

## Technical and Bibliographic Notes / Notes techniques et bibliographiques

Canadiana.org has attempted to obtain the best copy available for scanning. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of scanning are checked below.

Canadiana.org a numérisé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de numérisation sont indiqués ci-dessous.

- Coloured covers /  
Couverture de couleur
- Covers damaged /  
Couverture endommagée
- Covers restored and/or laminated /  
Couverture restaurée et/ou pelliculée
- Cover title missing /  
Le titre de couverture manque
- Coloured maps /  
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black) /  
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations /  
Planches et/ou illustrations en couleur
- Bound with other material /  
Relié avec d'autres documents
- Only edition available /  
Seule édition disponible
- Tight binding may cause shadows or distortion  
along interior margin / La reliure serrée peut  
causer de l'ombre ou de la distorsion le long de la  
marge intérieure.
- Additional comments /  
Commentaires supplémentaires:

Continuous pagination.

- Coloured pages / Pages de couleur
- Pages damaged / Pages endommagées
- Pages restored and/or laminated /  
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/  
Pages décolorées, tachetées ou piquées
- Pages detached / Pages détachées
- Showthrough / Transparence
- Quality of print varies /  
Qualité inégale de l'impression
- Includes supplementary materials /  
Comprend du matériel supplémentaire
- Blank leaves added during restorations may  
appear within the text. Whenever possible, these  
have been omitted from scanning / Il se peut que  
certaines pages blanches ajoutées lors d'une  
restauration apparaissent dans le texte, mais,  
lorsque cela était possible, ces pages n'ont pas  
été numérisées.

# CANADIAN MANUFACTURER

AND INDUSTRIAL WORLD

DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

VOL. 20. TORONTO, FEBRUARY 20, 1891. No. 4.

**"Old Dyewood Warehouse"**  
 Established over Fifty Years.

**Theo. H. Eaton & Son,**  
 Windsor, Ont. : Detroit, Mich.

**DYEWOODS, DYEING DRUGS,  
 CHEMICALS, ACIDS, Etc.**

**HIGH GRADE LOGWOOD.**  
 Domestic and Imported Extracts of  
 Logwood, Fustic and Indigo.

**FRENCH ARCHIL & CUDBEAR.**

SOLE AGENTS FOR THE UNITED STATES AND CANADA  
 FOR THE "CROWN ANILINE DYES."

**ALIZARINE-**  
**CYANINE R**

**A NEW FAST BLUE**  
 Replacing Allzarine Blue.

MANUFACTURED ONLY BY  
 Farbenfabriken, Vormals Friedr  
 Bayer & Co., Elberfeld.

**DOMINION DYEWOOD  
 AND CHEMICAL CO.**  
 TORONTO.  
 Sole Agents for Canada.

**IMPERIAL BANK**  
 OF CANADA.

Capital Paid-up, \$1,500,000  
 Reserve Fund, 700,000

DIRECTORS:  
 H. S. HOWLAND, President.  
 T. R. MERRITT, St. Catharines, Vice-President.  
 William Ramsay, T. R. Wadsworth.  
 Robert Jaffray, Hugh Ryan,  
 T. Sutherland Stayner.  
 D. B. WILKIE, Cashier. B. JENNINGS, Asst. Cashier.  
 E. HAY, Inspector.

Head Office, - TORONTO.

BRANCHES IN ONTARIO.  
 Essex. Niagara Falls. St. Thomas.  
 Fergus. Port Colborne. Sault Ste. Marie.  
 Galt. St. Catharines. Welland.  
 Toronto. Ingersoll. Woodstock.

BRANCHES IN NORTH-WEST.  
 Winnipeg. Brandon. Portage la Prairie. Calgary.

Drafts on New York and Sterling Exchange bought  
 and sold. Deposits received and interest allowed.  
 Prompt attention paid to collections.  
 Municipal Bonds and Debentures bought and sold.  
 Agents in Canada for "Cheque Bank, Ltd."  
 Agents, London, Eng. "Lloyd's Bank, Ltd." 72  
 Lombard St., E.C., with whom all deposits may be made  
 for credit with Head Office or Branches.

ESTABLISHED 1856

## THE J. C. McLAREN BELTING CO.

BELTING MANUFACTURED FROM

# IMPORTED OAK-TANNED LEATHER

EVERY BELT GUARANTEED.

TORONTO, 20 Front St. East.

MONTREAL.

**THE GUTTA PERCHA & RUBBER MFG. CO.**  
 OF TORONTO.  
 C. N. CANDEL, SECTY.

WAREHOUSE & OFFICE, 43 YONGE ST. TORONTO.

MONTEAL OFFICE:  
 81 Temple Building,  
 St. James Street.

**- ANILINES -**  
 BENZO COLORS  
 METHYLENE BLUES

**- DYEWOODS -**  
 EXTRACTS  
 CHEMICALS

MANUFACTURED BY  
 The Berlin Aniline Co.  
 The Stamford Manufacturing Co.

AGENTS,  
**MIDDLETON & MEREDITH**  
 MONTREAL

John Bertram & Sons,  
**CANADA TOOL WORKS!**  
 Dundas, Ont.

SEE ADVERTISEMENT, PAGE 142.

**FERRO-COPPERTIN**  
 AN ANTI-FRICTION METAL  
 THAT IS  
*Durable and Cold Running.*

J. & A. BERTRAM, Makers, Toronto.

This Space for Sale

Largest Manufacturers of STEEL  
and BRASS STAMPS in Canada.

**PRITCHARD  
& ANDREWS**

OTTAWA, ONTARIO.

Rubber Stamps,  
Stencils, Seals, &c.  
SEND FOR PRICES.

## OUR IMITATORS

Owing to certain dealers attempting to  
pass off on the public the products  
of other makers, and represent-  
ing them to be ours to the  
injury of the reputation  
of our goods, we have  
issued the follow-  
ing:—

**CAUTION** TO THE TRADE  
*Merchants are respectfully ad-  
vised that hereafter all gloves of  
our manufacture will be STAMPED  
or bear a SILK WOVEN label as below*

**W.H. Storey & Son**  
Acton, Can.

## McARTHUR, CORNEILLE & CO.

(Successors to JOHN McARTHUR & SON)

310 to 316 St. Paul Street,

and

147 to 151 Commissioners Street,

MONTREAL,

offer at closest prices

PURE OLIVE OIL.

WINTER-PRESSED LARD OIL,

EXTRA FINE SPINDLE OIL,

and a full assortment of other

LUBRICATING OILS.

Also

CHEMICALS,

DYESTUFFS,

DYEWOODS,

EXTRACTS,

&c. &c. &c.

Are Sole Agents in Canada for

SOCIETE ANONYME

DES

MATIERES COLORANTES ET

PRODUITS CHIMIQUES,

DE ST. DENIS,

Successors to

A. POIRRIER AND G. D'ALSACE,

PARIS,

Manufacturers of

ANILINE DYES,

ARCHIL,

CUDBEAR.

&c. &c. &c.

Prize Medal, London Universal Exhibition,  
1862.

Gold Medal, Paris Universal Exhibition,  
1867.

Grand Diploma of Honor, Vienna Universal  
Exhibition, 1873.

Medal and Diploma, with Highest Com-  
mendations, Philadelphia Centennial Ex-  
hibition, 1876.

Maintain large stock, replete with all the  
new and improved colors. Will be pleased  
to furnish quotations, with samples and  
directions for use.

WILLY KNOX.

JOHN H. ELLIOT.

**KNOX & ELLIOT.**

Architects, Engineers and Mill  
Constructors,

Office: 19 Queen Street East,  
TORONTO

**New York Dyewood, Extract  
and Chemical Co.**

SOLID AND LIQUID EXTRACTS

OF

**LOGWOOD,  
Fustic and Hypernic**

OF SUPERIOR QUALITY.

OFFICE: 55 BEEKMAN ST. N. Y.

**PILLOW & HERSEY MFG CO.**

Manufacturers of every description of  
Cut Nails, Tacks, Brads, Railway and  
Pressed Spikes, Horse Shoes, Carriage, Tire  
and other Bolts, Coach Screws, Hot Presses  
and Forged Nuts, Felloe Plates, Lining and  
Saddle Nails, Tufting Buttons, &c., &c.

The Hardware Trade, Shoe and Leather  
Finding Dealers, and Boot and Shoe Manu-  
facturers, will find the Largest and Best  
Assortment and Greatest Variety of above  
Goods always in stock, and can rely on orders  
being rapidly executed, our facilities for  
doing so being unequalled.

OFFICE, 106 Mill St., Montreal.

**ELECTRIC LIGHTING**

Electric Gas Lighting, Elec-  
trical Apparatus and  
Supplies, Contrac-  
tors for Electri-  
cal Work.

HENRY S. THORBERRY & CO.

39 King Street West, Room 2.

This Space for Sale.



Published on the First and Third Fridays of each Month

BY THE

Canadian Manufacturer Publishing Co.

(LIMITED.)

63 FRONT STREET WEST, TORONTO.

FREDERIC NICHOLLS,  
Managing Director.

J. J. CASSIDEY,  
Editor.

SUBSCRIPTION, - - - \$1.00 per year.

ADVERTISING RATES SENT ON APPLICATION.

MR. FREDERIC NICHOLLS is Secretary of  
The Canadian Manufacturers' Association,  
The Woolen Manufacturers' Association, and  
The Tanners' Association.

The Office is at the Publication Office of the  
CANADIAN MANUFACTURER,  
63 Front Street West, Toronto.

## IS RECIPROCITY A REMEDY FOR FINANCIAL FAILURE?

A RECENT issue of *Bradstreet's* presents a tabular exhibit, showing, first, the proportion of those who failed in business in the United States and Canada, who had only fair or moderate credit ratings or no ratings at all; second, the proportion of those failing who had been reported in good credit, and, third, the proportion of those who failed who had been rated in very good credit or higher. The record for 1890 is given in connection with records previously published, and the comparisons are for four years. The scheme relates to more than one million traders in the two countries. The results are as curious as they are interesting, showing an extraordinary degree of co-operation between the commercial, industrial and financial world. The total number of cities and towns reported in the two countries in 1890 was 72,637, and it is worth noticing that there are more places embraced within the range of these statistics than are known as post offices.

The total number of failures in the United States and Canada in 1890 was 12,299, or eight per cent. fewer than in the preceding year; and out of the more than 1,063,000 names of individuals, firms or corporations rated as to capital or credit, the failures, as above given, was only 1.15 per cent. Out of these failures the commercial world were practically forewarned as to about ninety-two per cent. of them, that proportion of them having been characterized as having only moderate or fair credit, or not having any credit rating at all. It is worth noting that 91.3 per cent. of these failures represent concerns with liabilities less than \$20,000 each, and that 61 per cent. were of those with liabilities of from \$20,000 to \$50,000.

The concern beginning business without sufficient capital runs great risk of failure, and the exhibit illustrating this in-

dicates that it is from this class the majority of the failures are obtained, ninety per cent. of them being of concerns whose capital was less than \$5,000. The number of failed concerns with between \$5,000 and \$20,000 capital furnished only seven per cent. of the total number, while enterprises worth \$1,000,000 or more furnishes but .56 of one per cent. When it is recognized that out of 1,063,000 traders reported in the two countries, about 903,000, or eighty-five per cent. of the total are credited with less than \$5,000 capital, a record of ninety per cent. of the failures from this class obtains special significance. It should be borne in mind that the failures here alluded to are only of those where losses have resulted to creditors. Many other failures have occurred where the losses fell solely on the principals.

We do not advance it as an infallible rule that every man engaged in a failing or unprofitable business in Canada is therefore a reciprocitarian; or that every business man who is a reciprocitarian is doing a failing or unprofitable business. We know such is not the case; but we also know that human nature prompts those who are unsuccessful to lay the blame for it at other doors than their own; and it has become quite the style of late here in Canada to attribute the ills, under which some manufacturers think they suffer, to a want of a larger market in which to operate. This they have been taught by such pessimists as Sir Richard Cartwright, the *Globe* and Mr. Wiman; and the suggestion having been thus made, the unsuccessful ones are glad to lay the blame upon the N.P., while it should properly be at their own doors. Successful Canadian manufacturers do not whine for reciprocity.

## SHORT-SIGHTED CANADIAN MANUFACTURERS.

"PROBABLY the most universal trait of mankind is selfishness. It affects national policies no less than individual lives. Even common patriotism has to yield at times to this malign influence. Thus, there are a few manufacturers in the United States, comparatively a few, whose perception of the greatest good to the greatest number is so badly awry that they cannot view any great public question save through their own medium of self interest. And even then, they are blind to their own best interests, for they fail to see that, were a system of public policy so readjusted as to be adapted to their own little circle of supposed necessities, it would not fit the needs of the great majority at all. There have always been enemies of a protective policy in the United States, even among manufacturers, and there always will be; but that does not alter the fact that adherence to this policy of encouragement to native industries has wrought marvelous changes for the better in this country, and that its abandonment would be a public calamity.

