in whose employ he is. While a part of the paper is used for the advertising purposes of the publishers, and while there is some original matter in it, it is made up in part of selections from trade journals, the selected articles being of special interest to steam users. This feature will be interesting to engineers and firemen.

Toronto's great Exhibition would not be wholly worthy of condemnation if it existed solely as a provider of innocent enjoyment to the multitude. The Industrial Fair avowedly has a higher mission, and they are its best friends who would not make it less amusing but would make it more instructive. The Exhibition is not strong in some departments that should be illustrative of the country's progress along the line of industrial achievement. For instance, why should not the Fair-goers be able to see in operation the process of manufacturing paper or Canadian tweed? The directors would have to financially encourage manufacturers to branch out thus; but the money spent in developing the Fair on its illustrative side would be well expended.—Toronto Telegram.

The fact is, there were quite a number of machines of various descriptions in operation at the Fair, and thousands of visitors found much pleasure and instruction in watching the production of the articles being made upon them. But according to the ethics observed among Toronto daily newspaper men, no mention whatever was made by them of these exhibits; and now the Telegram suggests an idea that has been exemplified at the Fair for years. Last year in the Main Building was a power loom upon which carpet was being made, and another loom upon which web was woven for the manufacture of suspenders, but the Toronto daily newspapers were oblivious of the fact. Some of the girls at the candy counters in the neighborhood objected to the noise, and so not to interfere in the taffy traffic these looms were not at the Fair this year.

In a letter to the Secretary of the Canadian Manufacturers' Association, in alluding to the political, fiscal and industrial situation now prevailing in the United States, Mr. James M. Swank, general manager of the American Iron and Steel Association, says that the iron and steel industries of that country are greatly depressed, and business generally is far from good. While the silver question may be, to a certain extent, responsible for this depression, the chief cause is the threat of unfavorable tariff legislation. Were this removed the prospect for a speedy revival of business would be much better. Mr. Swank sincerely hopes that the enemies of protection in both Canada and the United States will not be successful in their efforts to overthrow the policy which has done so much towards establishing important enterprises in both countries.

The Newark and South Orange, N.J., Railroad Company equipped and ran its first car to South Orange by electricity on October 7, scarcely 12 hours after the South Orange Board of Trustees had unanimously passed an ordinance granting it that privilege. There was a rumor that an injunction would be asked for to prevent the running of the cars, so the railroad people put a large gang of men to work Friday night as soon as the ordinance passed. Poles were erected, wires strung, and the current turned on at 10.40 o'clock Saturday morning, when the first car was run to the South Orange terminus.

The Corinth ship canal, which unites the gulfs of Lepanto and Ægina, and cuts in two the Peloponessus, was completed during the past summer by a French company which began its construction in 1881. The canal is about four miles long, its width is 75 feet, the same as the Suez Canal, and its depth 26.4 feet. It will shorten the voyage of vessels from the Adriatic to Constantinople and Asia Minor 185 miles.

The recent meeting in Montreal of the rolling mill proprietors was held with closed doors, a tyler being stationed outside the entrance with a drawn sword in his hand to keep off cowans and eavesdroppers, but it has leaked out that a subject of much interest that was discussed was that so frequently spoken of in the Canadian Manufacturer *re* the increase of duty upon wrought scrap iron. Some of the gentlemen, gulping down the choking sensation in their throats, like boys passing a graveyard at night, declared in loud whispers that they would not be afraid to meet the spook, and would quite cheerfully assent to the change if it could be shown that it would be for the good of the country to make it. These gentlemen can save some money by accepting the situation right now, and boldly declaring that the tariff ought to be increased for the good of the country. If they do not do it, by and by they will have to go down into their pockets for "influence" that will not influence the change that is bound to come.

IRON DEVELOPMENT IN PICTOU COUNTY, N. S.

Editor The Canadian Manufacturer:

Sir,—Nature's nest is never empty. This is a truism which leaves a deeper impression the more closely we analyze it. In the opening of the East River iron mines, we recognize an event of the greatest importance to the Dominion of Canada, an event which, in the coming years, will be celebrated as the dawning of the New Era, in which Canada commenced to take her place among the iron producing and manufacturing countries of the world.

A few months ago everything here lay dormant; now the scene is changed. From the glowing mouths of two furnaces there flows the molten metal, which, even at this early date, has found its way to Montreal, Toronto and the West, there to be tested, and to be pronounced by the users as giving the utmost satisfaction. What do we find here? Everything necessary for the production of Iron. Side by side, within a radius of a few miles, are inexhaustible deposits of coal, lime, and iron ore, the National Policy being the magic key which has unlocked the portals to this great storehouse of Nature's wealth. At Bridgeville we are in the very heart of the iron district. Here the very hills are of iron. The best known deposits are in the valley formed by the East River, which flows into Pictou harbor. Other valuable deposits are found in the bed or the banks of the Sutherland River, which flows into Antigonish Harbor. Then, again, some valuable ores are found on the highland between these rivers. The ore is found in the lower Carboniferous or upper Silurian formation. The lower Carboniferous rocks of the Pictou coal fields rest directly on the Silurian, and the iron ores are found in both. Brown Hematite has been traced over a distance of five miles in the East River Valley, near Springville. The ore is of good quality, though variable in richness, the average being 50 per cent. Specular ore averages 60 per cent. Seams run from 5 feet to 40 feet in width. In the Bridgeville mine they have sunk to a depth of 400 feet, where the ore appears in great abundance, being a true vein which is found to carry in depth as tunnels are driven. The height of the hills above the East River is from 300 to 400 feet. Already these mines in their present development give abundant evidence that very large quantities of iron ore are in existence. Limestone is found quite near in great quantities. The quarry near Springville shows a bed of it over 20 feet thick, and underlying it is another bed 12 feet thick. The New Glasgow Iron, Coal and Railway Company, with a capital of $1,000,000, have erected, at Ferrona, a plant of the most improved style. The size of the furnace is 65 feet high, 15½ feet bosh, crucible 9 feet in diameter. They have 54 coke ovens, from which the coke is rammed while hot, thus making a large saving in cost of production. They have a patent machine for washing the coal, which frees it from all impurities. The output of this furnace is 84 tons per day of No. 1 pig, which is being shipped as fast as made. Mr. Daniel Aitkin, of Glasgow, Scotland, is the foreman, and Mr. Harvey Graham is the secretary of the company.

In connection with the works they operate 12 miles of railway, which is well equipped, carrying passengers and freight, and connecting with the Intercolonial Railway at Eureka Junction. The furnace company give employment to 450 hands.

The Pictou Charcoal Iron Co., (Ltd.), was incorporated under the laws of Nova Scotia, in November, 1891, with an authorized

capital of $200,000. The property of the company consists of 6,000 acres of hardwood, the mining rights on the Grant Bros., farm at the very door of the works, besides limestone deposits in abundance. The buildings comprise office, engine house, stock house and casting house. The hoist tower, which is 70 feet high, has double elevators. The furnace stack is 50 feet high with 11 feet bosh. There are 20 kilns used for making the charcoal. The output is about 15 tons per day, while the quality of the iron is all that could be desired. E. A. Sjostedt is the manager, and D. R. Grant secretary of the company.

We have the assurance from several prominent manufacturers, both in this province and in Ontario, that the iron produced at Ferrona and at Bridgeville is better for the purposes of their business than any Scotch or American iron brought into the country. As we increase in population ; as our industries are advanced, and as our national resources become known and appreciated, new industries will be added and those already established will increase in importance.

JAMES H. MUNRO.

NEW GLASGOW, N.S., Sept. 30, 1893.

HALIFAX, N. S., Oct. 12th, 1893.

Editor THE CANADIAN MANUFACTURER :

SIR,—Under the caption of "St. John, N.B.," in your last issue, you have inferentially, and I am quite sure only through ignorance, done "sleepy" (?) old Halifax a great injustice.

The old town is called "sleepy, slow, dead, dry rotted," etc., only by those who are interested in having the world think her so, but that does not worry us greatly, as when intelligent people really desire to know what Halifax actually is, they look up statistics and find from cold figures that she is the financial and commercial metropolis of the Maritime Provinces, with a greater volume of business, a larger and more active banking capital, reaching not only all over the Lower Provinces but to Montreal and Winnipeg, Minneapolis and Chicago, far and away ahead of any rival in post office, customs house, money order and shipping business. But when we find intelligent journalists gravely assuring their readers that "St. John, N.B., is the only Canadian port open all the year round," then Haligonians feel that a little missionary work among the aforesaid I. J.'s will not be out of place.

Halifax is a Canadian port, Halifax harbor does not freeze, does not need dredging, is easy of access at all states of the tide for vessels drawing fifty feet of water when they are built, ergo, is open all the year round. See !

SOMNIFEROUS.

N.B.—Any further information cheerfully furnished. S.

IF the boiler is new, or has never been tested, the heating surface is the best guide to a knowledge of what it will be capable of doing. If the boiler is well designed or properly set, two pounds of water should be evaporated for each square foot of heating surface, so that, on the Centennial committee's basis, fifteen square feet of heating surface should be allowed per horse power of a boiler. the external surface of that portion of the shell which is exposed to the fire should be estimated, and to this, expressed in square feet, should be added the area of the tubes, and of such portions of the heads as are exposed to the direct heat. The sum should then be divided by fifteen, and the result is the nominal horse-power of the boiler. This rule is not absolute, but like all other rules it has exceptions. With the most approved settings, and with well managed fires, the evaporation is greater than that estimated above, and we find that in such cases twelve square feet of heating surface will evaporate the quantity of water required for a horse-power. In some exceptional cases the requisite heating surface is even less than 12 square feet, but we do not use less than twelve unless we have satisfied ourselves, by careful experiment upon similar boilers, similarly set, that we may do so fairly. On the other hand, if the boiler or the setting is poorly designed, or the draught more imperfect, or the fires badly handled, more than fifteen square feet may be required. There is no such thing possible as an absolute rule for the horse-power of a boiler, and the rule we have above merely represents, what, in our experience, a given boiler, well designed, may be expected to do under ordinary circumstances.

THE Thomson Electric Welding Co., Lynn, Mass., has, it is stated, just secured control of an electric loom which will revolutionize the present manner of weaving all kinds of textile fabrics, and the cost of labor will be much cheaper by the new method. The loom will be run by electricity, and will weave fabrics from the coarsest carpet to the finest linen. There is no noise perceptible when the machine is in operation, as each shuttle and moving parts work independently. The present power looms operate at the rate of 140 to 180 picks per minute, while the electric loom picks 250 to 300 a minute.

A NEW valve worked by electricity from any point desired is designed especially for application to steam engines, but can be used to shut off water, gas, etc., as well. When applied to a steam engine it is placed on the supply pipe near the throttle, and connected by electric wires with any part of a factory, so that one push of the button instantly closes the valve and stops the engine. The principle upon which the valve is worked is that of utilizing the steam pressure in the pipe as the motive power to work the valve after being released by the electric current. The valve consists of a piston enclosed in a shell in the form of a cross, and directly across the steam way through the supply pipe. When open it gives direct passage for steam and stands in equilibrium with the steam on both sides. Consequently it does not move, but on the electric current being applied a small exhaust valve is opened at one end, throwing the valve out of equilibrium, moving the piston and the shut off valve across to its seat directly athwart the steam way, and closing it, thus stopping the steam supply. It is very simple in construction and is not liable to get out of order, and does its work perfectly.