"Canada, which is struggling for the establishment of a like policy, is now undergoing a similar experience. While the vast body of Canadian manufacturers are undoubtedly in favor of the present protective policy, here and there may be found a few men who are willing to lend themselves as tools to the opponents of protection. Thus, one manufacturer, who owns plants in both Canada and the United States, wants reciprocity, because it might benefit him individually, without regard to the interest of his fellow-manufacturers; another, who manufactures sewing machines, wants the duty on imported materials entirely abolished because he thinks it would benefit him individually, in spite of the fact that he has a monopoly of the Canadian market, and a third, who uses

both American and Canadian machine bolts in his agricultural machinery, wants the duty taken off so that he can get his bolts cheaper, whether it destroys a home industry or not.

"We are not particularly interested in the promotion of Canadian industries, and have no doubt that American-made goods are sold in Canada very largely because of their superiority; but we cannot but perceive the selfish and short-sighted policy (considered from the standpoint of national advancement) of the manufacturers referred to."—*Cleveland Iron Trade Review*.

When one is at fault it is painful enough to a high toned, sensitive man to acknowledge it to himself alone and in the quiet hours of his meditation. It is more painful to have to be told of it by considerate friends; but it lacerates badly to have the matter discussed by strangers, and to have plain words spoken that are not characterized by a restraint upon a desire to tell the unpolished truth. Of course, if a man is not high-toned and sensitive he does not give any quiet hours to meditation, and the suggestions of friends do not disturb his conceit.

Perhaps it is of this latter class our Cleveland contemporary is alluding when he accuses certain Canadian manufacturers as being the embodiment of selfishness to which even patriotism has to yield. The advocates of protection in the United States have been battling for years against the "malign influence" of unpatriotic selfishness on the part of the opponents of that policy, but those opponents are not generally manufacturers, for American manufacturers as a class are high-toned and patriotic citizens who appreciate the value of protection to them; and the American people generally have such a high appreciation of protection that they are not at all likely to abandon it. As with all other human laws there are features of the system there that are not all that might be desired, but in amending and correcting these incongruities no disloyal appeals are made nor any desire expressed that that country should ask some other country to take it under its patronage and make laws for it under which its revenues would have to be collected.

But this seems to be the gauge of some Canadian manufacturers, and our contemporary has sized them up to a nicety. And these men, as we have heretofore said, are the embodiment of extreme selfishness. Almost without exception they attempt to palliate their denunciation of the N.P., by declaring that they believe in it and were adherents of it at some time or other; but investigation usually shows that that adherence was at a time when the enforcement of it was absolutely necessary to the adherent in getting a start in business, whereby he was enabled to attach features to his business which placed it beyond the necessity of any tariff protection, having acquired patents or trade secrets that afforded even greater protection than any offered by the N. P. When this is the case—when his protection consists in patents or trade secrets, operative both in Canada and the United States—in his selfishness he does not care what effect reciprocity may have upon the industries of all other manufacturers, but desires it so that he may not have to maintain a factory in each country, but that he may concentrate all his business in one. As far as he cares all other Canadian manufacturing industries may go to smash and ruin so long as his is successful.

This class of people is not as prevalent, however, as another who require manufactured products in their business, and

proclaim that without reciprocity they cannot produce as fine quality of goods, and cannot find as large a market. The ridiculousness of this contention is apparent on its face; and it will be noticed that those who advance it are usually men who have not distinguished themselves as being remarkably successful money makers, or as producers of articles that have attained remarkable celebrity for their excellence. One of these pessimists tells us that one reason for his desiring reciprocity is that a certain product necessary in his business can only be had of the proper quality from foreign manufacturers, while we know for a certainty that he is a large user of the Canadian-made article. This is worse than selfishness. Unsuccessfulness in business must be accounted for in some way; and here the unsuccessful man, in excusing himself for desiring a foreign article actually commits the inexcusable meanness of unjustly belittling the product of a home manufacturer. We say "unjustly," but the word "dishonesty" might better have been used; for we have knowledge of a case where one of the shriekers for reciprocity stated that a certain Canadian product was of too faulty construction to be available in his business, while it is a fact that he uses large quantities of this very Canadian product, never having found any fault with it to the maker.

It is by such distortion of facts sent out by so called Canadians that Canada and Canadian industries are brought into contempt. But we assure the *Iron Trade Review* that while its strictures upon these selfish Canadians are just and deserved, the sale of American-made goods in Canada is not because of their superiority to Canadian-made goods, other circumstances influencing their use.

#### A SPLENDID OPPORTUNITY.

AN English contemporary, *The Textile Mercury*, discussing foreign tariffs and labor questions, alludes to the fact that the McKinley bill has stopped the trade of Messrs. Lister & Co. in the United States entirely, and that the Germans were competing with them in the British markets more strongly than ever. Messrs. Lister & Co. are manufacturers of plush goods, operating large mills at Bradford; and they have notified their workpeople in a portion of their velvet department, numbering about eleven hundred persons, that their wages would have to be reduced to enable the continuance of their work. As a further grievance it is stated that the proposed new French tariff threatens to seriously increase the duty on plush. There seems to be an over-production of plush goods in England, the business being now competed for very keenly by such powerful concerns as the Salts, Brights, Walkers, Hinds and others. *The Mercury* thinks that foreign tariffs have undoubtedly tended to drive British manufacturers into a corner, so that Messrs. Lister & Co. have strong arguments to bring forward in support of their determination to reduce the pay of their employees. "The opportunity, is, too," it says, "a splendid one for impressing the voters of the country with the fact that unrestricted free trade at home and protection abroad may after all not be an unmixed blessing for them; and that Mr. Lister and other fair traders will be quite within their right in sharply emphasizing the fact in such a forcible manner."

Free Traders in Canada ridicule the idea that a desire for protection is fast gaining ground in Britain; but as has been from time to time shown in these pages, this sentiment is formulating with a demand on the part of the voters of that country for a change of policy that will at least preserve the home market to the British manufacturer, and ensure stability of wages to the British workman. *The Mercury* has repeatedly furnished illustrations of the great changes which have been brought about in the position occupied by Britain in relation to her foreign competitors, and has shown again and again, by giving practical illustrations gathered from the experience of those interested in many branches of British industry, how vitally foreign tariffs affect those industries. Admitting for argument that by the imposition of protective tariffs foreign nations simply tax themselves, the admission does not include a full statement of facts. If they continue to buy the same quantity of goods of foreign manufacture as before, the case might be different and the reply unanswerable. But the fact is, while the tariff greatly reduces the purchase and consumption of foreign goods, it to that extent throws both the capital and labor previously devoted in their manufacture out of employ, thereby inflicting injury upon the country, whose manufactures are thus displaced. It is this phase of the subject that imperatively demands the attention and investigation of the British voter. Commercial intercourse between nations is not regulated by moral principles; and the British manufacturer and his workmen are calling upon their Government to see that their interests, as an industrial and commercial nation, are not injured by what they denominate "the desperate raids" of such pro-protection countries as the United States, France and Germany.

This question of reduction of wages of British workmen because of the competition in the free British market of the products of protected France and Germany is burning. The theory of the Free Trader is that the British consumer should not be denied the privilege of buying in the cheapest market, wherever that may be. Under this policy the British workman engaged in the manufacture of certain numerous lines, finds that when he wants to buy any such goods for his own use he can get the foreign-made article cheaper than he can that produced by his own labor. This would be a satisfactory arrangement for him as long as his employment is steady and his pay full and regular. But his employer, the British manufacturer, is not so well pleased at the situation, for he sees that his products accumulate upon his hands—that he is unable to dispose of them, because he is undersold in his home market by foreign manufacturers; and the only thing left to him to do is to ask his employees to work for less wages. The situation shows to both the employee and the employer that if the British mills are to be kept in operation, giving employment to British workmen, something must be done to shut off the flood of the cheaper products of other nations flowing into the country. In other words, the demand is for protection.

In the present conditions of things in Britain these reductions of wages of workmen is inevitable. We know that the very life of that country is its foreign trade. That trade is being successfully attacked by every civilized nation in the world with the exception of a few sparsely settled and commercially insignificant people. A splendid opportunity, however, is now

being offered to British workmen to correct the evil. They may believe to their heart's content in the moral features of Free Trade, but idle hands, hungry stomachs and houseless heads do not wait upon a question of morality in politics to supply their wants. They are coming to see that their only hope is in doing just what other nations do—protect themselves against the rest of the world.

#### "ENORMOUS PROFITS."

MR. FEODOR BOAS is a manufacturer of woolen goods whose factory is at St. Hyacinthe, Que. A few days ago he made a speech at Oshawa, Ont., in which he declared himself as decidedly in favor of unrestricted reciprocity with the United States. He defined his political position by saying that he had emigrated from Germany twenty odd years ago, and had settled in Canada because he had faith in the country and the people. He had regretted the establishment of the protective system, and illustrated by giving some figures relative to the cost of clothing. Ready-made clothing in Canada is to a large extent made of English cloth. In England the cloth is sold for one shilling or one and sixpence per yard, it taking about three and a half yards to make a suit; and this suit can be made up and sold at what equals from \$1.75 to \$4 Canadian money. This cloth has to pay twenty per cent ad valorem and ten cents per pound, and these duties, with freights and expenses, bring the price to the Canadian dealer up to about forty cents per yard; and when profits are added, and the goods in the form of clothes reached the Canadian consumer, the suit which cost \$1.75 to \$4 in England cost in Canada \$8 to \$10. Speaking of the Magog print works that had recently changed hands, Mr. Boas said he had been asked to subscribe to the stock of the company, but that knowing how difficult it is to carry on such an industry in a restricted market, he had declined. "There are always enough fools," he said, "to go into this kind of thing, and the capital was raised and invested." He also told of the enormous profits, \$50,000 a year, made by one woolen manufacturer during 1879-80, and contrasted this fact with a letter he had received from this same manufacturer recently, "after the National Policy had worked out its natural result of over-competition," urging a combine and temporary closing down of the mills. Mr. Boas said that his reply was that he would continue to run his factory, keeping his seven hundred hands in steady employ. Speaking as a manufacturer he declared himself ready to compete in the open market with all comers, and showed how in different ways the Canadian manufacturer stood at least on a par with the American manufacturer, his only want being a larger market.

It is most remarkable that as intelligent a man as Mr. Boas should utter such nonsense; and we can account for it in no other way than that he is over-enthusiastic in a newly-found conversion. If he means to say that the ready-made clothing sold in Canada is to a large extent made of English cloth, and that such clothing is manufactured in England, we will grant his contention, but if his reference is to clothing made in Canada, we deny it, and assert that as a general thing the ready-made clothing manufactured in this country is made of Canadian-made goods. The duty upon ready made clothing is

higher than that upon such goods as such clothing is made of; and this difference was made to encourage the manufacture of clothing in Canada. In another sentence Mr. Boas seems to allude to the duty upon the goods rather than upon the clothing, for he says that the duty upon such goods as cost one shilling or one and sixpence per yard in England, makes the article cost about 40 cents per yard in Canada; and that a suit made in England at a cost of \$1.75 to \$4, cost in Canada \$8 to \$10. The cost of making a suit of clothes in Canada is not much greater than in England, and if a suit cost \$4 in England and \$10 in Canada, how is the \$6 difference accounted for? Three and a half yards of English goods at one and sixpence per yard would be in Canadian money about \$1.26, while the same goods imported into Canada would, according to Mr. Boas, cost, at forty cents per yard, only \$1.40, a difference of only fourteen cents. Mr. Boas would have been nearer the mark if he had added thirty-five per cent. duty to the English price, making the price in Canada about \$1.70. If the suit were made in England, and cost \$4 there, if imported ready-made and paying thirty five per cent. duty, the cost in Canada would not exceed \$5.40, and yet Mr. Boas says it would be \$10. This is where his exuberance got the better of his judgment, for he knows that in making such assertions to his Oshawa audience he was supplying them with a vast amount of chaff.

The gentleman was not very choice in his language when he alluded to the investors in the Magog print works as "fools"; but would he describe the woolen manufacturer who made \$50,000 a year in his business by the same epithet? But Mr. Boas has probably disclosed the animus that actuates him in what he says regarding the "enormous profits" in the woolen manufacturing business in 1879-80. He was in that line of business himself at that time, and as he was entirely too smart to put any of his money with the Magog works, although there were good prospects for that line of manufactures at that time, it is to be supposed that he was harvesting similar "enormous profits" from his St Hyacinthe woolen mills. Mr. Boas has accumulated considerable wealth since he came to Canada, for he was manufacturing woolens in the flush times of 1879-80 when such "enormous profits" were being made. There was not much competition in that business at that time: and as long as he could make "enormous profits" he was satisfied with the N. P., for it was just what he wanted. But afterwards, when others embarked in the business also, and competition caused a reduction in prices, and the people at large began to receive some of the benefits of protection by the cheapening of woolen goods, then Mr. Boas became disgusted with the business and whines for a larger market.

Mr. Boas has made a great mistake. When he was making "enormous profits" with his woolen mill, because he encountered little or no competition, the N. P. was good enough for him. He had no care for the people; and was willing enough that they should pay \$10 for a suit of clothes, provided he manufactured the goods, when, as he says, a similar suit could be bought in England for \$4. But times have changed since such "enormous profits" were made, and Mr. Boas has changed with them. His mistake is in remaining in Canada now that competition has so greatly reduced the value of woolen goods. He should emigrate again. It is only a short distance from

where he is to the line that separates him from the larger market he so much desires to have access to.