THE common water pump of to-day is but an improvement on a Grecian invention which first came into general use during the reign of the Ptolemies, Philadelphes and Energetes, 275 to 221 B. C. The name, which is very similar in all languages, is derived from the Greek word "pempo," to send or throw. The most ancient description we have of the water pump is by Hero of Alexander. There is no authentic account of its general use outside of Egypt previous to its introduction into the German provinces at about the opening of the sixteenth century. Pumps with plungers and pistons were invented by Morland, an Englishman, in 1674 ; the double acting pump by De la Hire, the French academician, some twenty years later.

To make boats of paper, a wooden model is prepared in exact form of the desired boat, on which the paper is moulded, sheet after sheet being superposed until the desired thickness is obtained. In process of construction nine thicknesses of strong manilla paper are laid on, making a thickness of about one-eighth of an inch. The lines of the boat are carefully drawn full size, and the paper—which comes from the mills in rolls—is cut to the full size desired for covering the entire length and breadth of the boat, so as to have no joints whatever. For racing-shells the best manilla paper is used, but for gigs, dingeys, canoes, and skiffs, paper made from undressed linen is used. In manufacturing the racing-shells the first sheet is damped, laid smoothly on the model, and securely fastened in place by tacking it to certain rough strips attached to its upper face. Other sheets are now superposed and suitably cemented together, the number depending upon the size of the boat and the stiffness required. Should the surface of the model be concave in parts—as in the run of boats with square sterns, for instance—the paper is made to conform to these surfaces by suitable convex molds, which also hold the paper in place until dry. It will then retain the desired form. The model, with its enveloping coat of paper, is removed to the drying room. As the paper skin dries, all wrinkles disappear, and it gradually assumes the desired shape. Finally, when all moisture has been evaporated, it is taken from the mold an exact counterpart of the model desired, exceedingly stiff, perfectly symmetrical, and seamless. The boat, as it then appears, is waterproofed, the frames and fittings completed, and the boat varnished. The advantages possessed by these boats over those constructed of wood are strength, stiffness, durability ; and, being without joint, lap, or seam, they do not admit of leaking by strain or shrinkage. They do not crack or split, never shrink, and paper being one of the best non-conductors, no ordinary degree of heat or cold affects them, thus rendering them admirably adapted for use in all climates.

FOR sometime past, Mr. E. B. Wall, superintendent of motive power of the South-west system of Pennsylvania lines west of Pittsburg, has been using oil furnaces at his blacksmith shop at Columbus. These furnaces are 5ft. by 9ft. and are designed for heavy work, and have proved so successful, and well adapted for the work required of them, that others are being installed in other shops of the same system. One feature of this furnace that may surprise those who have not had much to do with oil furnaces of such size, is the absence of any stack or other means for carrying off the product of combustion. It has been found by actual experiment that when a stack is placed on such furnaces, the temperature cannot be maintained to as high a point as desired. Without a stack it is evident that the flames and products of combustion have a tendency to creep out wherever there is an opening. For this reason the doors in the front of the furnace are carefully fitted, and it is found necessary to protect the buckstaffs in the immediate

vicinity of the doors extending out a rib of firebrick from the front wall. These furnaces when first installed gave an economy of about 50 per cent. over that of the coal furnaces, and an increased output of 25 per cent. The economy was not wholly due to the difference in the cost of fuel, a portion of it being accomplished by the reduction of labor, there being no wheeling and shovelling of coal and ashes. While the increased output is maintained, the economy has, in a measure fallen off, not due to the performance of the furnace itself, but because of the increase in the market value of oil since the furnaces were first installed.—American Manufacturer.

An electric vehicle capable of carrying as many as four persons at a speed of seven miles an hour is being introduced by the Columbian Electric perambulator Company, of Chicago. The vehicle is something like a bath chair and is propelled by means of a 1-horse power electric motor, the current for which is supplied by a battery of six cells carried on the carriages. Another electric vehicle, more in the form of a tricycle with the small or guiding wheel in front, is of Italian origin, and this also is driven by a small motor, the necessary current for which is supplied by a battery of accumulators.

It will be interesting to those who have anything to do with sheet iron boiler plate or similar material to have an easily remembered rule for finding the weight per square foot of the material they are working with. It has been found by experience that a square foot of iron plate $\frac{1}{8}$" thick weighed almost five pounds, and this forms a basis for a very simple and easy rule. As a square foot of iron $\frac{1}{8}$" thick weighs five pounds, a square foot of $\frac{1}{4}$" iron will weigh ten pounds, and we can say that the area of any sheet iron (or plate iron) in square feet multiplied by the thickness in one-eighths and multiplied by five will give the weight of the piece. There is a piece of tank iron $\frac{5}{16}$" thick, 3' wide and 5' long, how much does it weigh? The area will be 3'x5' or 15 square feet. Now how many $\frac{1}{8}$ths is $\frac{5}{16}$ths of an inch? Since $\frac{1}{8}=\frac{2}{16}$ths, and 2 is contained in 5 2½ times, we say $\frac{5}{16}=2\frac{1}{2}$—8ths or 1½ times 5 pounds = 12½ pounds per square foot, and as there are 15 square feet we have $15\times12\frac{1}{2}=1875$. Where the thickness is even eighths of an inch it is much simpler, but even this is not a hard thing to do as shown. If it is desired to use this rule for other metals than iron we simply find the difference between the weights of the two metals per cubic inch and find what a square foot $\frac{1}{8}$" thick will weigh, then work as shown above.

A new process has been proposed for obtaining red paint from the iron cinder of puddling furnaces. By this process 1,000 kilos of cinder are crushed sufficiently fine to pass through a screen of 100 meshes to the square centimetre, 170 to 200 kilos of 66 deg. B., sulphuric acid are then added, and the mixture worked till thoroughly homogeneous, it is then allowed to "sweat," and, a chemical reaction taking place, then the process is completed.

When there is no choice of feed-water, the acids may be neutralized and corrosion prevented by the use of some alkaline substance prior to the introduction of the feedwater into the boiler. This is best done by using soda ash, or carbonate of soda, which should be dissolved and introduced with the feed-water into the boiler. The quantity required will vary according to the strength and quantity of the acids in the water, and can be best ascertained by experiment.

There are so many grades of steel and so many different kinds of grades, that even a tool maker cannot keep the run of them; besides that, every tool requires a special steel, one that is specially suited for the purpose, and all requiring a special heat for making, and their own particular temperature for hardening and tempering. This is all well enough where the making of tools is to be carried on as a business, as they can lay in all classes of steel for every purpose, and devote all the time they wish in experimenting with temperatures and heats, and for this reason it is best to buy rather than to trust to home-made tools.

The activity in the beet sugar industry in California has been marked during the last year, and growers of sugar beets and manufacturers of sugar therefrom have realized good profits. The yield of sugar beets is 70,000 tons, which at present rates is worth $77 a ton without the bounty. Last year's crop amounted to 55,000 tons.

The United States Lighthouse Board has been successful in its experiments for establishing electric communication with lightships and lighthouses anchored at a distance of more than a mile from shore. This will attract the greatest interest in maritime circles all over the world. The board has been conducting these experiments for several years. The obstacles which have prevented connecting by electric cable a vessel swinging at anchor at sea with the land are said to have been overcome by attaching the core of the cable to the anchor chain, and making a conductor of the latter. Officials of the Treasury Department have recently talked by telephone with persons on board a lightship anchored over a mile from the shore with the anchor used to complete the circuit. The establishing of electric communication with lightships will result in the saving of many thousands of dollars annually to maritime interests. Passing vessels can easily and quickly be communicated with in case of emergency, and ships in distress will frequently be reported to life-saving stations in time to despatch relief vessels to save them.

A stove works concern in Kansas have adopted a novel system of operation for molders. The floors are a little larger than common. They have a gang of men who stake out the flasks, trim the castings and cut the sand for the molders. One man does the work for about an average of 7 floors. The molders pay these men themselves, and the expense runs from 75 cents to $1.50 a week, for each floor. The work takes the men about 7½ hours. The blower is started about 3 p. m. and about 5:15 the heat is poured off, while the molders have all quit work by 5:30. As soon as pouring off begins, the shaking out starts in and by 10 in the evening the work is all done, ready to cut the sand. The molders can put in about one hour more work in molding each day by this plan, and the extra work pays the cost of a man to fix up the floor for them. The molder is usually tired out by the time the pouring off is finished, and he is in no condition to get at the hard and hot work of shaking out and trimming up his day's work. It was an innovation when started, but the molders now would be almost induced to strike if an attempt was made to return to the old method.

The following notes on a patent process of melting and puddling various mixtures to produce a new malleable iron are published by Mr. Joseph A. Crawford: Charge 9½ cwt. of forge pig iron, 7½ cwt. of hematite with 100 lb. coke at various stages, into a 10-ton cupola, for 10 to 15 minutes, time allowed for melting, to follow on charging with 3 cwt. of cinder pig iron and 5 cwt. of malleable scrap iron, with 48 lbs. of coke. After all is melted down to run off the receiver connected with the cupola into a barrow ladle, which can be run alongside the puddling furnace, and turned into the furnace for the puddler to work, which will take the short time of three-quarters of an hour for balling, etc. One 10-ton cupola will melt iron to work 50 puddling furnaces on an eight hour shift and allow half an hour for fettling.

A method has been discovered in Germany of covering tissues of cotton yarn with a flexible and brilliant deposit of tin. A clear paste of commercial zinc-powder and white of eggs is first made and spread on the textures with a brush; the coating coagulating when drying. The tissue is then placed in a bath of perchloride of tin, which metal is precipitated on the zinc; and the article, after rinsing and drying, is calendered, an operation imparting lustre to the layer of tin.

Among the processes for fireproofing to which the attention of the directors of the Berlin exposition was recently drawn, and for which awards have been declared, are the following: For light tissues, a composition consisting of 16 pounds of ammonium sulphates, 5 pounds of ammonium carbonate, four pounds of borax, six pounds boric acid, four pounds starch—or one pound dextrine or one pound gelatine— and 25 gallons water, mixed together, heated to 86 degrees F., and the material impregnated with the mixture, centrifugated and dried, and then ironed as usual. One quart of this mixture, costing only a few cents, is sufficient to impregnate 15 yards of material. For certain materials, like theatrical decorations, wood and furniture, 30 pounds ammonium chloride are mixed with so much floated chalk as to give the mass consistency, and it is then heated to from 125 degrees to 150 degrees F.; two coats of it by means of a brush. A pound of this, costing only a mere trifle, is sufficient to cover five square rods.