### FALSE FRIENDS.

THERE are some newspapers in Canada that proclaim from the housetops of their editorial sanctums that they are the special friends and advocates of Canadian farmers; and in doing so they do all in their power to build up the fortunes of the corrupt party to which they belong, and to pull down and destroy that great policy of the country under which the farmers and all other classes have prospered. Therefore it is pleasant and refreshing to note the fact, that, although these newspapers appeal so pointedly to the farmer to vote against the N. P., there are many of them who are not to be deceived by these appeals, but declare boldly that however much they regret the shutting out of their products from the American market, the existence of the McKinley tariff is no reason why they should sit down in dejection and despair, and make no efforts to better their condition. As progressive Canadian farmers they say the American tariff has no terrors for them, and that they will bestir themselves to find other markets. Canadian farmers who entertain and express such sentiments are the ones to whom such blue ruin newspapers as the *Toronto Globe*, *London Advertiser* and *Montreal Herald* appeal in vain. But it is perfectly safe to say that there is never a farmers' meeting called to be held in any part of the country, for the purpose of discussing matters of interest only to farmers, but what the Grit politicians gather there also, and by ways that are shady manage to deceive the unsuspecting grangers into making political declarations that they really do not approve of, and which they would not make if it were not for the officiousness of these politicians. But when these farmers' meeting are made to take on a political complexion, and to give expression to the Grit sentiments that had been forced upon them, these dishonest newspapers always hasten to proclaim and exaggerate the occurrence, and claim that the sentiments of the farmers were enlisted in behalf of their party, and that these farmers' meetings were taking on the character of the Alliances and Granges that are such strong factors in American politics.

If this were a fact—if the farmers of Canada were really organizing themselves into such political associations as are now so much in vogue in the United States, we would not deny that they might accomplish much good for themselves by so doing. Manufacturers organize to be the better enabled to look after their peculiar interests; merchants do the same; so do laboring men and other classes in the community, and why not farmers? Such associations of farmers have done much good, and under judicious management could do much more; but the objection to them usually is that, as we have suggested, they fall into the hands of demagogues who pretend to speak in the interests of the farmers, but who manipulate their associations in the interests of their political party. The honest, unsuspecting granger may not see the cloven foot, but it gets there just the same. In the United States, at the recent elections, the farmers' alliances developed a voting strength that has alarmed the old parties; and now we observe that, intoxicated with the development of their great strength, and

under the quiet manipulation of evil men, and the insidious influences of newspapers professing to be devoted to the interests of the farmers, some of these associations are displaying strong agrarian and socialistic tendencies. We know this to be a fact from the testimony of the president of the New York State Farmers' Alliance, who, after a recent visit to Kansas, said that in that State "the leaders of the Alliance are half anarchists," and that the excesses into which they have led their party have already started a new organization, in line with the Alliance as it exists in New York and other conservative States. He predicts that the better class of farmers in the West who were identified with the Alliance movement will soon withdraw from that organization and form a new and better farmers' league. It was the political mountebankism of the dishonest men who obtained the control of the Kansas Alliance that resulted in the election to Congress of a man whose only and great claim for the suffrages of the electors was that he did not wear socks. Upon this principle we suppose that the only man who could have beaten this one would have been one who could pride himself upon the fact that he did not wear breeches.

We do not know just how far the fact is applicable to Canada, but it is a fallacy exposed by the recent census of the United States that farmers form a majority of the population of that country, the figures showing that three tenths of the whole population live in cities and towns. But whether this is true regarding Canada or not, if Canadian farmers desire to form themselves into similar organizations, if they hope to accomplish much or any real good for themselves, they should carefully tyle the doors of their lodge rooms against such cowans and eavesdroppers as are sent to them by such mischief-makers as Cartwright, Wiman and Laurier, and against such bitter anti-Canadian newspapers as those we have here alluded to.

#### THE EXPIRY OF BRITISH TREATIES.

THE expiry of British treaties with certain other nations is exciting great interest in that country in considering the action that should be taken with respect of negotiations for their renewal or otherwise. The treaty with Bulgaria expired a few days ago—January 13th; that with France expired on February 1st; with Montenegro on May 14th; with Portugal on June 22nd; all of this year, and that with Spain on June 30, 1892. It is not probable that any of these treaties will be renewed. They all give favorable conditions to British manufacturing industries; and all the nations interested have swung or are swinging into line under the banner of Protection. The outlook is not at all promising for British trade.

French political sentiment is strongly against any commercial treaties whatever, and in favor of a maximum and minimum tariff, by which there will be two schedules regulating the admission of imports. In the maximum schedule the duties levied will be applied to goods received from these countries that have not made concessions in their tariffs thought to be advantageous to French interests, while in the other the duties will be on a much lower scale, to be paid on merchandise from countries whose import duties are favorable to French productions. The tariffs in other European countries are also high,

most of them being of the protective character distinguishing that of the United States.

The manufacturing and commercial interests of Britain are greatly exercised regarding the expiry of the existing treaties, If they could induce the different countries to renew them, or to introduce into any treaties that may be made the favored nation's clause it would be all right for them, and they would not feel the pinch so severely. But the action of France indicates the direction of sentiment, and Britain sees that a large loss of trade is inevitable. The question is "What shall we do to be saved?" The matter is being discussed among the working classes, for they see that unless something is done to prevent it there must be a lowering of wages or loss of work. Manufacturers are facing the proposition as to how long they can continue in business in the presence of free importation of the cheaper wares of other countries, and commercial men generally are discussing the propriety of insisting upon the Government adopting some retaliatory legislation by which Britain will do to other nations as other nations do to Britain.

A full discussion was recently had at a meeting of the Keighly Chamber of Commerce. Many of the speakers were in favor of retaliation. It was shown that the French tariff regulated by the commercial treaty of 1882 had inflicted serious injury upon the textile trades of Yorkshire; that supposing that only the minimum feature of the proposed French Tariff was applied to Britain, in the case of classes of fabrics wherein wood predominated, there would be an increase of two per cent. which, although small, would have the effect of practically killing the trade. In dress goods where cotton predominated the advance would be six per cent. On certain worsted goods, where the existing duty is nineteen per cent., the minimum under the new classification would be thirty-two per cent. It was further stated that even if the increase under the minimum scale were imposed it would mean the total extinction of Britain's woolen trade with France. In the face of these facts commercial retaliation was openly advocated.

Alluding to the situation the *Manchester Textile Recorder* says: "It is obvious that the subject is beset with difficulties on every hand, and that it is indispensably necessary that constant and careful consideration should be given to it without delay." The moment Britain begins to lay a duty upon manufacturers, or upon anything produced in that country, in compliance with demands such as we allude to, and which does not seem improbable, the flood gates will be opened upon the great question that Mr. Cobden fondly thought he had settled forty years ago. Protection is not an impossibility in Britain; she will be forced to adopt it in self defence.

#### ENGLAND LOSING HER GRIP.

THE fact has frequently been alluded to in these pages that the British market was being flooded with the textile products of France and Germany, while British factories were being closed in consequence thereof, and British workmen thrown into enforced idleness. About the only answer the Free Trade journals could make to this is that although Protection prevails in both France and Germany, through that protection the wages of the workmen have been depressed to a point where



the products of their labor can be sold in Britain cheaper than the products of British labor under Free Trade.

But this is not the cause! or rather the answer should be formulated differently. France and Germany were never the formidable competitors in the British market that they now are, until they pronounced strongly in favor of Protection; and labor in those countries is quite as well or better paid now than formerly. Before these countries pronounced for protection Britain was the chief manufacturer of the world of textile fabrics; and so adept and skilful had British workmen become that it was thought that no other people could ever approach them in producing such goods. The machinery employed was unequalled; the methods were of the most approved character; the capital unlimited, and the workmen unapproachable in skill. Under these circumstances Britain deemed herself invincible, and British manufacturers and textile artisans concluded that they had attained perfection, and held an unchangeable control of it. In fact this conceit warped and affected their better judgment, and for which they are now paying a dear penalty.

While Britain was resting upon her laurels France and Germany, having adopted Protection, were planning to become successful competitors of that country in the general markets of the world, but also in the British market itself; and how well they have accomplished this the wailings of Britain tell. British silk manufacturers complain of the ruin of their business created by the weighting of foreign silks; and they ascribe the decline of their industry to this cause. It might be supposed from this that British silk manufacturers are immaculate in their business methods, and that they would not do such a thing as weight their goods. Other experiences have taught that British manufacturers are not immaculate. Those who have any experience in buying silks can easily tell by the appearance of the goods, and by the price charged whether they are weighted or not; and the foreign manufacturer when offering his goods in Britain cannot be said to have any advantage over the British manufacturer in this respect. Imagining himself to be immaculate, he declines to modify his machinery or to change his practice so as to meet a demand for weighted goods, and when the Frenchman or German comes with an article that catches the taste of the prospective buyer, the immaculate Britisher finds himself badly left. If the British manufacturer does not weight his silks it is because he cannot do it as skilfully as the foreigner. Under his Free Trade prestige he has been standing still, never dreaming that it might be important to him to know how to weight silks, or that he should ever have to practice the art to enable him to retain his trade; while under the stimulus of Protection, and a desire to capture the British market, the French and German manufacturers spent time and money and employed the highest and most valuable technical, chemical and mechanical skill to accomplish what they have done. According to a British textile exchange, the dyers there are "ignorant of the scientific aspect of their industry to a degree perfectly astonishing." There is said to be a great lack of chemist in the dyeing establishments of the silk industry. Everything is done by rule of thumb, and nothing with scientific accuracy. In fact, in some instances where a superior product was required, the yarns have been sent to France to be dyed because it could not be as satisfactorily done in England. It may be all very well to talk

about the cheap labor on the continent, but cheap labor cannot be accountable for the deplorable backwardness of the British silk manufacturers

The cotton trade is also gradually slipping away from Britain. That country cannot hope to always supply the world with goods which are merely the products of machinery, and which can be produced quite as easily elsewhere. The machinery can be produced elsewhere; the materials can be produced elsewhere (they never were produced in Britain); and the labor is to be found elsewhere. Other nations are increasing their production of cotton goods at a greater rate than Britain is. The Continent of Europe and the United States now produce five-eighths of all the cottons consumed in Europe and the States, and Britain three-eighths. Fifty years ago Britain produced five-ninths of the consumption, and thirty years ago only one-half. Britain's supremacy, based upon cheapness alone, is evanescent and is slipping from her grasp. Whatever supremacy she may hereafter hold must be based upon superior excellence alone.

#### EDITORIAL NOTES.

A FEW years ago a man engaged in digging a well in the eastern part of Toronto was suffocated by a sudden flow of natural gas. Natural gas has long been known to exist in this vicinity, and now a company has been formed to sink a well, believing that the article will be found in large volumes, and that it can be utilized for manufacturing purposes.

THE Grit politicians are angry because Sir John appeals to the country on the question of Reciprocity with the United States. They say he has stolen their thunder. Not at all. The Conservatives have always advocated Limited Reciprocity, and that is what they now desire to effect, while the Grits go in for Unrestricted Reciprocity, which means Annexation.

A WESTERN stove manufacturer had the curiosity the other day, while in Detroit, which is a centre of that industry, to investigate a little for his own satisfaction. He found everybody loaded up, and business reported as worse than it had been for many years. Canadian makers would have a difficulty in finding customers in Michigan under these circumstances.

CANADIAN horses recently sold in London, England, brought an average price of \$353. The Canadian prices of these horses ranged from \$125 to \$150 each. Canadian horse breeders selling their animals in the United States cannot expect more than Canadian prices plus the American duty; and the fact that more than double the Canadian price can be obtained in the British market emphasizes the contention that the British market, not the American, is the one in which Canadian horses should be sold.

AMERICAN detectives were on the *qui vive* for some time last week, trying to ferret out smugglers of sewing machine needles into the border towns south of the line. In Buffalo they were exceedingly active. The goods had been placed

somewhere, but by whom they were not able to discover. It seems strange that this sort of thing should work both ways, and there is no doubt whatever that the Canadian revenue also is defrauded by some underground means, both from England and the United States.

At present the taxation per head in Great Britain is \$9.83 per head per annum, and in the United States only \$5.41, or \$4.42 less in the latter country.—*Belleville Intelligencer*.

In Great Britain the revenues are obtained chiefly by direct taxation, and when a man pays this tax he knows it and feels it. It has been said by a British statesman that an additional tax of one penny per gallon on beer would cause a revolution. When the revenue is derived by duties upon imports it is seldom or never felt by the people, and, as in the case of tobacco, spirits, fine textile fabrics, etc., no one need pay a cent of duty unless they want to.

THE Board of Trade of St. John, N.B. have entered a vigorous protest against the recommendation of Mr. J. G. Moylan, Dominion Inspector of Prisons, to begin the manufacture of brooms at the Dorchester Penitentiary. They consider that such a move would be a fatal blow to the broom manufacturing industry of the Maritime Provinces. As we have before said, it is all right to have all such things as are needed in the prisons made in them by prison labor, but it would be an inexcusable outrage upon manufacturers and their employees for the Government to compete against them in the open market with convict labor.

MR. RAYMOND professes to be anxious for free trade with the United States, and has assured the *Globe* reporter that he could find a better market for his sewing machines in Chicago than he has in the whole of Canada. We have before us the circulars of a Chicago sewing machine company, issued contemporaneously with Mr. Raymond's celebrated interview, in which the wholesale and retail prices are given of five sizes of sewing machines. We have no hesitation in saying that if Mr. Raymond will do in Canada what he professes to be able to do in Chicago—compete with these prices—he can command a trade which will effectually give him the home market, and ensure him all the business he can possibly attend to.

We hear of one stove manufacturer in Ontario who says he could do a large business just now in Buffalo if he could get into that market without paying duty. Just now the Buffalo stove men are looking disconsolately at their overcrowded store-rooms and wondering what they are going to do with their base burners. The truth is that the change which has taken place in house-heating by furnaces has left the American stove trade in a fix. They can't sell very many stoves to their neighbors in the tropics and look to Canada as a possible dumping ground for their surplus. Under the circumstances does any rational man believe for a moment that the Canadian stove-maker would be benefited? And if not he, what about his employees?

SOME of the more influential newspapers in the United States have made a study of the Canadian method of dealing

with the Indians. The fearful evils that are being exposed in the American system, and that have driven the Indians in the United States into the war now going on out west, are not to be found in Canada. The *Illustrated American* has put in circulation a petition to Congress on this subject. It sets forth the wrongs which the Indians have been shown in its columns to suffer and have suffered from the agents appointed by political jobbery. It asks that an immediate investigation shall be made into their fraudulent practices; that steps shall be taken to remedy the wrongs against which the Indians have risen in arms, and that a blot shall be removed from American civilization.

OUR politicians are buying property in and about Boston Harbor on which to place long range guns. As it is never wise to do a thing until we know why we are doing it, and the object to attain, it is presumable that our politicians already know in which direction the enemy will come from. There is one thing sure, we cannot have an enemy until we make one; and an honest, strong Government never yet had an enemy. A Government in this country that finds that it cannot perpetuate itself without war, will not hesitate to pick a quarrel. And this is what we should not lose sight of. Our people need every available island and promontory on our coast for health-seeking recreation.—*Wade's Fibre and Fabric*.

The average Yankee politician is like Jacob Faithful, who raised money to start in life with by selling the remains of his mother. We presume from what our Boston contemporary says that those who are most anxious to precipitate a war between Great Britain and the United States are those who have land on which long range guns could be planted.

At an Annexationist meeting held in Brantford a few days ago, a telegram was received from Rev. T. S. Linscott, of Toronto, which read as follows: "Our country is in the rapids above Goat Island. Shoot out the line of Unrestricted Reciprocity, with William Patterson for an anchor, and save her from going over the falls." Metaphorically speaking, the man who could write such stuff is an ass. If parson Linscott was in the rapids at Goat Island, shooting lines wouldn't help him, nor would all the Billy Patterson anchors that he might shoot out. Parson Linscott should understand that the safety of "our country" does not depend upon attaching any line of Unrestricted Reciprocity to American territory. If the parson don't know any more concerning the plan of salvation of souls than he does about the political necessities of Canada, or the use of metaphors, and we don't think he does, his spiritual flock, if he has one, have an undesirable shepherd. He is a blind leader of the blind.

At a recent meeting of the Dominion Grange, held in London, Ont., President Glendinning said:

However much we may regret the shutting out of our products from the American market, that is no reason why we should sit down and lament the loss without trying to better our condition. For the progressive Canadian farmer the American tariff will have no terrors, but will make him look about for other markets.

Spoken like a man. Spoken like a self-respecting and Canada-loving Canadian. Those features of the American tariff which bear so hard on Canadian farming industries were placed there on the suggestions of Cartwright, Wiman, Farrer

and other annexationists for the purpose of forcing Canadian farmers to consent to the scheme of unrestricted reciprocity, which means annexation. Canadian farmers, with instincts like those of Mr. Glendinning, are not men who can be whipped into the advocacy of a cause they detest. For progressive Canadian farmers the American tariff has no terrors.

"ACCORDING to a statement prepared by Secretary Blaine last year, Brazil imported \$20,003,939.76 worth of goods which, under the Reciprocity treaty, will now be admitted free from the United States. The United States furnished only \$3,394,633 worth. The gain that will come to us according to the natural laws of trade will be \$16,000,000. Besides this, we may expect to sell the Brazilians the greater part of the \$38,000,000 worth of goods of the class on which the United States will pay 25 per cent. less duty than any other country. Of this \$36,000,000 will be a gain. A similar Reciprocity treaty is believed to have been nearly completed with Venezuela, which will further increase our trade about \$30,000,000. A free market for \$80,000,000 worth of our agricultural products and manufactures is what the Reciprocity treaty has given—and this without the sacrifice of a single American industry."—*Buffalo Express*.

Canada, like the United States, has a surplus of agricultural products and manufactures, and of very similar character. Unrestricted reciprocity would bring these products of the two countries into direct competition. Who desires such competition?

"WILL some one explain to me how we are to sell our surplus machinery in the United States?" said an implement manufacturer the other day. "I find that over production has been going on in that country until they have facilities for turning out twenty-five per cent. more implements than the country requires, and just lately they tried to form a combine which would reduce their employees by over 10,000 men. The project failed, and the result must be that the weaker firms will go to the wall. The Canadian market was overcrowded last year, and prices went down fully ten per cent., which left us without a margin of profit and a lot of machinery on hand. What I want to get at is this: If their market is glutted, how can we sell to them? And if not, how would Commercial Union or Unrestricted Reciprocity benefit the manufacturer here? It seems to me that the big fish over there—the McCormicks and Deerings—would crowd the best of us to the wall in time. A squeeze in prices for two or three years would exhaust the capital of the strongest firms in Canada."

DEMOCRATS and Bourbons are people who never learn anything. Ex-President Cleveland is a Bourbon Democrat, and he has never learned to keep his mouth shut when it should not be opened. Until a few days ago Mr. Cleveland apparently had the call on the next Democratic nomination for President of the United States, but his enemies laid a trap for him and he walked into it, and now he is in the soup. About all of the mining and agricultural States of the Union (and a majority of them are Democratic) are strongly in favor of the free coinage of silver, a bill providing for which is now pending in Congress. Mr. Cleveland's State of New York and some other Eastern States object to the measure, and

now Mr. Cleveland has written a letter in which he makes a formal expression of his agreement with those who believe that the greatest peril to the country would be invited by the adoption of the scheme embraced in what is known as the free coinage of silver bill. The free silver Democrats in Congress constitute more than ninety per cent. of the party representatives there; and the impression prevails that Mr. Cleveland's *faux pas* will cost him the Presidential nomination.

MR. WILL CLARKE, formerly of Bolton, England, but now employed in a cotton mill at Bengalore, India, has written a letter home giving some interesting particulars about labor in the mills at that place, some of which are reproduced in the *Manchester Textile Mercury*. He says: "I have not seen a white face since October; all here are black as night and almost naked. We work from light to dark. Sundays too (no Factory Act here), and we only stop the engine a half hour for dinner. Our hands only get on an average six annas per day, which is equal to five pence." Great Britain will not permit India to levy an import duty upon cotton goods manufactured in Britain, and until recently Britain supplied about all the cotton goods consumed in India. But now India is manufacturing her own cotton goods with labor costing but ten cents per day, and the British laborers who formerly found employment making cotton goods for the Indian market are in idleness, forming a large contingent of that submerged tenth of Britain's population so graphically described by General Booth in his *Darkest England*.

AMERICAN military experts are testing nickel steel. Some think it might be used to advantage in covering the armored forts which are taking the place of earthworks. The experiments of the navy with nickel steel plates are likely to be renewed, it is said, in a few months. The *New York Commercial Advertiser* says: "The very small percentage of nickel used in the alloy that has proved its superiority over compound armor will not necessitate our looking to foreign sources of supply, and our steel makers are quite confident of their ability to produce a satisfactory material." Yet some of the Tory papers in this country are still clamoring for an export duty on nickel ore as if we had an absolute monopoly of it.—*Toronto Globe*.

The supply of nickel produced in the United States previous to the Annapolis experiments was not sufficient for the demands of ordinary business, and considerable quantities of the article were imported, paying a duty of \$300 per net ton. The Annapolis experiments demonstrated the value of nickel for armor plates, and also that it would speedily come into large demand for commercial purposes. If the Yankees can supply themselves with all the nickel they require, why don't they do it? Why did they remove the duty from nickel ore? Canada has the bulge on nickel. Impose the duty.

It is no secret in political circles here that ample provision of a financial character has long since been made for the present contingency, and that there is a perfect understanding between the Liberal Governments of Quebec, Ontario, New Brunswick, Nova Scotia and Manitoba to act in concert and throw all their united resources against Sir John Macdonald and his Cabinet at any given moment.—*Montreal Witness*.

History repeats itself. A few years ago, the Governments of the Southern States of the American Union made ample

provision and had a perfect understanding to act in concert and throw all their united resources against President Lincoln and the Government of the United States. The result of the conspiracy is now recorded in history. Is Canada to furnish a parallel? Are Jeff Davis, W. L. Yancey, Bob Toombs and the others of the fire-eating Southerners to be reproduced in Canada by Cartwright, Laurier, Farrer and the others of the gang who desire, under the banner of unrestricted reciprocity, to annex Canada to the States? What else does the threat imply? If the treasonable revolution is successful the traitors may become patriots, and Cartwright may become a Senator for the State of Ontario, but if they champion a "Lost Cause," it may go harder with them that it did with the Southern rebels.

PREMIER MERCIER is a Grit patriot who places much dependence upon a liberal distribution of boodle. At a banquet held last summer in Quebec, to celebrate a political victory, he made a speech in which he declared for what he called a "push and progress" policy. He said he would fill the Province with public buildings and religious institutions, build railways in all directions, throw fine iron and steel bridges over every creek and watercourse, and construct highways through the trackless forests in the regions of the North. This policy, he declared, was essential in order to advance race interests. Of course public buildings, religious institutions, railways, bridges and highways cost money, and it was in carrying out this policy Mr. Mercier proposed to expend ten million dollars. In fact, he had arranged to proceed to Europe to negotiate a loan for this amount, when the Dominion Parliament was dissolved and writs issued for a new election. This event disconcerted Mr. Mercier's plans, for he suddenly abandoned his foreign trip and announced that as Premier of Quebec he would throw himself into the election fray and do all he could to defeat Sir John and to put Sir Richard in power. A more barefaced scheme for boodling and corruption was never set afoot, even by Boss Tweed in his palmiest days, than that proposed by Mr. Mercier.

A most unusual event occurred in Toronto last week. A crowd of a couple of hundred persons, said to be laboring men out of employment, formed themselves into a procession, and with a black flag, upon which was inscribed "Work or Bread," marched to the city hall and demanded of the mayor that they be put at work on the streets or elsewhere, so as to enable them to obtain the necessary comforts of life. The movement was entirely of a political character, or rather was gotten up by Grit politicians for the purpose of reflecting upon the policy of the Government and of influencing the forthcoming election. Most of the paraders are known to be professional bummers, hired for the occasion. No doubt there is more or less distress prevalent in the city at this time, as there is every winter, but there is no unusual amount of suffering or unusually large number of sufferers. All large cities are afflicted in this manner; but the Grit politicians took advantage of the opportunity to create a demonstration, alike disgraceful to them and unfortunate for Toronto. No doubt there were a number of worthy but unfortunate and destitute men in the procession, but these comprised but a very small fraction of the whole.

If the distress among the laboring classes of Toronto is to be attributed to protection, to what, other than to free trade, shall be attributed the fearful distress among the tens of thousands of England's unemployed at this time?

ONE of the facts that have come out in connection with recent enquiries into the condition of the poor of London is that of the migration of labor from the country to the metropolis. Farms all over England are uncultivated at the present time for want of tenants, and are to be obtained in many cases at a very small rental. The proximity to good markets, and the many advantages of many of these lands, would seem to recommend them to people accustomed to make the best of things, and to encounter hard work with persistence like, say, our Canadian farmers.—*Toronto Mail*.

GENERAL BOOTH, of the Salvation Army, speaking of the distress prevailing in Great Britain, says that one-tenth the population is submerged in pauperism. It is estimated that at this time there are a hundred thousand unemployed workmen in the city of London alone, and deaths from suffering and privation are of frequent occurrence. As the *Mail* points out, there is a constant migration of population from the farming section to the cities. This is because Free Trade has rendered British farming unprofitable and impossible. Those who once made their living tilling the soil are driven to the cities seeking employment. The labor market is congested and the people are starving. The products of the cheaper labor of Germany and France imported into Great Britain, are forcing the closing of mills and factories there, thus greatly accentuating the distress. The only hope that seems possible for the distressed British workman is the imposition of import duties upon foreign products.