An improvement in dynamo brushes has been invented in France. It consists simply of a pile of exceedingly thin sheets of copper alloy possessing anti-friction properties. The sheets are about one-thousandth part of an inch thick. They are said to wear the commutator less than the ordinary brushes and to last longer than those made of copper netting so much used abroad.

According to a contemporary, sheet brass may be cut chemically with success by the following method: Make a strong solution of bichloride of mercury in alcohol; draw a line across the brass with a quill pen, where it is to be cut. Let it dry on, and with the same pen draw over this line with nitric acid. The brass can then be broken like glass cut with a diamond.

After lengthened discussion in the Chamber and in the Senate a bill has lately become law in France which will modify to a considerable extent the conditions of labor for women and children in that country. Under the provisions of the new law, which includes workers in factories, mines and shops, night work is forbidden for all women and for all boys under 16 years of age. Children under 12 are not allowed to labor. The daily working hours for

children under 16 years of age, either male or female, are limited to 10 ; for those between 16 and 18 years, 11 hours a day is the limit, or 60 hours a week. These working hours are to be divided by one or more periods of rest, aggregating at least one hour during the day, and one rest day each week is secured to all young people under 18, as well as to all women workers. Penalties ranging from 5 to 15 francs are laid down for each infraction of this law and for each worker affected. There are also numerous special regulations affecting female and child labor in various industries, which are calculated to improve the condition of those coming under the influence of the new law.

In no part of the world has the struggle between organized labor and organized capital been more severe during the past five years than in Australia, and the one cause of quarrel throughout was the demand on the part of the strikers for the exclusive recognition of unionism. Had the unionists won the day, every worker in Australia would have been compelled to join a union and place himself under the domination of the small cliques of individuals in the big cities who make of labor agitation an exhilarating and lucrative profession. The boycott was used alike against employers and non-unionists. "We intend," said the Shearers' Union in a manifesto, "to teach the squatter the folly of resistance. He shall not be allowed to shear his wool except by union labor. But if he should succeed in getting the wool off the sheep's back, it may rot in his sheds, for we shall prevent carriers taking it to the railroad ; and should he succeed in getting it to the railroad, we shall prevent its going to sea, for we shall call out the sailors ; and if it sails we shall prevent its discharge in London, for we shall call out the dock laborers." This announcement effectually ranged public opinion with the employer, and, when the actual attempt to enforce the threat was made, the Shearers' Union found itself face to face with a combination of pastoral employers infinitely stronger than that of the workmen.

A student in chemistry has accidently discovered that tiles can be made of common beach sand mixed with water and certain chemicals, the nature of which is not disclosed, and we understand that a company has been organized in New Jersey to utilize the discovery. "All that is necessary is to mix the ingredients with the sand and pour it into tile-shaped moulds over night," and in the morning there is your tile, glazed and hard, without the application of either heat or pressure. It is said that tiles, drain-tubes, imitation terra-cotta, statuettes, etc., become as firm as baked pottery and are much cheaper. Coloring matter can be stirred into the sand with the effect of permanently tinting it, and by pouring the color unevenly through it a fair imitation of marble can be produced, at least, so we are advised from the States.

Metal tin can be burned as easily as paper, and to do it makes an interesting parlor experiment. A candle, blowpipe and tin foil are necessary. With the blowpipe direct the flame of the candle against a strip of tin foil, and it will readily take fire and burn with a brilliant light, the melted incandescent globules falling to the table and dancing about in a very curious manner. It will be noticed that the product of the combustion of the tin is a white powder, the oxide of tin, and it was observed many years ago that this calx, as it was called, weighed more than the original tin. This simple observation was the beginning of a long series of investigations which finally led to the discoveries of Priestly, Scheele and Lavoisier, and laid the foundations of the modern science of chemistry.

Until a short time ago peroxide of sodium was only known as a rare product of the laboratory. It is now put on the foreign market at five francs per kilo. The peroxide contains about 20 per cent. of oxygen available for bleaching purposes. This percentage is very high, barium dioxide containing eight per cent. and peroxide of hydrogen (12 vol.) only 1.5 per cent. It is decomposed by dilute acids. The sodium compound, on account of its strong alkaline reaction, cannot be directly employed in the bleaching of fibres of animal origin, such as silk or wool. In this case peroxide of magnesium is recommended, prepared by adding three parts of sulphate of magnesia free from chlorine to one part of sodium peroxide. In bleaching, first add the magnesia, then the peroxide. When bleached sufficiently, pass through a weak sulphuric acid bath to remove magnesia ; rinse and dry as usual. Care must be taken to secure a slight excess of the sulphate of magnesia.

The three Commissioners who were appointed in accordance with an act of the Pennsylvania Legislature of 1889 to investigate the waste of coal have made a report. The total amount of coal sent to market up to date, as shown by this report, is : From the Wyoming region, about 383,000 tons ; Lehigh region, 147,500,000 tons ; Schuylkill, 289,500,000 tons or a total of over 820,000,000 tons. This represents about 90 per cent. of the product mined and consumed. The other 10 per cent. was used at the collieries. For every ton of coal mined the commission estimated that a ton and a half was lost in waste and in the mines. Of the 60 per cent. of coal lost in mining at least 25 per cent. was lost in unsaleable or crushed coal. The amount of unmixed anthracite coal is not less than 18,000,000,000 tons. To work out a solution of saving this 25 or 30 per cent. that has gone to the waste bank is properly a great question to solve. A saving of 25 per cent., or 4,500,000,000 tons of coal will mean for the future of the anthracite coal trade and the carrying companies at the rate of $1.50 per ton to tide over $6,000,000,000. As a means of utilizing this vast amount of waste coal, the Commissioners suggest the use of rotatory grates that will carry off the ash as quickly as it is formed.

WHAT IS STEAM ?

The above question is frequently asked of engineers nowadays, and although they make constant use of steam, very few will answer that "steam is an invisible, gaseous fluid generated by the aid of heat from water." Many of them, when told that steam is invisible, laugh and say they know better, because they see it every day. If one of these wise men who claim the honor and name of practical engineers will take a look at the water glass in the boiler room, if they have one—if not, let them look at the one on their neighbor's boiler—and then tell if they can see any steam inside of it. If the glass should happen to burst while they are making the observation, they will, no doubt, see plenty of what they call steam in the vicinity, and they might also see the same if the safety valve should happen to blow off. Why, then ? Simply because steam is invisible, and so long as it is confined you can not see it, but when it is cooled off, as when it comes in contact with the air, and is consequently condensed again to the water from which it originated, it becomes visible to the eye, like water in very small particles, as in a fog. Viewed at such times it has lost its characteristics as steam, and instead of being a gaseous fluid it has become condensed to water in very small particles, which occupy considerable space. When in this condition we see what we call steam, but when an engineer notes the flow of steam, from guage-cock or safety-valve, he will notice that near the opening nothing is visible, while at some distance he sees fog. The reason of this is that at all times steam is invisible while it remains steam, but by condensation and the formation of water a fog is produced, which can be seen and distinguished in no way from the fog which rises from rivers, swamps, or other bodies of water during such times as the temperature and other conditions are favorable to its formation.—Machinery.

Inventions.

CANADIAN PATENTS.

The following patents have been issued from the Canadian Patent Office, from October 2 to October 14, 1893, inclusive.

Information in regard to any of these patents may be had free on application to THE CANADIAN MANUFACTURER, or copies of American patents corresponding to these, where the American patent has been previously granted, can be procured through us for the sum of twenty five cents.

MECHANICAL.

44,370 Manufacturing glass central draft lamps, J. Proeger, October 2nd.
44,371 Wood barking machine, The Hadley & McDonald Machine Company, October 2nd.
44,372 Carving and engraving wood and other materials, T. Ryland and E. Bird, October 2nd.
44,373 Heating metal rods, bars or wires in machinery for making nails, screws, key blanks, file blanks, etc., Simens Brothers & Co. (Ltd.)., October 2nd.
44,374 Chalk sharpening implement, G. Hay, October 3rd.
44,375 Lawn mower, H. L. Freeman & B. Shoemwell, October 3rd.
44,376 Self-threading shuttle for looms, J. H. Nason & H. M. Hewes, October 3rd.
44,377 Street rail cleaning brush, J. A. Gowans, October 3rd.
44,382 Process for making Portland cement, H. Froehling, October 4th.
44,383 Hat, coat and umbrella rack, E. W. Trout, October 4th.
44,384 Welt-making machine, Z. T. French & W. C. Meyer, October 4th.
44,385 Forming collars, A. W. Cummings, October 4th.
44,386 Channelling machine, Z. T. French & W. C. Meyer, October 4th.
44,387 Grain crusher, J. Irving, October 4th.
44,388 Trap for horn flies, R. H. Guthrie, October 4th.
44,389 Harrow and cultivator, T. J. Hubbell, October 4th.
44,391 Moccasin attachment, J. R. Russell, October 4th.
44,392 Hanging moldings, N. Hoffend, October 4th.
44,393 Construction of the hulls of vessels, P. O'Brien, October 4th.

44,394 Cloth cutting machine, J. Wolf, Jr., & J. Block, October 4th.
44,395 Mowing machine, S. L. McCulloch, October 4th.
44,396 Life-saving guard for street cars, W. T. Lacon, October 4th.
44,397 Tanning machine, J. H. Chartier & L. S. Durand, October 4th.
44,398 Hoisting apparatus, M. H. Gilmore et al., October 4th
44,399 Lamp-filling oil can, J. Geary, October 5th.
44,402 Steam radiator, E. E. Gold, October 5th.
44,403 Can heading machine, M. A. Wheaton, October 5th.
44,404 Beer tap and pump, N. Hardoin, October 5th.
44,405 Burial apparatus, M. C. Scherer, October 5th.
44,406 Shoe sewing machine, F. J. Freese, October 5th.
44,407 Refrigerator, G. Fee, October 5th.
44,408 Rolling blanks for making socket shovels, spades, scoops, etc., J. McMurchy, October 5th.
44,410 Mode of preventing surface ice stopping water wheel shafts, W. Faint, October 5th.
44,412 Paper pulp manufacture, H. J. Bird, October 6th.
44,413 Vehicle jack, J. Kinghorn and W. McGlashan, October 6th.
44,414 Fly paper, J. H. Smith, October 6th.
44,415 Cyclone cave, O. O. Walker, October 6th.
44,416 Manufacture of blocks or briquettes of fuel, T. W. Lee, October 6th.
44,417 Foot ball game, T. Knight, October 7th.
44,418 Shirt, F. J. Goodwin, October 7th.
44,419 Furnace, I. D. Smead, October 7th.
44,420 Faucet and vent bungs and bushings, D. Beebe, October 7th.
44,421 Bicycle tire, O. L. Wullweber and F. E. Augustin, October 7th.
44,422 Sack case for packing machine, Nordyke & Marmon Co., October 7th.
44,423 Necktie, S. S. Milne, October 9th.
44,424 Shoe sole channelling machine, The Goodyear Shoe Machinery Co., of Canada, October 9th.
44,425 Shoe sole channelling machine, The Goodyear Shoe Machinery Co. of Canada, October 9th.
44,426 Sole trimming machine, The Goodyear Shoe Machinery Co. of Canada, October 9th.
44,427 Measuring vessels, A. H. Cell et al, October 9th.
44,428 Stand for window shutters, F. Harris and W. Douglas, October 9th.
44,429 Balanced slide valves for steam engines, American Balance Slide Valve Co., October 9th.
44,430 Repairing asphaltum pavements, A. H. Perkins, October 9th.
44,431 Cistern cleaning device, J. Shepherd and G. Barton, October 9th.
44,432 Horse Collar, L. Ingals, October 9th.
44,433 Split pulley, J. C. Fiester and J. S. Aminon, October 10th.