FREE TRADERS assert with much positiveness that under free trade the foreign commerce of a nation grows more rapidly than the foreign commerce of a nation under protection. Facts afford a good test as to the truth of this assertion. The United Kingdom is the greatest free trade nation, and the United States the greatest protected nation. In 1850 the foreign commerce of the United Kingdom was \$942,695,380, and of the United States, \$317,885,252. Ten years later, in 1860, the foreign commerce of the United Kingdom was \$1,825,191,648, and of the United States, \$687,192,176. The percentage of increase of British trade for the decade was 93.61 per cent., and of American trade, 116.21 per cent. The increase of American trade was 22.6 per cent. greater than the increase of British trade. In 1870 the trade of Britain was \$2,663,620,718, and of the United States, \$917,794,421. The great rebellion in the United States occurred in this decade, and the increase in British trade was 45.99 per cent. against only 35.56 per cent. for the United States; but it will be observed that the trade of the latter country in 1870 was almost equal to the trade of the former in 1850. In 1888 the trade of Britain was \$3,336,086,844, and of the United States, \$1,417,172,421; an increase of 25.25 per cent. for Britain and 54.41 for the United States. In 1889 British foreign trade amounted to \$3,616,930,121, and American trade, \$1,597,628,312; and as compared with 1850 the percentage of increase for Great Britain was 283.68 per cent. and for the United States, 402.57 per cent.

MR. C. W. WELLINGTON, the sorghum syrup manufacturer of Grimsby, Ont., has been in Buffalo talking with the sugar refiners, and is enthusiastic over the encouragement he received to persevere in his new industry. He says that in conversation with a gentleman who has traveled all over the country in the interest of the *American Agriculturist*, the latter told him he had never seen syrup of equal sweetness and quality manufactured from sorghum cane. He strongly urges Canadian farmers to grow cane, and is confident that if they enter into the new industry with the characteristic Canadian zest, Canada can in the next two years supply her own market. *Buffalo Express*.

There is no shadow of doubt that the growth of sorghum and sugar beets in Canada, and the manufacture of syrup and sugar from them in sufficiently large quantities to meet the full demand for domestic consumption is entirely feasible. If these enterprises should be engaged in by Canadian farmers they would do well; but the manufacture of syrup and sugar could not prove a success for some years unless it was protected by the tariff. The United States pay a large bounty—two cents a pound we believe—upon the domestic production of beet sugar, and Canada is quite as well adapted to the growth of that crop as that country. Under the change of Government—if Mr. Cartwright should accede to the Premiership—there would be no duty protecting the industry, and with Unrestricted Reciprocity Canadian farmers, without a bounty, would be at a sad disadvantage in their competition with American farmers. Indeed, there could be no competition. Under a Cartwright Government, Mr. Wellington, of Grimsby, would be forced to abandon the sugar factory, and the farmers of Canada could never grow crops of sorghum or sugar beets.

A DISPATCH from Ottawa says that Mr. S. J. Ritchie, of Akron, Ohio, has had another conference with the Government respecting his scheme for the establishment of nickel steel works and the building of a railway to Sudbury, and that Mr. Ritchie expresses satisfaction with the progress of the negotiations. Of course what took place at the conference is only known to those who were at it, but it is safe to say that Mr. Ritchie got no assurances of assistance whatever. Why should the Government grant a large sum of money and an annual subsidy to a foreigner when Canadians can be found willing to do more than Mr. Ritchie promises to perform on much better terms? Mr. Ritchie and the men behind him want all of Canada that they can get, but they will find that they will not get much they do not make a full return for. They own the principal nickel deposits and are carrying the ore out of the country to refine it in Ohio, and they may consider themselves lucky that they have that privilege. On their side of the line they would not think of allowing a company of Canadian capitalists to operate like that, and Mr. Ritchie must not be surprised if he should one of these days find an export duty against him in the tariff list, and then whether he gets a subsidy or not he will have to move his nickel factory into Canada or pay duty on the ore.—*Toronto Evening News*.

WE cannot conceive why there should be any difference between foreigners and Canadians when discussing Government assistance towards the establishment of important industrial works in Canada. The care should be that the assistance rendered goes towards the establishment of the works in Canada and not elsewhere. We have not yet heard of any proposition from Canadians or others who propose on any terms to do as much or more than Mr. Ritchie has proposed. If there are any such the *News* should disclose the facts. It goes with-

out further comment that Canada should impose an export duty on all nickel ore and matter taken out of the country. Impose the duty.

## SPECIAL ADVERTISEMENTS.

Advertisements will be accepted for this location at the rate of two cents a word for the first insertion, and one cent for each subsequent insertion. Subscription \$1.

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

WEST TORONTO JUNCTION'S ENTERPRISES.—The ten large factories which have located at West Toronto Junction during the past three years are all doing large trades. The "Barnum Iron and Wire Works," the "Toronto Rolling Mills and Forging Company," and others about to locate will swell the paying industries of the town and augment its population. A large number of fine residences and business blocks have added to its appearance and to its facilities for supplying the people's wants. A perfect fire alarm system, (the "Gaynor") and an efficient system of water-works, both now in operation, with sewers, electric lights, and improved streets now contemplated, will add to the protection and the comfort of the people and their houses. Free sites, free water, and exemption from taxes are inducements offered to first-class manufacturers, and it is now acknowledged by all that Toronto's western suburb, with its great continental railway connections, is destined to be among the most prosperous cities of Canada. Dr. Carleton is Chairman of the Factory Committee.

"IRON-WORKING with Machine Tools" will be the special topic of the March article in the American Industries Series that the *Popular Science Monthly* is publishing. This division of the series is to conclude with an account of the steel manufacture.

THE *Montreal Gazette* has sent us "The People's Almanac," which is, in addition to the matter usually found in almanacs, a compilation of facts and figures for the consideration of the electors of Canada. Considering the fact that a general election campaign is now in progress, and that politics will be red hot until after the fifth day of March, this publication is exceedingly handy.

A MAGAZINE of the size of *The Ladies' Home Journal*, which has just reached a monthly circulation of 600,000 copies, requires a good deal of room; another four-story building is to be occupied next month, in addition to the two now in use. The growing popularity of the *Journal* has also overtaken the capacity of the nine large presses, and twelve new ones of latest improved pattern are awaiting the completion of the new quarters.

"It is undoubtedly true that racing canoes are now sailing much faster than ever before," says that old-time canoeist, C. Bowyer Vaux, in *Outing* for February. "The canoes are also much safer than they were a few years ago, and are so arranged now that even an upset will not delay them long enough in a race to prevent the unfortunate winning, unless very closely pressed at the time of the accident. Upsetting is not an accident that is considered in the least serious, but a parted line or broken spar is always dreaded."

PROF. DRUMMOND'S famous address on "Love: the Supreme Gift," sometimes called "The Greatest Thing in the World," which has had a wonderfully large sale at 35 cents a copy, and has undoubtedly done a great deal of good, is now published by Alden, unbridged, in large Pica type, for three cents! It ought, now, to circulate by the million. The same publisher issues Drummond's "Natural Law in the Spiritual World," in large type, fine "half-seal" binding, for 35 cents, plus postage, 10 cents. These are two items characteristic of the 132-page catalogue, which is sent free on request, by the publisher, John B. Alden, 393 Pearl Street, New York.

THE issue of the *Illustrated American* for the week ending February 14th is of exceptional interest. Among other timely portraits it presents excellent likenesses of the late Secretary William Windom, of the Treasury of the United States, and of Senator Arthur P. Gorman, whose prominence in public affairs has been increased so enormously by his splendid fight against the Force Bill in the Senate. Then, that portion of the public who are not fanciers as well as the large portion who are, cannot fail to be interested in the types of feathered aristocrats in the way of highly-bred chickens, ducks, turkeys, pigeons, etc. which are given in the illustrations of the poultry show now in progress at the Madison Square Garden in New York. An account of a young, vigorous and growing section of the United States is given in an article on the wonderful resources and prospects of Montana, Elaine Goodale and the educated Indian she is to marry; an illustrated article on William M. Chase, the artist; a review of the rise and decline of the American merchant marine, and the misfortunes that have pursued the royal family of Belgium during the present century, are the subjects of other articles of more than ordinary interest, both as regards the letter press and the illustrations.

WHAT WILL BE THE IRON ORE OUTPUT OF 1891?

Will the product of 1890 mark "high tide" in the history of the Lake Superior iron mines? One thing seems certain: that the output of 1891 will fall considerably below that of the year just closed. For the shipping season of 1890 the shipments from Lake Superior ports aggregated 8,143,146 tons. The rail shipments are estimated at 750,000 tons, making the total output of the mines 8,893,146 tons. That this enormous aggregate will be even approached in 1891 seems extremely improbable. Nothing in the present aspect of the market points to such a thing. With the blowing out of sixteen furnaces in the Mahoning and Shenango valleys, having an annual capacity of 990,000 tons of pig iron, and with the wholesale laying off of iron miners, in some instances reaching 75 per cent. of the regular force employed, there is every reason to believe that this year will witness a marked falling off in production. And this is both wise and business-like. That there was a heavy overproduction in 1890 everybody knows, and that restriction is now the best policy is only too evident. The business of mining and marketing iron ore should never have degenerated into a mere race for the largest production, as it seems to have done in some quarters, but should be regulated by the all-prevailing laws of demand and supply. Prices, too, will have to seek a more normal level, and the whole business put on a more steady and enduring basis. We are aware that it is very easy to preach homilies to the trade, but there is nothing like stern facts to enforce much-needed lessons.—*Cleveland Iron Trade Review.*

WIRE NAILS FROM STEEL PLATE.

A PITTSBURGH iron and nail manufacturing concern has fitted up an attachment to its steel-plate nail mill, by which it is claimed wire nails can easily be made. Hitherto this has been regarded as impossible, but a reporter of the *Western Manufacturer*, who witnessed the operation of the new device, was enlightened as to the process, and thus describes it; One of the long row of nail-plate machines, out of scores now standing idle, has been fitted with the new arrangement. The self-feeder has been removed, and in its place is substituted an ordinary wire-nail machine feed, operating from the left side. The bed-plate, gripping and heading dies remain as in the old machine, but from the clamp at the back is attached an arrangement for cutting and pointing the wire, similar to the manner in which this process is done in regular wire-nail machines. It is said the adapted machine turns out perfectly

formed nails at the rate of 250 a minute; that the heading die performs its work better than that of the regular wire-nail machine. The heading arrangement of the latter works from above, and fashions the heads with a quick blow. The heading die of the transformed nail-plate machine works from the right-hand side, and works the heads with a more gradual motion. The nails are seemingly thoroughly well made, well pointed, and with large head, and without any indication of splitting. By changing the space block 4, 6, 8 and 10-penny sizes can be made. The alteration of the plate-nail machine to the wire-nail producing form is quite simple and can be done in thirty minutes, and its capacity for wire nails is said to be from forty to fifty per cent. greater than the ordinary wire-nail machine.

THE ENERGY OF A BLAST FURNACE.

FEW persons save those connected with the manufacture of pig iron are aware of the enormous and insatiable appetite of one of the largest blast furnaces; and the figures hitherto given fail to convey an adequate idea of the immense quantity of materials that pass through such a furnace, and it is only when the total daily amount of these materials is considered that the tremendous igneous activities constantly at work in that combination of hurricane and volcano—a modern blast furnace of the first class—can be fully appreciated. Such a furnace will have passed through it in twenty-four hours the following materials:

Ore.....	1,263,360	pounds or	564	gross tons.
Coke.....	990,384	" "	442	" "
Limestone.....	353,741	" "	158	" "
Atmospheric air (blast)	2,331,840	" "	1,041	" "
Totals.....	4,989,325	" "	2,205	" "

which is equal to ninety-two tons per hour, or 1.53 tons per minute. From this quantity of materials there will be produced in twenty-four hours 784,000 pounds or 350 gross tons of pig iron, which is at the rate of 32,666 pounds or 14.57 tons per hour, or 544 pounds per minute.

Heating the 25,000 cubic feet of air supplied per minute to a temperature of 1,200° Fahr., its volume would be increased to 85,000 cubic feet; and, on the supposition that the furnace is blown by seven tuyères, each seven inches in diameter, this torrid air would rush through each tuyère (under a pressure of nine pounds per square inch) at the rate of 12,143 cubic feet, and having the enormous lineal velocity of 45,417 feet per minute. The velocity is over five times that of the most violent tornadoes, and the pressure is more than twenty-five times greater. Should a blast of equal pressure and velocity come from unfathomed space and envelop this earth, it is absolutely certain that no living beings or loose materials would be left upon its rock-ribbed skeleton, which, stripped of its flesh and blood, fields and forests, lakes and oceans, would be hurled into a new orbit and made to assume revolutions and rotations whose amplitude and duration it is impossible to imagine or describe.—*Popular Science Monthly.*

INVENTIVE TALENT.