44,434 Cloth cutting machine, J. Wolf, Jr., and J. Block, October 10th.
44,438 Fare and transfer ticket, D. S. Macorquodale and J. B. Perry, October 10th.
44,440 Advertising envelope, L. A. Dion and A. Carmel, October 11th.
44,442 Arch plate frame for upright pianos, J. B. Mitchell, October 11th.
44,443 Filter, The Boston Filter Co., October 11th.
44,444 Vail fastener, W. H. Harrison, October 11th.
44,445 Bolt and nut, C. A. Higbee, October 11th.
44,446 Tool for cutting down screw threads, C. A. Higbee, October 11th.
44,448 Bread tins and the like, G. M. and T. Parkinson, October 11th.
44,449 Manufacture of ribbed knitted ladies' drawers, J. R. and ——Moodie, Jr., October 11th.
44,450 Preparation of a material for building or other purposes, H. Meise and C. Wassmuth, October 11th.
44,451 Cutting or shearing various sections of iron or steel bars, beams or girders, M. H. Cameron & W. Snake, October 12th.
44,452 Stoppering, sealing and protecting the tap holes of barrels, casks or other vessels and in apparatus connected therewith, E. Hazlehurst, October 12th.
44,453 Road cart, W. Corbeau, October 12th.
44,454 Paper bag holder, G. Staley, October 12th.
44,455 Circular knitting machine, E. J. Faulk, October 12th.
44,456 Printer's galleys, N. G. Duffy, October 13th.
44,457 Proof press, N. G. Duffy, October 13th.
44,458 Binder, R. R. Vernon, October 13th.
44,459 Biscuit making machine, W. Christie, October 13th.
44,460 Time stamp, S. H. Hoggson, October 13th.
44,461 Printer's lock-up, N G. Duffy, October 13th.
44,462 Bag holder, G. J. Hancock, October 13th.
44,463 Appliance for teaching penmanship, W. H. Kingman, October 13th.
44,464 Finishing wood veneer, J. F. Barker, October 13th.
44,465 Waggon, M. W. Montgomery, October 14th.
44,466 Radiator shelves and device for attaching the same to radiators, A. J. Bennett, October 14th.
44,467 Rail joint, W. Curtis, October 14th.
44,468 Metallic basket, L. M. Calcana, October 14th.
44,469 Mattress frame, A. E. Kenny and W. H. Taber, October 14th.
44,470 Vehicle tire, A. E. Spangler, October 14th.
44,471 Wire stretcher, E. J. Fox, October 14th.
44,472 Ventilating railway carriage, S. Hughes, October 14th.
44,473 Car coupling, F. A. Gaudet, October 14th.
44,474 Fire escape, J. Mills, October 14th.
44,475 Auxiliary cut offs for engines, J. H. Tennyson, October 14th.
44,476 Cattle stall, J. Aeberly, October 14th.
44,477 Combined drag bar, cultivator and drill, W. Hull, October 14th.
44,478 Hub attaching device, C. F. Carlsan, October 14th.
44,479 Elliptic carriage spring, T. B. Dowsley, October 14th.

ELECTRICAL.

44,369 Induction apparatus and increaser, M. R. Ruble, October 2nd.
44,381 Support for electric lamp, A. Wright, October 4th.
44,389 Electro magnetic bell, J. J. Ross & G. R. Holden, October 4th.
44,400 Secondary battery, H. Woodward, October 5th.
44,401 Electric railway conduit, A. W. Wright, October 5th.
44,409 Incandescent lamp, J. H. F. Gorges, October 5th.
44,411 Magnetic brake, W. E. Dillon, October 5th.
44,435 Circuit controlling device, The Hall Signal Co., October 10th.
44,437 Ventilated brushes for dynamos, H. H. Cherry et al, October 10th.
44,439 Armature for electric machines and method of constructing the same, Westinghouse Electric & Mnfg Co., October 11th.
44,441 Electric shoe yoke, R. F. Carnes and J. A. Northcutt, October 11th.
44,447 System of electrical illumination, E. A. Colby, October 11th.

SCIENTIFIC PROCESS.

44,378 Saving fumes of lead sulphide, E. O. Bartlett, October 4th.
44,379 Making sublimed lead pigment, E. O. Bartlett, October 4th.
44,380 Treating roasted and ground coffee, S. J. Bradley, October 4th.
44,436 Obtaining dye stuffs from hydrocarbons by nitration, The Grasselli Chemical Co., October 10th.

THE critical hour has arrived in the existence of organized labor. The question is whether organized labor will have the wisdom to live, or whether it will die of temerity. The ostensible object of organized labor was and is to improve the mental and moral condition of the working man; to exercise such influence in the lodge as shall make him a wiser, and therefore a better man. But it will be noticed that of late years organized labor has stepped a long way out of the lodge, toward the works, with the object of running factories, mills and other industrial establishments according to its own ideas of what is proper. A glance over the situation is sufficient to raise the query whether such a policy is wise at this juncture. It cannot be denied that the attempt of unions to control work and wages at this time must be futile, and the wise thing for leaders or organized labor to do is to stay in the lodges and let the workingmen look out for themselves. If the unions act with wisdom they will probably remain in existence through this trying time. If not, they will go to pieces. It does not require a sharp eye to see that this is a most inauspicious time for unions to interfere with the management of the mills or try to regulate wages.—Pittsburg Press.

ELECTRICAL TOOLS FOR USE ON OCEAN STEAMERS.

An English electrical journal points out that the accident which recently befell the steamship Umbria through the cracking of her propeller shaft, and the heroic efforts on the part of her engineers, led to the conclusion that the Atlantic liners are not sufficiently equipped with appliances for grappling with such contingencies. and it is probable that electrical tools will henceforth come into general use on board ocean steamers. It is impossible to carry a well-equipped engineer's shop on board such vessels, and, moreover, ordinary machine tools cannot readily be moved about and applied in confined spaces. Since every large steamer is now supplied with electric-light machinery it would be easy to carry the current to any corner of the ship, no matter how remote or cramped it might be, and utilize it for actuating tools run by electric motors. A portable electric drill, for instance, could readily have been used for boring the holes in the shaft of the Umbria, and the task could have been accomplished in one-fifth of the time, with very little exertion on the part of the engineers. Such a drill can be used in confined spaces, where there is scarcely room for a man to stand in. Many of these appliances of modern power and dimensions are in use in engineers' shops, and they prove an immense saving. Instead of bringing a boiler, cylinder, shaft or any other heavy piece of machinery to a fixed machine, portable drills are carried to the spot of application, and no other connection but a pair of wires is necessary to convey the motive power from the generator to the motor. These machines are efficient and inexpensive, and they ought to form a part of every steamer's tool stores. Numerous mechanical operations are continually being performed on the steamships, which involve the most laborious hand labor, and which can be done in far less time and at a nominal cost, besides with much greater effectivenesss, through the medium of electricity.

Chemists turn scrap iron into ink, old bones into lucifer matches, the shavings of the blacksmiths' shop into Prussian blue, fusel oil into oil of apples and pears, the draining of cow houses into fashionable perfumery, beggars' rags into new pilot coats, cesspool filth into ammonia, and tar waste into aniline dyes and saccharine. In Paris they first utilize rats to clear the flesh from the bones of carcasses, then kill the rats, use up their fur for trimmings, their skin for gloves, their thigh bones for toothpicks, and their tendons and bones for gelatine wrappers. These are a few of the things the Iron Industrial Gazette names among the products converted into use by the chemist and inventor.

An automatic railway pump, consisting of a powerful lift pump, operated by passing trains, is an American invention intended to dispense with the stationary engine and all other devices used for filling tanks. The pump is operated by cable transmission of power from the train as it moves along the track at the water station. A company is being incorporated to manufacture and operate this device.

MAKING LACE PAPER.

Minneapolis can claim a monopoly in this country of the manufacture of lace paper. Germany is the nearest competitor. There is an interesting story connected with the founding of the industry in Minneapolis. A certain business man, tolerably well known, once upon a time loaned some money and material to a Russian immigrant who was trying to start a green house in St. Paul. The florist was very grateful for the help, but at the end of six months had not repaid any of the loan. The business man hunted him up and inquired wherefore this negligence. The florist explained his difficulties at some length, and sorrowfully averred that in addition to other burdens he had to support his brother.

"Why doesn't your brother go to work?" "Pardon, sir. He is honest and industrious, but can find no work at his trade." "What trade can that be?" "He is a lace-paper maker, and there are no factories of that sort here, and he has not much chance at other trades where he has no skill."

After some investigation several Minneapolis capitalists concluded to start a factory to evolve the dainty confections that modern ingenuity says may be made from paper. The industry is still so new that its present condition may be regarded as only an earnest of the future.

The fad for fancy lamp shades makes a special department which was not at first contemplated. Crape paper develops in all the soft, dainty sheen of silk. Women are specially good at this branch of the industry, as it requires patience and that peculiar "knack" which no man ever had, and the woman who possesses it is luckier than if she had beauty, though she never thinks so herself.

Lace paper for lining the edges of boxes really forms the important part of this industry. Look at a bit of this dainty paper and see how faithfully it reproduces every thread of the lace from which it is copied. When people are told that these delicate patterns are stamped from engraved metal plates, they are apt to look incredulous. Still that is the process.

Lace paper has its styles just the same as the real article. The young lady who gets her daily box of bonbons from her confectioner wants the lace-edged holder to be in the latest mode. She can also select torchon, valenciennes, spanish, guipure, breton or any other style in the paper just as she can in the thread.—Paper World.

AS TO BELTS.

One of the most vital points in connection with the running of belting in a mill is the tension used. When you see a very tight belt running you may take it as an evidence that the man who put it on did not understand his business, or that it is disproportionate to the work it has to do. Tight belts and overseers who think that it is absolutely necessary to run belts very tight, are expensive luxuries in a mill. The man who thinks it is economy to continue using a belt that is constantly breaking, and has to be put in place with powerful screw clamps every time to make it transmit, in preference to buying two new pulleys and a new belt, should have the loss of power, time, wear on journals for a year shown to him, and unless he is completely insane, I think that he would be willing to pay expressage on the new outfit from quite a distance to save time. I am not imagining any suppositious case, but am thinking of a number of cases that I have met. Generally, the belt has been employed for transmitting power from one line of shafting to another, and when it broke down it stopped all the machines on the secondary line. Such a belt is, as a rule, run horizontally, and there is no reduction of speed from one shaft to the other. This offers exceptional opportunities for a good, economical belt drive, and it is a pity that it is not always taken advantage of. When the belt was originally put up, it was generally large enough to transmit all the power that was necessary, but the continual addition of new machines renders it disproportionate. Such a belt should run with a gentle undulating motion on the return side. This will show that it is not transmitting any more power than it is able to. One of the highest authorities believes that three-quarters of the trouble experienced from broken pulleys, hot boxes, etc., can be traced to the fault of tight belts. The enormous and at the time useless pressure put upon pulleys must in time break them, if they are designed anywhere near a reasonable proportion, besides wearing out the whole outfit and causing heating and consequent destruction of the bearings. If manufacturers realized how much this running of tight belts cost them they would probably wake up and come to the opinion that it is economy to increase the pulley and belt at times, as the increase of machinery demands.

EFFECTS OF ELECTRIC CARS ON TRAVEL IN OTTAWA.

An interesting idea of the effect of the electric railway on the Ottawa hackmen can be obtained from the records of the books at the police office which contain the names of those to whom licenses have been granted. In 1890, the number of licensed hackmen reached the high water mark, amounting to 195. In 1892, the number fell to 127 and up to the first of July, this year, but 90 licenses were applied for. Last year only about 20 licenses were granted after July 1st, so the total figures for this year will doubtless fall short by between 15 and 25 of last year's figures. The hackmen say that the electric railway has very materially injured their business. Not infrequently a hackman will remain at his stand all day without a single "fare." For many of the cabmen Sunday is now one of the best days. On that day no cars are running, and a large number of people can take a hack for a drive out to Beechwood or to some other resort at a greater or less distance from the city. For this reason the bulk of cabmen are opposed to Sunday cars, as this would materially interfere with the business done on this day by the cabmen. "It is surprising" said one hackmen, "the number of people who use the cars in preference to the cabs. Formerly when a train came in at the station there would be a large number of "fares," but now the big majority of passengers jump on the electric car and go home in that way." In this, as in everything else, however, things will eventually find their level, and every trade and calling must adjust itself to changing conditions and circumstances. One after another of the old familiar faces are missed from the stands as one after another of the hackmen decide to embark in some more remunerative business. But what is to the disadvantage of the hackmen is to the advantage of the public, for the price of one cab fare will pay for half a dozen rides on the electric railway, and besides thousands of people can afford to ride on the cars who could not afford to pay cab fares."

The revolution worked by the electric railway in the mode of travel in Ottawa, is seen also in the great reduction of the number of horses in the city. The reduction in the number of hackmen alone would lessen the number of horses by from two to three hundred, and to these will be added the cars employed on the street railway that will soon be retired in favor of electric cars. But this is by no means all. Scores of families who formerly were almost obliged to keep a horse to enable the ladies of the house and oftentimes the men also to get about the city, find now that they can dispense with them, as the electric cars give speedy, easy and cheap access to nearly all parts of the city. This is a boon greater than some people imagine, for to many of these people the cost and maintenance of a horse and conveyance was a burden they could ill afford. The exact amount of the reduction in the number of horses cannot easily be ascertained, but the waterworks officials, who are in the best position to know, say that it totals a great many hundreds. But in this, as in the other case, the loss in one way is more than made up in another, and the electric railway is the friend of the people. Not only does it enable many families who could ill afford to keep a horse to dispense with that costly luxury, but it enables thousands to reach any part of the city they desire at a cost within reach of even the poorest.

GRAPHITE AS A LUBRICANT.

As graphite is rapidly coming into use as a substitute for oil for lubricating purposes, the following from the American Mechanic may be of interest:

As the properties of graphite become better known, its usefulness is extended and new places where it may be utilized are constantly found. Engineers find it a useful article to put on the gaskets of man hole and hand hole plates to prevent them from adhering to the boiler and being ruined when an attempt is made to remove them. It may be used on the threads of pipes instead of red lead, and as it is a perfect lubricant it makes the joints screw together more easily, securing better work, and at the same time making a joint that does not harden like red lead, but which may be taken apart without breaking the fitting or crushing the pipe. For the same reason it is a good thing to put on the threads of bolts, especially where they are to be used in damp places. The writer's experience with it in cooling off hot bearings has been as follows:

The main bearing on a certain engine began to heat, and no amount of oil would stop it. The cap was taken off, the oil carefully wiped away and the cap replaced. The oil holes were filled with graphite and tallow, and the engine started up immediately. At this time the shaft was nearly hot enough to melt out the Babitt metal, but the graphite and tallow were used freely, and at the end of the run, the bearing was at its normal temperature. In another case the bearing on the main shaft of a mill, which was next to the

main pulley, was lubricated with thick grease until it became hard and allowed the box to run dry. As it was a bronze bearing without Babitt lining, it was badly scored, but the free use of graphite and tallow made it unnecessary to take the shaft down and refit the box, which was duly appreciated as the shaft was 4¼ inches in diameter, had several large pulleys on it, and was in an almost inaccessible place.

A USEFUL FORMULA.

In finding the contents of cylindrical vessels the ordinary rules call for the use of aggravating decimals and fractions. This neat little device does away with all the bother. Let the diameter of any cylindrical tank be given in feet; then take 5 times the square of the diameter; take off 2 per cent. and the result is gallons per foot high. This is simplicity itself. Both the simplicity and the rule and the near approach of its results to the accurate contents will appear from an example or two.

Let the tank be 10 feet diameter (inside of course).

$10 \times 10 = 100$
5
500
Take off 2 per cent..... 10
490 gallons

per foot deep, which is within one gallon of the accurate measurement (490.87 gallons).

Take an 11 foot tank: $11 \quad 11 = 121$
5
605
2 per cent..... 12.1
592.9 gallons

per foot deep, which is only one gallon away from the accurate contents (593.96). A rule so simple and so useful almost deserves a place in the common school texts. A note by the author draws attention to the fact that the 2 per cent to be subtracted is always just one-tenth of the first term written down—10 for 100 and 12.1 for 121 and so on.

THE Steam Boiler & Plate Glass Insurance Company, London, Ont., have sent us an attractive and interesting brochure having special reference to steam boilers and the importance of taking care of them. Some of the short, terse sentences contained in the book are: Your engineer should be a skilled man. Determine the power of your boiler by inspection. The man who handles steam handles power. A thin coating of scale on the inside of your boiler and tube, will increase the fuel required from 10 to 15 per cent. Don't have an explosion. The best investment is inspection. Have your boiler inspected and insured. Don't trust to luck. Will your boiler stand the required pressure at its weakest point. The unexpected is the thing that happens. This company insure against boiler explosions, and cause inspections to be made at regular intervals by competent engineers. Prevention is better than cure. The inspection of a boiler is the best guarantee not only that it has been properly constructed, but that it is being properly used, and is in the condition in which it should be kept. This company is incorporated by Act of Dominion Parliament with a capital stock of $200,000. Its board of directors are well known men of long business experience. Mr. James Laut is manager, John Fairgrieve inspector, and J. H. Killey consulting engineer.

A COAL SAVING COMPOUND.

THE Coal Saving and Smoke Consuming Company, whose headquarters are at Montreal, with branch at Toronto, and of which Mr. William Angus, of the former city, is president, are sending out a circular to manufacturers and other large consumers of coal in which is set forth the merits of their patent chemical compound and from which we take the following:

Science demonstrates that fully ninety per cent. of the caloric or heating power engendered by the combustion of Coal for steam-making and all other purposes, escapes without doing a particle of duty, through the necessary drafts to maintain fires and ordinary combustion. To retain more of this fugitive heat, and force it to do duty and thus save such extraordinary fuel-waste has long been a problem of scientific thought. All kind and manner of mechanical devices have been suggested. The huge and offensive columns of black smoke to be seen, wherever we find the wheels of industry, which are simply unconsumed carbon escaping, are only too painful evidences, that the problem is not yet solved by any instrumentality in use so far. We have here a double loss, all to the detriment of the coal consumers, viz.: loss from unconsumed smoke which escapes; the nuisance arising therefrom, and unutilized heat. If by any device or material we can retain a portion of the heat contained in the smoke, as well as escaping heat, we would thus secure a double duty heating power, and as a consequence, make a large saving in the consumption of coal. Common sense teaches that the less the draft, with which the coal can be effectually consumed, the less opportunity for heat and smoke to escape. With closed dampers, heat and smoke must be retained. To retain heat and consume the smoke, thus making more heat, is then the problem in a nutshell.

In its natural state coal will not burn properly and your steam must go down, without powerful draft and large open dampers. We are speaking to manufacturers.

If then under your own boilers, by use of a simple treatment of your coal in using our Compound you observe your steam guage indicating a rise in your steam, and holding its grasp for a continued period, and upon opening the furnace doors you see a bright glowing mass of fire, while the dampers are almost entirely closed, you must admit that the problem for that period at least has been partially solved.

We guarantee that these facts, (however you may have been disappointed in any coal saving appliances or experiment heretofore tried,) will convince you that our claims are at least worthy of yourattention. This point gained, whether you will save 25 to 40 per cent. of your future coal bills is a question entirely between yourself, engineer and firemen. The latter's method of firing may have to be materially changed in the way of thinner fires and putting in less quantities of coal at a time, but these are questions for later consideration. We ask you now to look at what we claim and without any new machinery, in fact without any change in your machinery whatever, and without any risk to your boilers, and without any extra handling of coal, we claim by the use of our compound, that:—

1. It increases the steam and keeps the steam at a high pressure and even, and makes more steam with the dampers shut than the same coal not treated will or can make with the dampers open, thus giving a larger reserve force, evaporating over 20 per cent. more pounds of water per pound of coal.
2. It retards the gases, prevents the escape of smoke or free carbon, and causes complete combustion.
3. Keeps boiler and flues clean.
4. Burns up the clinkers and makes much less ashes.
5. Starts a quick strong fire in one-fourth the time it takes to start a fire with coal not so treated.
6. Prevents all explosions in heaps of coal by neutralizing the gases.
7. Saves labor both for the engineer and fireman and also for those who keep the engine clean.
8. Saves from 15 to 40 per. cent. in combustion alone.
9. The inferior or low grades of coal, when treated, will produce as much heat and be equal to the higher grades of coal.
10. No alterations in the setting of the boilers, for burning coal or any other changes whatever are required.
11. There is nothing in the compound that is dangerous or explosive.
12. There is nothing in it deleterious to the iron in the boiler.

GERHARD & Co.'s cigar box factory and the factory of the Montreal Beer Pump Company, at Montreal, were partly destroyed by fire Sept. 11th; loss about $5,000.

Captains of Industry.

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

THE Consolidated Plate Glass Company, with head offices at 75 Wellington St., West, Toronto, and branch office at Montreal, London and Ottawa, are prepared to make estimates and contracts for anything in the line of heavy plate glass. Mr. F. J. Phillips, of the Cobban Manufacturing Company, Toronto, is president of the concern, and in charge of the Toronto office; Mr. W. R. Hobbs, of the Hobbs Hardware Company, London, Ont., vice-president in charge of the business in that city, and Mr. Alexander Ramsay, also a vice-president, in charge at Montreal.