THE fact that American manufactured goods, made by high-cost labor, are often sold at prices as low as those that are demanded in countries where labor is cheap, is largely due to the astonishing fecundity of American inventive talent. All the great labor-saving inventions, in this and other lands, have been produced under the patent system, which is a most rigid form of protection. By far the largest number of these inventions, in recent years, have been the production of Americans. The reason for this is, not that Americans are the most ingenious people in the world, but, first, that the high price of labor here has been an inspiration to the preparation of devices for saving labor, and, second, that our Government has the most liberal patent laws that are to be found anywhere. In 1889 more than 22,000 patents were issued at Washington to Americans. An examination of these will show that the great bulk of the patentees live, as might have been expected, in the States in which manufacturing industries are most largely carried on. Thus, while Alabama took out only seventy-six patents, or one to every 16,611 of its people, Massachusetts, with not much larger population, took out 2,042 patents, or one to every 873 of its people. Connecticut has just about half the population of North Carolina, but Connecticut took out 889 patents, or one to

every 700 of its people, whilst North Carolina took out but seventy one patents, or one to every 19,714 of its people. New Jersey and Mississippi have almost precisely the same number of inhabitants, but, while New Jersey took out 1,061 patents, or one to every 1,066 of its people, Mississippi took out but forty-eight patents, or one to every 23,574 of its people. Rhode Island has hardly more than one-fourth the population of South Carolina, but Rhode Island took out 248 patents, or one to every 1,115 of its population, while South Carolina took out only sixty patents, or one to every 16,592 of its people. These facts and figures show that inventive talent obtains its impulse and its inducement from active industry. The men actually engaged in productive industry are the men who devise methods of making that industry more productive. Therefore, we do in fact owe American labor-saving inventions, and the continual movement towards other means of reducing the amount of human toil and the increase of wealth, to that protective tariff system which has permitted the manufacturing industries to be built up in this country. If Alabama had availed herself, as Massachusetts has done, of the advantages offered by the tariff, her record as a contributor to inventions would be as good. If the northern manufacturing States had lagged behind, under a system of Free Trade, as Alabama has done, the whole human race would be far poorer than it is in labor-saving devices.—*The Manufacturer.*

THE PROPERTIES OF NICKEL STEEL.

THE contemporaneous researches of English and French metallurgists—notably Mr. Riley, Glasgow, and M. Schneider, Creusot—upon the effect of nickel on steel, have had results which seem likely to profoundly influence the future of steel-making. The extraordinary qualities of ferro-nickel have been brought prominently before the metallurgical world by the tests recently undergone in the United States by the Creusot nickel-steel armor-plates, and as the outcome of that success it appears that the manufacture of nickel-steel will at once be entered upon on an extensive scale. Now that the existence of enormous deposits of the metal has been demonstrated in Canada, the only difficulty is the economical and efficient reduction of the ores. This is claimed to be achieved by a French metallurgist, M. Garnier, who has elaborated a process by which sulphur is completely eliminated from the metal. M. Garnier has, it is stated, concluded a contract with the Canadian nickel mine owners to erect a large smelting works, in which this process will be practically carried on. In this aspect of the nickel-steel question, any information as to the actual composition and capacity of the alloy must be of interest. Such information has just been supplied by M. Charles Walrand, a well-known French steel-works engineer, who claims priority over M. Schneider for the idea of applying nickel to the constitution of armor-plates. The composition of M. Schneider's plates, as well as the special operations of tempering and annealing which are employed in their manufacture are, of course, a trade secret. But M. Walrand gives the composition of the material with which experiments were made, so far back as 1885, at the works of the Société des Forges de Montataire. These experiments were made with the idea that ferro-nickel might be used as a substitute for copper and "white metal" in nearly all its applications; and it was as the result of the information therein obtained that the employment of nickel-steel in armor-plates, ordnance, etc., was suggested to the directors of the Ferro-nickel Company and the Creusot Works. The composition of the alloys from which specimens were rolled and tested at the Montataire Works was: carbon, .15 and .05 per cent.; phosphorous, .02 and .04; sulphur and silicon, traces; manganese, .50 and .04; nickel, 25.00; and iron, 74.00. From this metal results were obtained in the testing-machine which were quite foreign to the views up to then entertained upon the characteristics of steel. In round pieces of six inches, turned to 4½ inches, a resistance of 197 pounds and an elongation of nineteen per cent. were obtained before tempering, while the results obtained after tempering were: resistance, 179 pounds; elongation, 29.5 per cent. In flat pieces of seventeen cm. by six cm. the resistance for both the tempered and non-tempered metal was less, but the elongation was forty and thirty-three per cent. respectively. With round pieces of 10½ inches, turned to 4½ inches, not tempered at all, the resistance was 196 pounds, and the elongation 43.5 per cent. Other round specimens of 4½ inches, which were tested without being turned, showed resistance of 152 pounds and 160 pounds, and elongation of thirty-seven and forty per cent. M. Walrand does not attempt to deprive M. Schneider of the merit of having pursued his own researches independently of those conducted by the Montataire Company. The main interest of his statement lies in the evidence

which it gives of the peculiar properties of steel and nickel when combined in the proportions given above.—*Parisian correspondence to the London Ironmonger.*

AGRICULTURAL PRODUCTS.

VALUE OF EXPORTS FROM THE UNITED STATES.

THE Annual Report of the Chief of the Bureau of Statistics on the Foreign Commerce of the United States, for the year ending June 30, 1890, issued by the Treasury Department at Washington, contains much interesting information on the above subject. On page 34 the following figures are given, showing the exports for the above year, as follows:

ANIMALS.....	Cattle.....	\$31,261,131	
	All other.....	2,376,997	\$32,638,128
BREADSTUFFS..	Corn & corn meal..	\$43,554,894	
	Wheat & wheat flour	102,312,074	
	All other.....	9,059,959	154,926,927
FRUIT.....			4,059,547
PROVISIONS....	Meat products.....	\$123,182,650	
	Dairy ".....	13,081,856	136,264,506
SEEDS (not medicinal).....			2,637,888
VEGETABLES.....			1,357,065
			\$332,884,091

A comparison of the range in prices in United States and Canadian markets for the last four or five years, shows that prices in the United States have been higher on horses, young cattle and sheep, barley and eggs, but higher in Canada on wheat, flour, corn, oats, beef and pork products, clover and timothy seed, fruits, etc.

From the great value of the exports from the United States it is evident that under free trade between the two countries, Canadian farmers would have more reason to dread competition than to expect improved prices for their principal products. The consumers in the cities and towns of both countries would be more likely to benefit than the farmers of either country. The strength of the argument in favor of free trade in natural products is found in the difference in the seasons and the nearness of many markets in each country to the sources of supply in the other. As these reasons have equal force in both cases, it is not likely that the relative proportion of aggregate purchasers would vary materially from the present proportion.

The trade demand for Canadian horses is decreasing, not so much because of the McKinley bill as by the substitution of electric power for horses on street railways in American cities. The demand for Canadian barley is diminishing on account of the increased acreage and improved quality of the barley raised in the United States.

The trade in eggs is not altogether a profitable one for Canada. Both last winter and this the prices for this commodity have been materially lowered in this country by large imports from the United States. In the winter of 1890, 89,640 dozens of eggs were brought in from that country into Toronto alone, and during this winter 67,500 dozens have been imported up to the 7th inst., and have completely ruined the farmers' home market during the few weeks when they usually obtain high prices.

This season it cannot be said that the farmers are being benefited by the National Policy in the prices realized for their wheat or oats, but in the preceding four or five years they were largely benefited. The producers of corn and pork have been and are now being greatly benefited by the duties on these articles.

With free trade in cattle, farmers would in all probability lose their valuable privileges in shipping live cattle to England. It is absurd to argue that the danger could be avoided by any quarantine regulations, as after imported cattle were relieved from quarantine it would be impossible to discriminate between the imported and native cattle, and the privilege granted to us by England in for speech in Wisconsin, Mr. Rusk, Secretary of Agriculture for the United States, said that the American Government were using every effort to secure this privilege for their live cattle, a privilege which he estimated as equal to \$8 to \$10 per head.

On page 25 of the Annual Report above referred to, Mr. Brock, Chief of the Bureau of Statistics, makes the following remarks with respect to the importance of

#### THE MARKET IN ENGLAND AND EUROPE.

"Our exports of domestic merchandise during the period from 1860 to 1890 increased from 316.2 millions to 845.29 millions, an increase of 167 per cent.; to Europe, from 241.2 millions to 677.3 millions, an increase of 181 per cent."

"Attention is called to the marked increase in our exports to the United Kingdom and Germany, our exports to the former having increased from 166 millions in 1860 to 444 millions in 1890, that Kingdom having taken 52.5 per cent. of our exports in 1860, and 52.8 per cent. of our exports in 1890, or one-half of the exports of domestic merchandise from the United States to all countries. The value of exports to Germany increased from 12.68 millions in 1860 to 84.3 millions in 1890."

There are important facts for the guidance of the Canadian Parliament. It seems unaccountable that a political party should adopt for its policy, a system of exclusive trade with the United States, which country is itself so largely dependent for a market on those very countries whose custom the farmers of Canada are being taught to despise and alienate.

The following statements as to the actual value of horses, mules, milch cows, cattle, sheep and swine ought to enlighten our farmers a little as to the real value of the American cattle market.

#### OFFICIAL CATTLE STATISTICS.

WASHINGTON, Feb. 10th.—The estimates of numbers and values of farm animals, made at the end of each year, and returnable in January to the Department of Agriculture, have been consolidated. There appears to have been little change in numbers except on the Pacific coast and in certain portions of the Rocky Mountain area, where the winter of 1889-90 was unusually severe. Losses were especially heavy on the Pacific slope.

The number of horses on farms, as reported, is 14,056,750. Average price of all ages, \$67, a decline from last year of \$1.84.

The number of mules is 2,296,532, having an average value of \$77.88, a decline from last year of 37 cents.

The number of milch cows is 16,019,595, an increase of 66,708 from last year. The average value per head is \$21.62, which is less by 52 cents than last year's average. There is a tendency to increase of dairying in the south, especially in the mountain region which offers inducements of cheap lands and abundant grasses.

Other cattle aggregate 36,875,648, including those on ranches. The highest value is \$28.64 in Connecticut; the lower \$8.46 in Arkansas. In Texas the value is \$8.89.

The estimated number of sheep is 43,431,136. The average value is \$2.51, an increase of 24 cents or more than 10 per cent. All other kinds of farm animals have declined slightly in price. A tendency to increase of numbers is seen in most of the States, through the heavy losses from the severe winter of last year on the Pacific slope have decreased the aggregate.

The aggregate number of swine is 50,625,106, showing a decline of nearly 2 per cent. The average value is \$4.15, a decrease of 57 cents per head. The scarcity of corn caused a slaughter of stock hogs in poor condition, tending to glut the market and reduce the price temporarily.

One more fact culled from the Annual Report of the Statistician at Washington deserves notice. He shows that the year ending June 30, 1889, the value of the imports of merchandise into the United States, amounted to \$745,130,000 or about \$12.00 per capita. The Trade and Navigation returns of Canada show the value of imports into the Dominion \$109,673,447, or about \$21.00 per capita. If the United States is increasing in wealth by such rapid strides as our clear Grit orators assert, and if Canada, with its much lower tariff, is in a state of arrested development (à la Cartwright) surely the reasonable inference is that the high protective tariff of the former has been the cause of its prosperity by enabling it to manufacture a much larger proportion of the commodities which it consumes.

The Jenckes Machine Company, Sherbrooke, Que., who had applied to the corporation of that town for a loan of \$50,000 and exemption from taxes, have withdrawn their request. The city council offered a bonus of \$10,000 and exemption for twenty years to the company, which was refused as too small, but the committee named for that purpose on visiting the works, and becoming acquainted with the scale of the contemplated improvements, expressed a determination to recommend to the council the passing of a by-law granting the aid previously asked.

## Manufacturing.

This department of the "Canadian Manufacturer" is considered of special value to our readers because of the information contained therein. With a view to sustaining its interesting features, friends are invited to contribute any items of information coming to their knowledge regarding any Canadian manufacturing enterprises. Be concise and explicit. State facts clearly, giving correct name and address of person or firm alluded to, and nature of business. Subscription \$1.

THE Collinsby Rafting and Towing Company are building a powerful steel steam tug at Kingaton, Ont., the plates, machinery, etc., for which are being imported from England.

SHEPHERD'S Carpet Works, in Paris, Ont., are getting up a fine lot of patterns in carpets. They have first-class workmen and the whole is under the supervision of a superintendent who is an expert in that line of business.

MR. W. CLARKE has begun the manufacture of pearl buttons in Berlin, Ont. Mr. Clarke has had a large experience in this particular line in Great Britain. The works are large and will be fitted up with the newest and most improved machinery.

THE Calvin Company, Kingston, Ont., are building a barge for the lake trade of the following dimensions: length, 200 feet; breadth of beam, 37 feet, depth of hold, 16 feet. She will have capacity to carry 1,650 tons of freight through the Welland Canal.

THE British Columbia Sugar Refinery, Vancouver, B. C., turned out its first sugar on January 19th and has begun the manufacture of all grades of refined sugar with a daily output of 150 barrels. This concern is equipped with the most approved machinery with capacity to produce 250 barrels per day.