MESSRS. W. BOULTER & SONS, who have two large fruit and vegetable canning factories at Picton, Ont., are endeavoring to secure a favorable location in Toronto for the erection of another factory, where employment will be given in season to about 200 women and girls, and 25 men.

ADDITIONAL awards made to Canadian manufacturers at the World's Fair, at Chicago, include as follows:—John Bertram & Sons, Dundas, Ont., for iron working machinery; Stevens & Hamilton, Galt, Ont., for attachment to drilling machine, (heretofore illustrated in this journal); Central Bridge & Engineering Co., Peterborough, Ont., for optimates power hammer, the invention of Mr. W. H. Law, the manager of that compauy; Coaticook Knitting Company, Coaticook, Que., for knit underwear; Newlands & Co., Galt, Ont., for glove linings; Norfolk Knitting Company, Port Dover, Ont., for knit underwear; Penman Mnfg Company, Paris, Ont., for knit underwear and hosiery; Perinoult Knitting Mills, Thorold, Ont., knit underwear; Geo. T. Slater & Sons, Montreal, boots and shoes.

THE Bertram Engine Works Company, Toronto, have absorbed the works of the Doty Engine Works Company and will continue the business under the name of the first mentioned concern, under the management of Mr. A. Angstrom, late of the Cleveland, Ohio, Ship Building Company.

THE large brick glue factory of Messrs. J. J. Huber & Co., Berlin, Ont., was destroyed by fire Oct. 2nd, loss about $20,000.

THE Toronto Cider & Fruit Vinegar Co., have built a new factory at Stouffville, Ont. Messrs. E. Leonard & Son, London, Ont., supplied the 25 h.p. engine and 50 h.p. boiler.

THE London Bolt and Hinge Company, London, Ont., are making some alterations to their works. They have overhauled their shops generally, and have added several more machines and a new 55 h. p. boiler.

THE planing mill of Mr. James McDonald at Oakville, Ont., was destroyed by fire Oct. 16th. loss about $3,000.

THE machine shop of Sickles & Co., Strathroy, Ont., was destroyed by fire Oct. 18th, loss about $1,500.

THE premises of the Canadian Bank Note Company, Montreal, was damaged by fire on Oct. 19th to the extent of about $125,000.

THE Schofield Woolen Company, Oshawa, Ont., of which Mr. Jonathan Schofield is manager, are placing a large new boiler in their mill, and installing an electric light plant.

THE Ontario Malleable Iron Company, Oshawa, Ont., are making considerable additions to their works including an enlargement of their moulding room, another steam boiler and engine, and an electric light plant.

ADAM BECK, London, Ont., has built an addition to his factory, where he manufactures cigar boxes, veneer and thin lumber. The new building is a three storey brick, 40x40 feet. He has also built a new boiler and engine room and put in a new boiler and engine and added considerable new machinery, all of which will about double the capacity of his factory. He will shortly increase the number of hands from 60 to about 100.

THE British America Brewing Co., Windsor, Ont., are putting in a new 125 h.p. boiler, purchased from E. Leonard & Son, London, Ont.

MR. DUFFES, Thamesville, Ont., is building a new chopping mill. For power he will use the engine of his sawmill, and will put in a new 50 h.p. boiler built by E. Leonard & Son, London.

THE Magee Manufacturing Company, London, Ont., are putting in a 35 h.p. Leonard-Ball automatic engine, heater and pump.

THE planing mill of W. B. Derbyshire, at West Port, Ont., was destroyed by fire Sept. 10th ; loss about $2,500.

THE Oriental Laundry, Toronto, have put in a 25 h.p. Leonard Ball automatic engine, heater and pump.

THE Canada Chemical Manufacturing Co., London, Ont., are building another large addition to their works. It is a brick building 100x40 feet and will be used for the manufacture of hydrochloric acid and glubers salts. The company expect to keep this department running night and day when completed.

THE farmers' elevator at Griswold, Man., was destroyed by fire Sept. 10th.

THE Hudon Cotton Mills, Montreal have installed a 150 light Royal Electric Company dynamo in their mills.

W. G. ROCHESTER, an engraver of Ottawa, has invented and patented a printing and lithographing machine with which he says he can produce as many as thirty printings of different colors at one operation ; and he has sold his German patent for $60,000.

Messrs. Newlands & Co., Galt, Ont., have equipped their factory with automatic sprinklers.

Messrs. Keith & Fitzsimmons, Toronto are applying for incorporation with a capital stock of $75,000 to continue and enlarge their business under the name of The Keith & Fitzsimmons Company.

Messrs. Cant Bros. & Co., Galt, Ont., have recently shipped a planer, matcher and moulder to the Pennington-Baker Seating Company, Dundas, Ont., and a surface plane to J. Zellinger, Mount Forest, Ont.

The Doty Engineering Works, Toronto, of which Messrs. Doty Bros. & Co. are proprietors, have sent us a circular in which they announce that they have severed their connection with Messrs. Bertram & Co., who have been carrying on the engine business during the past year under the style of Doty Engine Works Co.; and have acquired the new premises at No. 15 York street, opposite the Union Station, which they have fitted up with a new and complete plant, where they will have first-class facilities for the manufacture of engines and boilers. They intend to maintain the same standard for high class work as has been done by them during the past twenty years. They will make a specialty of marine engines and boilers; and with their extended experience in this branch their customers may rely upon getting the latest and best designs and improvements in marine engineering. They will give particular attention to the compounding of high pressure engines, in which line they have heretofore met with much success; and will upon application, furnish all information desired as to best manner of making and cost of alterations. They are putting on the market a new and improved water tube and marine boiler, which they say possesses many improvements over the Roberts and other water tube boilers now in use. A special catalogue is in preparation giving particulars of this boiler, which will be sent on application. The managers of the concern are Messrs. John Doty, Frank H. Doty and Fred W. Doty.

The Richelieu & Ontario Navigation Coy.'s new steamer Columbia has been filled throughout with electric light. The Royal Electric Co., Montreal, supplied the plant, which is for 300 lights.

The Dominion Blanket Company, have put an electric light in their mills at Beauharnois, Que. It is a 400 light plant supplied by the Royal Electric Co., of Montreal.

The woolen mill of Messrs. John Newton & Son at Limehouse, near Georgetown, Ont., was destroyed by fire Oct. 12th, loss about $15,000.

Messrs. Wm. J. Matheson & Co., 423 St. Paul St., Montreal, have sent us a specimen book of samples of loose cotton dyed with diamine cutch, manufactured by Messrs. Leopold Cassella & Co., Frankfort-on-the-Main, for whom they are the American agents. Speaking of the advantages of this article over cutch, the circular says: "When cotton is dyed with diamine cutch, it remains soft and brilliant and retains its spinning capacity. The resistance of the fibre suffers not in the least. With diamine cutch all kinds of dark shades may be obtained, the production of which with cutch would cause great difficulties. We are informed that a greater advantage over cutch is that cotton dyed with diamine cutch will not affect the cards used for carding the cotton before it is spun. Diamine cutch stands washing almost as well as natural cutch and is much superior in its fastness to chloring. Acids do not influence the shade."

THE Edmonton Electric Lighting & Power Co., Edmonton, N. W.T., are installing a 750 incandescent electric light plant. The Royal Electric Company, Montreal, supplied the plant and machinery complete.

THE St. John Electric Light Company, St. John, Newfoundland, have added a 650 light Royal Electric Co's. alternator to their plant.

THE Standard Electric Company, Ottawa, have bought from the Royal Electric Co., Montreal, the largest dynamos as yet built in Canada. It is a 5,000 light alternating incandescent generator.

THE Quebec & Levis Electric Light Co., Quebec, are installing four 250 light transformers, which were built for them by the Royal Electric Co., Montreal, for their new high potential alternating circuits. These are said to be the largest transformers as yet built in Canada.

MESSRS. WINGFELDER BROTHERS, Stratford, Ont., were the first to use electricity as a motive power in that city. They have just installed a Royal Electric Co's. motor for running their sausage machinery.

LONDON has long been the monetary centre of Western Ontario. Its loan companies control more capital than those of any other city in Canada except Toronto, while all the chartered banks in London reap good results. The latest enterprise established here, with its head office at the Masonic Temple, is the Steam Boiler Inspection and Plate Glass Insurance Company. Already it is acquiring a snug and thriving business. Its board of directors are well known business men, E. Jones Parke, Q.C., being president; F. A. Fitzgerald, president of the Imperial Oil Company, is vice-president, and Hon. David Mills, Q.C., M.P., ex-Minister of the Interior, Mr. John Morrison, ex-governor of the British America Assurance Company of Toronto, and Mr. T. H. Purdom, barrister, of London, are the directors. The services of Mr. J. H. Killey, of Hamilton, have been secured as consulting engineer, and it will be welcome news to the citizens generally to know that Mr. John Fairgrieve returns to London as its inspector. The management is in the energetic hands of Mr. James Laut, and the Advertiser predicts a successful career, under his oversight, for London's latest enterprise.—London Advertiser.

THE Dominion Foundry and Supply Co., Montreal, have started a mill at Richmond, Que., for making foundry facings, etc.

THE factory of the Star Box & Collar Company at Montreal was destroyed by fire Oct. 5. loss about $2,000.

THE Goldie & McCulloch Co., Galt, Ont., have just shipped a tandem Wheelock steam engine and boiler to Messrs. H. Brown & Son, Carleton Place, Ont., and a carload of mill machinery to Messrs. Workman, Stinson & Co., at Minetono, Ont.

MESSRS. COWAN & Co., Galt, Ont, have shipped a moulding machine and band saw recently to Tilsonburg, Ont.; heaters to Ottawa and St. Thomas, and two planers and matchers to Quebec.

THE Niagara Falls (Ont.) Street Railway Company have determined to extend their system in a very comprehensive manner, and to operate it by electricity. The plan proposed includes an extension of the line from the present terminus to Chippawa via Falls View, and the erection of a large observation tower at the most convenient point at the latter place; an extension out Lundy's Lane as far as McDonald's corner; a loop line from Bride street to Niagara Falls Centre by way of the Mowat gate of the park and up the Clifton House hill, running as near the river as possible; an extension to a point one mile north of Queenston, and eventually to Niagara-on-the-Lake. It is said that the company will probably effect an arrangement whereby a spur of their road will be extended over the upper suspension bridge making a connection with the street car lines on the American side. When the projected extensions are completed, the road will be about twenty miles long. Arrangements have already been made to have the road connect at Chippewa with the Michigan Central, and it is probable that a line of steamers will soon be run from Buffalo to the same point as an additional feeder for the railway. The road will be built on the heights above the Falls, the highest point being where the Loretto convent stands, and at this point a high tower will be erected, commanding a view of the falls, the rapids and the surrounding country for many miles round. Northward the road will make a a slight detour to the west before it reaches Niagara-on-the-Lake. A concession has been secured from the Niagara Falls town council by which the company will be able to land passengers at the Mowat gate of the provincial park.

THE saw mill of Messrs. Moudon & Aret, at Yamaska, Que., was destroyed by fire Oct. 4, loss about $5,000.

THE Ottawa Brewing & Malting Company is being incorporated with a capital stock of $15,000, with head office and works at Ottawa to do a brewing and malting business.

MESSRS. GRIFFITH & CANBY, Welland, Ont., have just completed a factory for the manufacture of coal oil barrels. This new enterprise is the direct result of the new policy of the Dominion Government by which American oil is allowed to be imported in bulk. Welland is a distributing point, and no doubt the new barrel factory will find steady and profitable employment.

THE beet sugar works at Berthier, Que., were put in operation Oct. 9, under most pleasant auspices by Mr. A. Musy, the manager. The Catholic Archbishop of the diocese pronounced a benediction upon the enterprise, a large number of the clergy and other distinguished persons being present.

THE Jenckes Machine Company, Sherbrooke, Que., have gone into the building of Corliss engines.

MR. JAMES CLARK, in charge of Canadian machinery department at the World's Fair, has telegraphed the Robb Engineering Co. that their engine has been awarded medal and diploma.

THE Colwell Woolen Company, Colwell, Ont., are building a brick tower to their factory to take the place of the old wooden tower. They are also adding some more cards and mules.

RYERSON VANDERWORT, Sidney Crossing, Ont., is building a new shingle mill. F. J. Drake, Belleville, Ont., is supplying the machinery.

CLEMENT LEFLEUR, St. Henri, Montreal, has placed his order for a Corliss engine and boiler, with the Jenckes Machine Co., Sherbrooke, Que.

APPLICATION has been made for the incorporation of the Canadian Meat and Packing Company, with a capital stock of $250,000. The business offices of the company will be in Toronto, but the abattoir where the animals will be slaughtered will be built somewhere in Manitoba or the Northwest Territories.

THE factory of the Canada Wire Mattress Company at Toronto Junction, near this city, was destroyed by fire Oct. 11, loss about $10,000.

JOHN NICHOLL, Queenshoro, Ont., has overhauled and put new machinery into his saw mill, and has also built a new shingle mill the machinery for which was supplied by F. J. Drake, Belleville, Ont.

W. H. EARLE, Belleville, Ont., is building a new 50 barrel roller mill for John Nicholl, Queenshoro, Ont.

GEORGE EASTERBROOKE, Tweed, Ont., has put a Little Giant turbine into his mill.

MESSRS. S. J. WHITE & Co. Belleville, Ont., manufacturers of thin wood boxes, baskets, etc., are to be succeeded by J. L. Grass and S. E. Haight who have been running the factory since the death of Mr. S. J. White some weeks ago.

THE Malleable Iron Company, Montreal, are making alterations and improvements in their work. They have built an extension to their foundry and have put in an air furnace. These improvements will increase their capacity 50 per cent.

THE Troy Steam Laundry, Montreal, will put in a 60 h.p. Corliss engine and two 70 h.p. boilers, pump and heater. The order is being filled by the Jenckes Machine Co., Sherbrooke, Que.

THE saw mill and stave factory of Messrs. Ament Bros., at Brussels, Ont., were destroyed by fire, loss about $6,000.

THE Galt-Preston Railway Company, who are about building a railway connecting those towns, have decided to operate it by electricity. There will also be one or more steam motors to be used when necessary. The road will be about five miles long.

THE Incandescent Electric Light Company, Toronto, have just put in a 435 h. p. Babcock & Wilcox boiler.

Mr. S. T. Willett, of Richelieu Woolen Mills, Chambly Canton, Que., has ordered a 160 h. p. Babcock & Wilcox boiler from Messrs. A. Holden & Co., Montreal.

The Ball Electric Light Company, Toronto, have sold their entire electric manufacturing business, including patterns and good will, to the Canadian General Electric Company. In connection with this transfer a notice has been sent out by the General Electric Company as follows: We, The Canadian General Electric Company, Ltd., have purchased from "The Ball Electric Light Company, Ltd.," their entire electric manufacturing business, and will continue the manufacture of "Ball" apparatus at our extensive Peterborough works, including their new "1893" model arc lamp, which offers over others greater simplicity and reliability of working either for constant current arc circuits, or direct or alternating constant potential incandescent circuits. We also are pleased to announce that Mr. W. A. Johnson, late manager of The Ball Company will be connected with this company as head of our arc light department, as well as giving special attention to other recent and special apparatus manufactured by this company.

Messrs. D. Ritchie & Co., Montreal, have given an order to the Jenckes Machine Company for a new Corliss engine, a 100 h.p. boiler, pump and heater.

The Penberthy Injector Co., Detroit, Mich., are in receipt of a letter from the Pitts Agricultural Works, Buffalo, N.Y., making reference to the Penberthy automatic injectors in which they state:—"We take pleasure in stating that we have used, during the past five years, about 2,000 of your automatic injectors on our traction engines with phenomenal success. The few complaints we have had could almost without exception be traced to causes foreign to the machine, consequently we feel justified in saying they will do all you claim. Previous to their introduction on our engines we used and experimented with at least 10 different kinds, all highly recommended, with indifferent success. We consider an injector which will work successfully on a traction engine will work anywhere, on account of the excessive jar which it is necessarily subjected to.

The Canada Machinery Agency, W. H. Nolan, manager, Montreal, are putting in a Robb-Armstrong engine and Monarch economic boiler in the electric light plant at Montreal Junction.

Messrs. Wm. J. Matheson & Co., 178 Front Street, New York, importers and manufacturers of dye stuffs, have sent us a circular in which it is announced that for the convenience of their customers in the Dominion they have opened an office, laboratory and warehouse at 423-425 St. Paul Street, Montreal. A representative familiar with the application of their dyes to practical work will call regularly upon their customers. Mr. Fred C. Hopewell, who has been for a number of years in the New York laboratory of this concern will have charge of the Montreal office.

The Dominion Suspender Company, Niagara Falls, Ont., informs us that they are working overtime on orders now in hand. It is likely that another addition to the already large factory of this company will soon be made to enable them to accommodate their rapidly increasing trade.

The Goodyear Shoe Machinery Company, an American concern, have become incorporated in Canada, with headquarters at Montreal, where Mr. Francis J. Freese will be agent.

Messrs. Archibald Penman & Sons, Hall's Mills, Ont., have purchased the property formerly occupied by Mr. William Hall and will convert it into a shingle mill.

The Gurney Foundry Company, Toronto are enlarging their stove works. This, they say, will make theirs the most extensive stove works in Canada.

Doty Brothers, Toronto, have severed their connection with Messrs. Bertram & Co. and have commenced business at 15 York Street, under the firm name of Doty Brothers & Co., and will manufacture engines and boilers. The St. James' Hotel building will be used as a machine shop, and a large force of men are now busy making the necessary alterations.

The Eagle Knitting Company, Hamilton, Ont., will build an addition to their factory. It will be a brick building 50x50 feet, four stories high. The company will extend their lines of manufacture included in which will be full fashioned hosiery.

The Cant Bros. Co., Galt, Ont., have recently made several shipments of their wood-working machines to various places in Quebec and Ontario, including a car load to Mitchell, a hollow-square chisel mortiser to Lindsay and to St. Catherines, and their big 42-inch resaw to a large firm in Hamilton.

Mr. W. A. Fleming, has taken the agency for Canada for F. Reddaway Company's camel hair belting, hose, etc. He will continue the warehouse at 57 St. Francois Xavier St., Montreal, and will also open an office in Victoria Chambers, Ottawa.

The new station of the Gananoque Electric Light and Water Supply Co., Gananoque, Ont., is nearly completed. Messrs. John Inglis & Son, Toronto, are supplying the new engine and boiler. The dynamos, etc., are being built by the Canadian General Electric Company.

The Montreal Blanket Company, Montreal, have completed an addition to their mill at Cote St. Paul, and have put in more machinery. We understand they are using two new processes in the manufacture of shoddy.

The Hamilton Fanning Mill Co., Hamilton, Ont., have appointed Messrs. Darling Bros., Montreal, their agents for the Province of Quebec.

Messrs. John Lawrie & Bro., Montreal, are building six steam engines of 600 horse power each for the Montreal Street Railway Company, a similar engine for the Merchants' Manufacturing Company, and a 450 horse power engine for the Hochelaga mills of the Dominion Cotton Company.

Messrs. Kerr & Morgan, machinists, Montreal, are enlarging their business, and will include the building of Corliss engines, heaters and electric elevators.

The Robb Engineering Company, Amherst, N.S., have placed three of their Robb-Armstrong engines in the new Board of Trade Building, Montreal. The order was placed through the Canada Machinery Agency, Montreal, of which Mr. W. H. Nolan is manager.

THE TORONTO CARPET MANUFACTURING COMPANY.

The following sketch of the Toronto Carpet Manufacturing Company, and of the president thereof Mr. James P. Murray, appeared in the October issue of the Philadelphia American Carpet and Upholstering Trade. The article was accompanied by a full page illustration including a view of the carpet company's factory in Toronto, a view of the company's most excellent and attractive exhibit at the World's Fair at Chicago, and a portrait of Mr. Murray:

The President of the Toronto Carpet Manufacturing Company, James P Murray, was born in Limerick, Ireland, in 1852. In 1854 his father, W. A. Murray, moved to Toronto, and in this beautiful city the family have since resided. Young James was educated at St. Michael's College, Toronto, and at St. Hyacinth, Province of Quebec.

The late respected W. A. Murray founded the Toronto house of W. A. Murray & Co. soon after landing. This house soon took its present rank as the largest and finest exclusively retail dry goods concern in Canada. The founder was a noted figure in business circles abroad and crossed the ocean 153 times as a buyer for his firm.

In this business James P. Murray was brought up and spent 26 years, studying every branch and frequently visiting the British and foreign manufacturers.

Two years ago, after nine years' experience in the decorating and furnishing of houses, being convinced of the great opening for a better class of carpets than were being made in the Dominion commenced his career as a carpet manufacturer.

With this move of Mr. Murray's began also the career of the company, of which he is president. The company was chartered in 1890 with a capital of $50,000, the management being, James P. Murray, president; F. B. Hayes, secretary and treasurer, having with them as co-directors A. Claude Macdonell and Louis M. Hayes.

The initial scheme of the new company looked to the production of a better grade of ingrain than was then being offered in Canada, whether of English or Canadian manufacture. This, of course, meant an advance in dyes, designs and in standard of weights. The styles shown in Canada had been a hybrid between certain lifeless English effects and the crude output of the struggling mills of the Dominion. Taking English extra-super as a basis the new company determined to surpass them, though these were already heavier than the American consumers required. To excel meant better stock, more of it to the yard, and a higher price list. The outcome was the famous "Maple Leaf Brand" of extras, 3

plys, C.C.'s, medium wools and medium unions, all these showing an increased consumption of materials per yard and per piece, and general lifting of standard.