MR. IRA B. FOLGER, Kingston, Ont., has recently launched a fine new steamer for the St. Lawrence River excursion business. The engines and boilers of the steamers *Islander*, *Maryland* and *St. Lawrence* belonging to the Thousand Island Steamship Company, are receiving large repairs and alterations.

THE ship *Titan*, of Boston, recently cleared from Vancouver, B. C., loaded with 782,000 feet of rough lumber from the Hastings saw mill at that place bound for Wilmington, Del. The lumber is for the U. S. Navy. This shows the superior value of British Columbia lumber for use in ship building.

THE Maritime Chemical Pulp Company's mill will have its capacity doubled when it resumes in a few weeks. Two new digesters, in which the pulp is boiled in a chemical solution, are going in, and the old ones are being relined with cement, lead lining having been discarded after a fair trial.—Chatham, N. B., *World*.

BORING for oil was recently commenced on Lalonde's farm at Conber, near Windsor, Ont., and on January 15th a strong flow of natural gas was struck at a depth of only 140 feet. The flow is said to be nearly equal to that of the great gusher at Kingsville, Ont. The well belongs to Messrs. Samuel Rogers & Sons, Toronto.

WE learn that the recently organized Kerr Vegetable Evaporating Company have received an order from the British admiralty office for the supply of nearly 10,000 lbs. of evaporated vegetables for the British navy. The company are at present receiving large orders from the United States and Upper Canada.—Kentville N. S. *Star*.

THE Kerr Engine Company have received instructions to make very extensive alterations in the machinery of the steamer *Empire*, of the North West Transportation Company, of Sarnia. The *Empire* is the sister ship of the *Monarch* of that line, whose engines were built by Kerr Brothers, in Walkerville, last year.—Walkerville, Ont., *Mercury*.

THE Adams Bros., from Paisley, Scotland, have commenced the manufacture of woven coverlets in Paris, Ont. They are now supplying the trade through some of the leading wholesale houses in Toronto, and experts say that the spreads are far in advance of anything hitherto manufactured in Canada, both in design and workmanship. The dyeing is done by a Hamilton works and is first-class.

THE Edison General Electric Company, in Canada, of which Mr. M. D. Barr is manager, have taken a large four story brick building on Bay Street, between King and Wellington streets, Toronto, where they will have their general offices. An enlargement of the company's business will include the carrying of a large stock in their new quarters of all kinds of electric goods and appliances—dynamoes, motors, wires, fixtures, etc.



THE old boilers are being removed from the steamer *Corsican* owned by the Richelieu Navigation Company, to be replaced by new boilers now being built at Toronto, by the John Doty Engine Company. The Kingston Foundry Company have the contract for furnishing these boilers and compounding the engines of the steamers *Corsican* and *Spartan*. Both these boats are large sidewheel steamers and \$25,000 will be spent on them this winter.

THE Brooks Manufacturing Company, manufacturers of electric light carbons, Peterborough, Ont., have contracted to supply the Royal Electric Company, of Montreal, with their entire requirement for carbons. The contract will average \$1,000 worth a month. Already one car load of 200,000 carbons has been shipped. These carbons are the equal in every respect of the best American goods. The output of the Brooks Company is over 10,000 carbons per day.

THE mill of the Columbia Flouring Mill Company, at Enderby, B. C., is 100 x 40 feet square and five stories high. It contains a full roller process of the most modern equipment, and was erected three years ago by the well-known firm of Goldie & McCullough, Galt, Ont., who also supplied the fine 75 h. p. Wheelock engine, by which the machinery is run. The boiler and engine are located a little distance from the mill in a brick building. The storage capacity inside the mill is 600 tons, and that of the warehouse adjacent 900 tons.

**ELECTRICITY IN CHAIN MAKING.**—The chain makers of the United States are awaiting to see what the developments will be in the chain welding machines which are expected on the market in sixty days. The Thomson Electric Welding Company say that by electricity it can weld steel chains, which has not been successfully done in the past. The electrically welded steel chain will weigh but two-thirds as much as the iron one now used, and its tensile strength will be fully as great. The steel used will also cost one-third less per pound than the best Norway iron now used in chains. In the past few days two large machines have been sent to the Brooklyn and Norfolk navy yards, to be used for shafting, boiler flues, stanchions, angle irons and miscellaneous work.

An improved sewing needle, recently patented, is worthy of mention, which secures the end of the thread in the eye, instead of having a running thread as in the case of ordinary needles. The eye of the needle is round or oval at the bottom, and tapers away chisel-shaped at the top or head, thereby causing sufficient elasticity at the top of the eye to hold the thread perfectly rigid. This invention does away with all cutting of the thread, which is the case with ordinary needles where a running thread is used. The object of this invention is to allow the cotton thread to be easily passed through the hole and pulled up toward the head, so as to fix the thread in the chisel shaped slit, and thereby prevent the thread from slipping out, as is the case with ordinary needles.

THE British Columbia Iron Works Company, Vancouver, B. C., are applying for incorporation for the purpose of manufacturing all kinds of saw mill, mining and marine machinery, agricultural implements, pumps, hoisting machinery, derricks, cranes, dredges, excavators, boilers, machine tools, safes and vaults, and generally to carry on a blacksmithing foundry, boiler-making and machine business in all its branches; to act as agents for the sale of machinery and machine supplies of all kinds; to build and repair ships and steamers and vessels of all kinds; to purchase, sell or lease any lands or premises, wharves or docks for the carrying out of the above purposes. The capital stock of the company is to be \$50,000. John G. W. Macfarlane, J. W. Campion, J. Whetham and Wm. Hickey are the incorporators.

MESSERS. BUTTERFIELD & CO., Rock Island, P. Q., manufacturers of taps and dies, will occupy their new factory about April 1st. The building is a 153x30 feet two story fire-proof brick and iron structure. This firm started in 1879 in a very small way, and their ever-increasing business has necessitated more commodious quarters and better facilities. They advise us that there has been no time during the past three years that they have not had to run a portion of their machinery overtime to fill orders. They also have a branch establishment at Derby Line, Vt. They desire to call attention to their new 80-page catalogue. This catalogue, in some respects, is an improvement on any list of its class ever issued. The arrangement of the tables for ready reference will commend it to all who have occasion to consult its pages. The company will mail a copy on application.

THE National Electric Tramway and Lighting Company, of Victoria, B. C., who now operate a considerable mileage of electric tramways in that city extending as far as Esquimalt, are making important additions to their plant, increasing the number of their cars and running them at less frequent intervals, and will also engage in municipal, commercial and domestic lighting. Most of

the cars have been manufactured by Messrs. Patterson & Corbin, St. Catherines, Ont. The additional power to be used by this company will be furnished by a 300 horse power Corliss engine now being built by the Albion Iron Works Company, Victoria. The Thompson-Houston system is being used, and hereafter the armatures and other portions of the electric apparatus will be manufactured in Victoria.

THE Penberthy Injector Company, Detroit, Mich., has achieved a world-wide reputation, as the manufacturers of the Penberthy automatic injector. This injector was not known prior to 1887, and although but four years have elapsed, they report sales to date between 39,000 and 40,000. It is used on the great lakes almost exclusively, also on traction and portable engines, and in all places where there is much jar or motion, its automatic qualities being such that the feed cannot be broken so but that it will start automatically. This feature, together with its simplicity of construction, the parts being removable without disconnecting the injector, and its entire reliability as a boiler feeder has achieved for it an enviable reputation. This firm also manufactures a jet pump that is, for its particular use, equal to their injector; also a very decided novelty in the shape of a spring covered oil cup. A detailed description of articles manufactured by them is condensed in one of the handsomest pamphlets ever shown to the steam using trade, and will be sent to any one interested, on application.—*Safety Valve*.

It is considerable work to maintain a supply of fire pails, and more work to keep them filled with water and in place; it is still more trouble to keep their contents from freezing and evaporating. The evaporation question is easily handled by placing a coating of oil on top of the water; fifteen or twenty drops are sufficient for a coating of oil which will prevent evaporation. It is unnecessary to place half an inch of oil in each pail, as this would only be an additional cause of trouble in case of fire. For winter use the pails may be filled with brine or a solution of muriate of ammonium. Both muriate of ammonium and chloride of sodium (common salt) will prevent water from freezing when held in solution therein. Each will do, but a mixture of both is much better. The trouble occasioned by hoops breaking off can be obviated by procuring special pails made of galvanized iron, which, having no hoops to break off, are always in shape. When troubled by employees removing pails from their hooks for the purpose of washing up or carrying water, it is well to have the iron pails made with a conical bottom, so that they will not stand up except in a hole made in the shelf which is to support them, and consequently are useless when placed upon the floor or bench.

THE Chignecto ship railway works are now well advanced, the roadway proper being about finished, about ten per cent. of two large cuttings being all that remains undone. The track is laid from the southern dock for thirteen miles, or to within four miles of the northern dock. The track, as previously noted, is an ordinary double track, laid with 110 lb. rails, 18 ft. between centres, with 9 ft. x 7 x 12 in. ties, laid 2 ft. centers, the two ties at each joint being 27 ft. long, to connect the two tracks, and thus preserve exact gauge for the cradle. The locomotives run on one track only of standard gauge, two locomotives being used for one cradle. There are no turn-outs, but traverse tables at each end; frog-less switches riding the rails being used for switching the locomotives. Rock ballast in inches under the ties, is used throughout. Work on the lifting docks is in a very forward state, so as to make it fairly certain that the work will all be completed in 1891. The pumping machinery at the southern end is in place, and the building for it completed; at the other end the same work is about half completed, and is likely to be completed by July 1st. At least 1,500 men will be employed on the works next summer.—*Engineering News*.

A NEW problem has appeared on the horizon of the electrical manufacturer. He has seen the need of the dynamo, the stationary motor, the railway motor, the welding machine and the hundred modifications as to the uses of these machines. But now comes the need, or at least the need is growing daily more apparent, for a modification of the form or method of assembling these standard forms of apparatus to meet certain strange requirements of transportation. Hitherto useless and trackless ravines and mountains now become important as possible possessors of valuable water-powers, which through the mystic agency of electricity can be put to some use, one, five, ten or more miles distant. Thus the need arises on the other hand, to put this electric apparatus into such shape that its usefulness may be of benefit; for all the showings made on paper of wonderful results in economy in the employment of electrical transmission of isolated water-power go for nothing, if the apparatus is so constructed that the means of transportation to the water-power, or point of its application, are inadequate.

Numbers of instances are coming to light daily wherein mule transportation alone can be employed. The average load in concentrated form which can be put on a mule is in the neighborhood of three hundred pounds. Consequently the manufacturer must so construct his apparatus that no one part shall weigh over this amount.

#### THE JOHN DOTY ENGINE COMPANY OF TORONTO.

The engine and boiler business carried on for a number of years in this city by Messrs. John Doty & Sons, has been incorporated by letters patent and is now merged into The John Doty Engine Company of Toronto, Limited. Mr. Daniel Hunter formerly of the firm of Messrs. Inglis & Hunter, will be vice-president of the John Doty Engine Company and will take charge of their outside business.

The Doty Company are very busy this winter and have contracts which will keep them busy for some months. They now employ two hundred men in their works on Bathurst street. They have lately erected a boiler shop 80 x 200 feet, and equipped it with the best labor saving appliances. Upon a visit to their works lately we were shown some large boiler plates, several of them being 30 feet in length, 9 feet in width and  $\frac{3}{8}$  inch thick. They were procured from the Lukens Steel Company, of Coatsville, Pa., and are claimed by the makers to be the largest plates ever manufactured. These plates are being used in the construction of two marine boilers for the steamer *Corsican*, of the Richilieu & Ontario Navigation Company.

The Doty Company are supplying seven tubular boilers of 125 h. p. each for the Toronto Incandescent Electric Light Company. They are also building a large marine boiler 12 feet in diameter, together with a compound marine engine with cylinders 20 and 36 x 32 inches for the Halifax & Lunenburg Steam Packet Company. Also a compound engine 22 and 40 x 30 inches, for Messrs. J. & T. Charlton, of Tonawanda, N. Y., for their tug *Charlton*, also a boiler for the same firm for their tug *Unaping*.

They also report several orders for steamboat machinery from British Columbia.