Preliminary to this advance, however, the question of modern scouring machinery and the scientific treatment of yarns in all their processes was considered. Yarn makers were put under bonds to use only the best lard oil in manufacturing and mineral oil was absolutely forbidden. How to get away from the old and obsolete designs which had been hawked over the Canadian market next claimed attention, as did also the latest results in special weaves. The best designers and inventors in the United States were consulted and their best work adopted, the aim being to place the Toronto ingrains on a level with the leading Philadelphia mills. Skilled dyers were also employed and the choicest colorings only were purchased, both aniline and alizarine. The first output of the mill showed that the highest standard had been adopted in these essentials, and the brilliancy and depth of the colorings soon told in their favor. These preparations had all taken place in the fall of 1891. The Spring line began to capture orders as soon as shown, and finding that the nine looms they had in position would not fill orders promptly enough, the company purchased the entire plant of the Ontario Worsted Company and quickly removed all their thirteen fine power looms from Elora to Toronto, thus making the plant at Toronto the largest in Canada producing ingrain carpets.

It was quickly developed that the premises Nos. 1 to 3 Jarvis Street would be insufficient for the increasing business, and the result is the handsome and spacious factory situated on the south-west corner of Jarvis and Esplanade streets. This has a frontage of 100 feet with a depth of 70 feet; four stories high and finely lighted on three sides. The ground floor holds the power looms of the Murkland and Crompton build with space reserved for art square looms, soon to be in operation. On the second floor are the offices, Superintendent's room, show room, dyed stock, shearing, rolling and shipping departments. On the floor above are winders, including one of the new Altemus make, twisters, spoolers, warpers, designers and card cutting machinists' departments, the top floor being devoted to untreated yarns. Across the lane, twenty feet away, is the engine house and a big Polson engine, which secured the prize at the Toronto Exposition, furnishes the power. Adjoining the engine house is a modern dye house 35x80 feet, part of this being used as a drug room. Over the engine house and the dye rooms are drying rooms, connection being had with the main building by a bridge over the lane, making it very convenient to the dyed yarn bins on the opposite floor.

Protection against fire is secured through two immense water tanks placed on the roof with which are connected the hydrants on each floor; there being no need of fire in the main building, power and heating coming from across the lane and the factory lit by electricity, the risk of fire is reduced to the minimum.

The president and vice-president having been for many years connected with the finest dry goods trade in Canada, the secretary-treasurer's long service as accountant with one of our banks, and the superintendent having graduated from one of the largest Philadelphia factories, places this company under officers who with their technical knowledge and experience, their energy and progressiveness, will not be satisfied until the "Maple Leaf Brand" of ingrain carpet shall be known throughout the length and breadth of Canada; showing the world that for purity of stock, beautiful and lasting quality of dyes, graceful and original designs and superior weight and technique the Toronto Carpet Manufacturing Company (Ltd.), are leading.

In August, 1892, President Murray, finding his manufactures so highly appreciated by the trade determined to withdraw from the old firm of W. A. Murray & Co., and to devote his future energies to the production of carpets.

Having studied out the purposes and technique of the various makes of ¾ carpet, he decided that a carpet having all the wool on the face and the tufts so tied in that as to be bound to stay, was a desideratum, he produced a new fabric which he christened "Imperatrix Axminister." For this the following points are claimed:

1. All the wool is brought to the top.

2. The chenille is tied down 100 times to the square inch, i. e., 10 ties to an inch of chenille and 10 picks to an inch.

3. The stuffer is of jute, tow or other coarse material to fill the fabric, which works completely between the face and back, giving stability and weight.

4. The back is composed of linen or cotton warp, which is confined entirely to the back and which is filled with jute, tow or other coarse yarn. This carpet the Toronto Company contend must wear well, being so well bound. It looks as well as an 8-shot axminister and will not cost more than one-third as much.

Industrial and Trade Directory.

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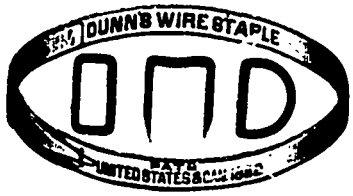

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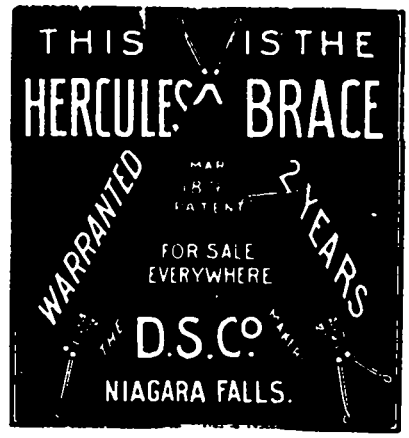

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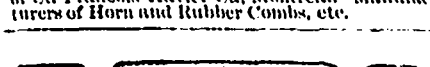

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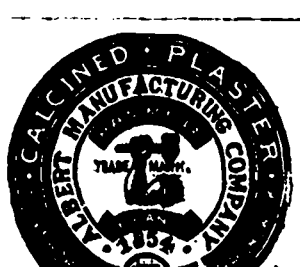

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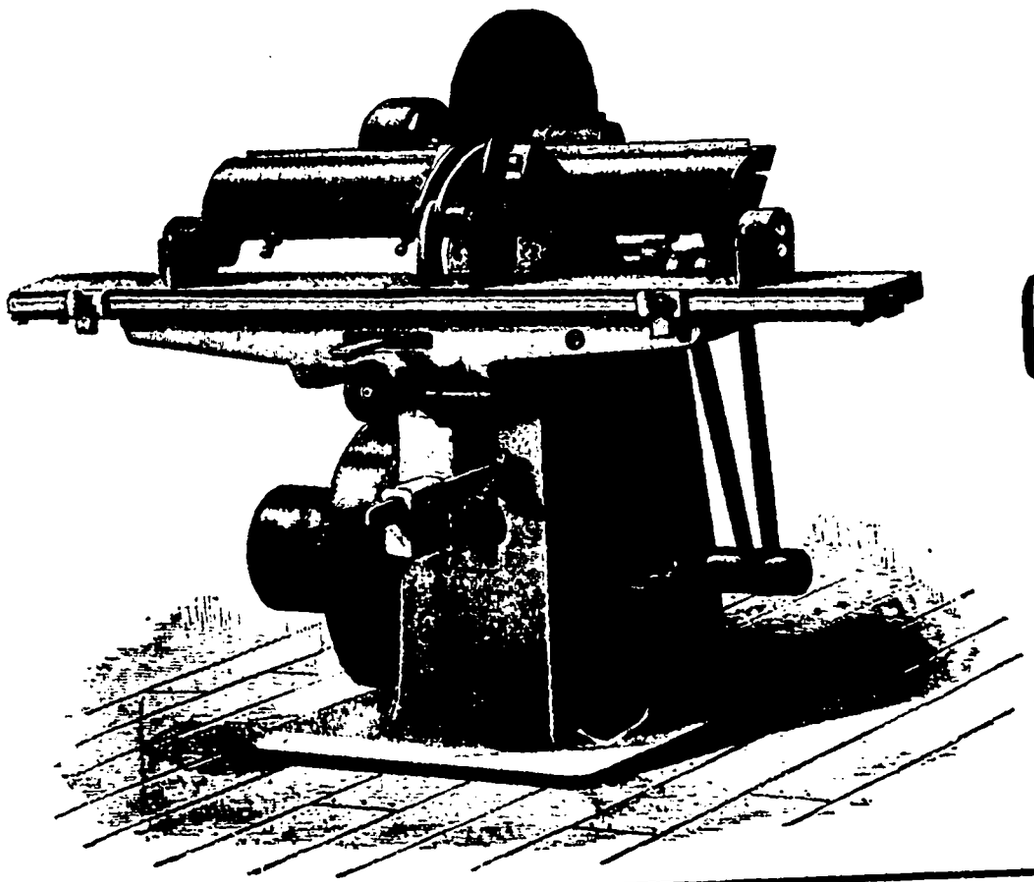

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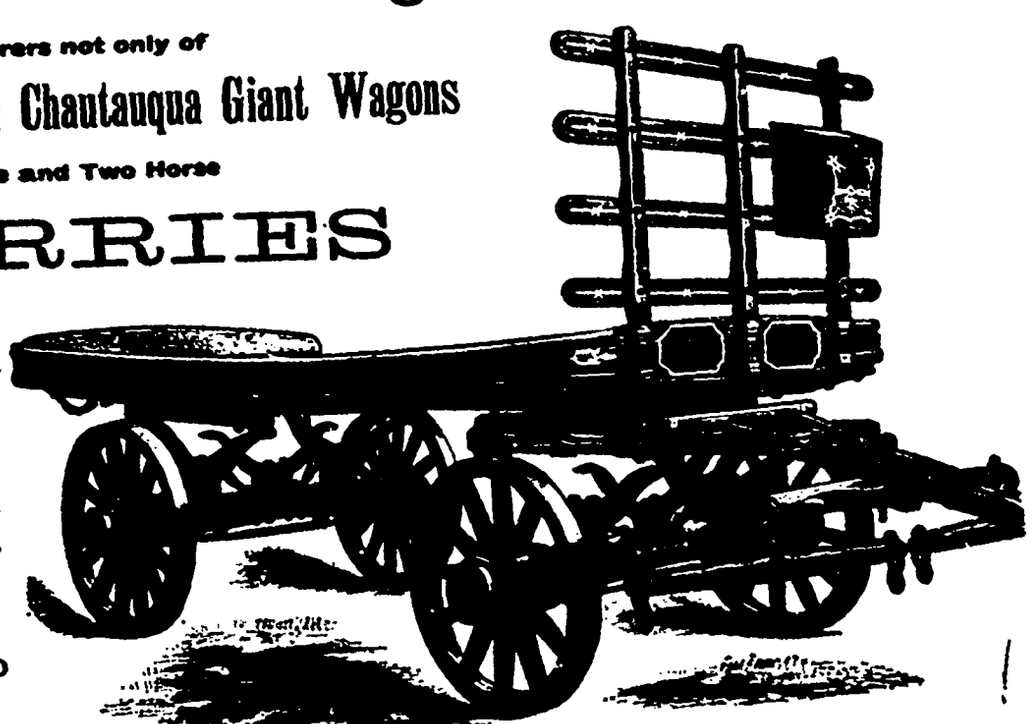

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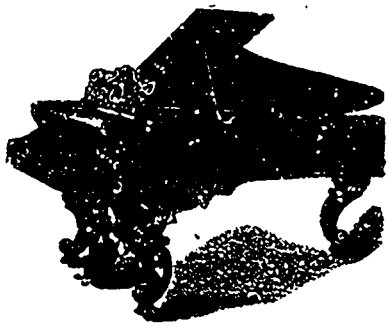

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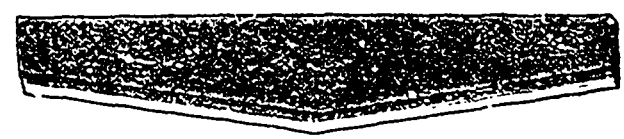

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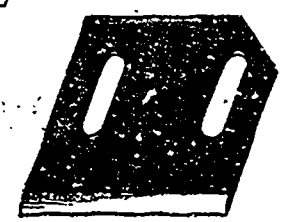

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