#### MICA.

In a recent issue of one of our American contemporaries reference is made to the fact that notwithstanding that the demand for mica had so increased of late, no corresponding activity was observable in its production within the limits of the Republic. In the construction of dynamos, motors and other electric appliances, mica plays an important part on account of its flexibility and insulating properties, and with the constantly enlarging sphere of electrical mechanics, a very large quantity is annually used. For these purposes the American article is unsuited, it being found to be inferior in cleavage and flexibility, the two great requisites, and the Canadian "amber mica" is in almost universal use. This is chiefly obtained from the mines of the British Canadian Mica and Mining Co., in the Township of Villeneuve, Ottawa County, Quebec, and of the Sydenham Mica and Mining Co., in the Township of Loughboro', Ontario, although considerable quantities are also taken out by small operators in the Ottawa Valley and Kingston districts. The United States Government, in its recent enactment of the McKinley tariff, has done all in its power to foster the industry by imposing a duty of thirty-five per cent. upon the foreign product; but even with this assistance very little improvement is noticeable in the output of the American mines, for the reason that, protected or not protected, it is not of sufficient quality and is not therefore wanted; and the only alternatives left to manufacturers of electrical apparatus are either increasing the cost of the machines or using inferior materials; and in this latter connection it is said that some have gone the length of using paper as a substitute for mica. Reference to a recent report of the U. S. Geological Survey discloses some statistics bearing upon the subject. The production of mica in the United States in 1884 was 147,410 pounds; in 1885, 92,000 pounds; in 1886, 40,000 pounds; in 1887, 70,500 pounds; and in 1888, 48,000 pounds. The value of the amount in 1887 was \$142,250, and of that in 1888, \$70,000. These figures show conclusively that the output is on the whole falling off. Compared with these are the imports of foreign (i.e., Canadian) unmanufactured mica, which for 1884 were \$28,234; in 1885, \$28,685; in 1886, \$56,354; in 1887, \$49,085; and in 1888, \$57,541. It must, however, be noted that in the imports of the last three years ground mica waste is included, an article which concerns about ninety per cent. of the product of the mines, and for which there is a steadily increasing demand in the manufacture of lubricants. It is evident, therefore, that left

to itself and unhampered by tariff restrictions, the trend of the American demand would be almost entirely towards the Canadian "Muscovite" and amber qualities; and even under the detrimental influence of a thirty-five per cent. duty, there will no doubt be a large consumption of it within the Republic, while the American mines will derive little or no benefit from a stimulant that may galvanize them into a short artificial life, but which can effect no permanent results upon an industry which lacks the essential element of filling a demand. Some one must pay the increased cost of the electrical apparatus or use inferior machines, and that some one is of course the purchaser, while many articles produced by electric power will be dearer, so that it appears as if no one would be benefited, but many injured directly or indirectly, by the mistaken zeal of the Ohio statesman.—*Mining Review*.

#### RUBBER BELTING.

The Canadian Rubber Company announce that they are the manufacturers and controllers in Canada of the Forsyth seamless belting as made in the United States by the Boston Belting Company; that they are now manufacturing this belting at their factory in Montreal, and that they are ready to meet all demands for it. This Forsyth patent includes an improved method of putting together heavy seamless rubber belting, which obviates all of the criticisms and possible defects to which the heretofore established methods are subject.

Rubber belting is usually made of cotton duck with frictioned rubber coating on both sides. The outer covering is butted, and a light seam of pure rubber applied to hold the parts together, the whole being then vulcanized under pressure. In the "regular" belting the inside plies are made as above described, but the outer surface of the outside ply is treated with an extra coating of rubber applied by heated callendar rollers, by which all the parts are united. The outside ply is then wrapped over the inner plies, butted, the seam applied and vulcanized under pressure. In making a four-ply belt two two-ply belts are first made with the butt joints placed on opposite sides from the centre of the belt, the seam strip being dispensed with, and the butted surfaces brought together and vulcanized under pressure. A six-ply belt is made substantially in this same manner. It is claimed that belts made by this process have a better union between duck and rubber, and are perfectly flat, as no seam strip is used; and it makes no difference, as in other belts, which side is run on the pulley. They will also bend more readily, having more and better applied rubber within and between the several plies than by other processes.

In connection with this matter of belts, the Canadian Rubber Company have issued a convenient little pamphlet containing suggestions for the transmission of power by rubber belting. Some of the facts relating to vulcanized rubber machine belting are: The perfect uniformity of width and thickness which it will retain; great heat will not injure it, and severe cold will not stiffen or diminish its flexibility, it being also particularly adapted to damp or wet places; it is of great strength and durability, and does not slip on the pulley, consequently a gain of power is obtained, and when properly adjusted to machinery does not require alteration as is the case with other material, and the cost of it is much below that of any other material used for belting. This little book (which will be sent free on application), contains a great deal of technical information regarding this subject which cannot but be of value to those who use belts for the transmission of power.

#### CHATHAM MANUFACTURING COMPANY.

The Chatham Manufacturing Company, Chatham, Ont., occupied two full pages in a recent issue of the Walkerville, Ont., *Mercury* setting forth and illustrating the merits of the wagons manufactured by them. Reference is made to their two-horse spring lorry, described as "the best and easiest running lorry made in Canada;" to their "Standard" wagon, "the handsomest, strongest and easiest running farm wagon in the world;" to the "Chautauqua" wagon gearing, in which is embodied "the greatest improvements in wagons made in 100 years," and to a dump cart which embodies some exceedingly valuable features. Other illustrations show machinery for tire setting and cooling, by the use of which there can be no more burnt felloes nor warped wheels; a box press capable of exerting a pressure of twenty tons by which a box is pressed into its place in the hub; an arm-setter, which performs a most intricate and important operation connected with wagon making

and a box setter in which the wheel is made perfectly true and which bores the hole to receive the box at the exact centre of the circumference of the wheel after the tire is set. Regarding the product of these works, we are informed that over 15,000 Chatham wagons are now in use giving unbounded satisfaction, "right across the continent from Halifax, N.S., to Victoria, B.C." Each department of this company's works is presided over by experienced and practical mechanics who are stockholders in the company, and the employment of as good wagon mechanics as the world affords. The company have two mills—a band saw mill for sawing short logs, and a gang saw mill for sawing ship plank and stock. They also have their own foundry where all their cast-iron work is made.

Regarding the excellence of the wagons manufactured by this concern, we find the following testimonial in the *Chatham Planet*:

A few months ago the Chatham Manufacturing Company received an order from the Oshawa Roller Mill Company for a 34-inch arm Chatham Wagon with the patent Chautauqua gearing, and with a box large enough to carry 100 bushels of wheat in bulk; and we take pleasure in publishing hereunder a letter in reference to the appearance, ease of running and great carrying capacity of this wagon as a sample of such verbal or written reports of the Chatham Wagon, as we are informed, are constantly being received by the Chatham Manufacturing Company; and therefore we proudly say "good for Chatham."

THE OSHAWA ROLLER MILLING CO.:

OSHAWA, ONT., Jan. 16, 1890.

CHATHAM MANUFACTURING COMPANY, Chatham, Ont.:

GENTLEMEN,—The wagon you made for our company reached us all right and we must say we are very well pleased with it.

We are drawing 105 bushels of wheat at a load, and even with that load it runs almost like a trotting wagon. If all your work gives as good satisfaction as this gives us, you ought to be able to run full blast the year through.

The wagon not only runs easy and well, but from the splendid way you painted and finished it, it makes us a splendid advertisement. One lady told us that when she first saw it she wondered what circus was coming to town, as she mistook it owing to the elaborate painting and decoration; so you see it not only draws us an immense load, but also makes us a capital advertisement as well.

Trusting that you will have a very prosperous year, we are

Yours very truly,

THE OSHAWA ROLLER MILLING CO.

#### VANCOUVER, B.C.

VANCOUVER, B.C., was called into existence by being made the Pacific terminus of the Canadian Pacific Railway. At the beginning of 1888 the population was only about 3,000, which at the beginning of this year had increased to over 18,000. Speaking of its growth and prosperity the *Telegram* of that city says that in no respect has Vancouver made such substantial advances as it has industrially. It was long felt that the city could not live by real estate and building operations alone, and that manufacturing industries were necessary not only to give employment to labor, but add substantially to its growth. The city for a time was slow in developing industries, but owing to the extent of public improvement, and the activity in building, the need of other employment for labor was not felt. Last year, however, a great advance was made, and numerous industries were inaugurated. During the year some twenty-eight joint-stock companies, with subscribed capital aggregating nineteen million dollars, were organized and set into active operation. The year previous not more than a quarter of million of capital was subscribed in the same way. The pioneer industry: lumbering, received a wonderful impetus, and now the saw mills, eleven in all, situated on Burrard Inlet and False Creek, have a daily cutting capacity of 700,000 feet, or over 200,000,000 per annum. The North Pacific Lumbering Company, a branch of the McLaren, Ross Company, erected a fine mill at Barnet, with a capacity of 100,000 feet daily for export trade principally. The Moodyville Saw Mill Company was thoroughly overhauled and repaired. Hastings Saw Mill was largely rebuilt and its capacity doubled. Both the Vancouver and Lumber Company's Mill and the Fader Bros' Mill have been placed on a sound financial basis, considerably extended and repaired, and are doing a prosperous business. The Canadian Pacific Lumbering Company has been organized with a capital of \$500,000. Export trade has only been fairly active, owing to higher rates of freight and scarcity of ships, but the foreign demand has been good. The output, on the whole, has been considerably increased. Allied with

the lumber industry is that of wood-working, and in this department of it there has been wonderful activity and a prosperous year. The Royal City Planing Mills doubled its output of manufactures in the past two years, and the increase was at least thirty per cent. during 1890. Cassady's sash and door factory, and Slater's shingle mill, the Manufacturing and Trading Company and Morse & Boggs have each been doing a good business. The Manufacturing and Trading Company's business is one of the industries belonging to the past year, and enters into the manufacture of furniture cooperage and a general line of manufacture of woods. Attention having been drawn to the British Columbia woods for the purpose of home furnishing, a considerable trade in manufactured woods of this class has been opened up with Eastern Canada, and this will doubtless grow to some magnitude. It is safe to say, therefore, that the invested capital in the lumber business has doubled since 1889.

Chief among the new industries is the sugar refinery, which had a speedy and successful completion. The nominal capital is \$500,000, capital invested, exclusive of site, \$175,000; it will employ about fifty hands at an annual wage of \$72,000, and the value of the output will be, when running full capacity, nearly \$2,000,000.

The British Columbia Iron Works is another scarcely less important. It will do a general foundry and machine business, making marine work a specialty. Practical men, interested in the concern, will be at the head of the various departments. The building and plant when completed will cost about \$35,000, and will be enlarged as accommodation is required. About fifty hands will be employed altogether. Another, perhaps more important for what it will lead to than for what it is, is the British Columbia Fruit Canning and Coffee Company, capital \$20,000. There are prospects of a large home consumption for its products, as well as an export trade of considerable proportions. It had a prosperous year for a commencement. The Manufacturing and Trading Company, already referred to, has a capital of \$100,000. A good business is already being done by the Vancouver Candy Company, capital \$25,000. The Dawson Baking Powder Company, capital \$25,000, is another. A tannery, reference to which is made in the building improvements, has been started in Mount Pleasant. Reference to the Telegram Printing and Publishing Company, which in its job and newspaper departments employs twenty-three hands exclusive of newsboys and pays a weekly wage of \$350. During 1890 also the Vancouver Foundry and Machine Works, which has had a most prosperous year, was reorganized and the capital increased. About \$150,000 is now invested in the business and fifty-five hands employed. The industries previously established have all had a good year.

Alluding to the fishing industry the *Telegram* says:—A start has been made in the fishery industry and operations on a large scale are expected to be undertaken early this year. During the summer the British Columbia Deep Sea Fishing Company, with a capital of \$100,000, was organized. It is the intention of the company to engage in deep sea fishing and will have well equipped steamers in connection, curing and drying apparatus, etc. Another company, somewhat allied to that set on foot, is the Vancouver Shipbuilding, Sealing and Trading Company. This will be the inception of sealing in Vancouver, and a sealer is now being fitted out to take her departure with the rest of the Pacific coast fleet. The capital of the company is \$200,000, and embraces shipbuilding on a larger scale than has yet been undertaken here. This should properly be included in the list of new industries. While on the matter of the fishing industry reference should be made to the Garry Point Salmon Canning Company, organized by local shareholders, and also to the fact that the headquarters of the Hobson & Co. canneries, which have been moved to this city, make four canneries now controlled here, another important advance.

The Vancouver Electric Light and Tramway Company was organized in 1890, and the electric lighting and tramway plant set in complete and successful operation. Vancouver is now well lighted with both arc and incandescent lights, and has three miles of street track laid and six cars running, the whole management and operation of the system giving complete satisfaction to the public. A further extension of five miles of track is contemplated for next season. Not less important was the successful negotiation of a company of strong local capitalists to connect Westminster with Vancouver by means of tramway. Work has been commenced at the Westminster end, and the connection will be completed next season, which will afford every convenience to passenger traffic to and from the Royal City. Another electric tramway line is talked of and the line surveyed between Vancouver and a point on Lulu Island opposite Ladner's Landing, which, if consummated, and there is every prospect of it being successful, will give direct and speedy communication with a very rich agricultural section and divert to this city the whole of its trade.

BRITISH COLUMBIA SAW MILLS.

The saw mills on Burrard Inlet, B.C., are reported as having done a prosperous business last year. The Hastings mill produced 14,600,000 superficial feet of lumber, valued at \$175,000. Shipped to foreign markets, 10,699,000 feet rough, 544,000 dressed, 107,000 pickets and 17,000 laths. Rail shipments were, 407,000 feet rough, 23,000 feet dressed. The local market consumed 1,953,000 feet rough, 388,000 feet dressed and 3,180 bundles shingles. Fourteen sailing vessels were loaded, with a tonnage of 16,863. The number of men employed at the mills was 150, and at the logging camps 150, seventy cattle and horses and one locomotive and two tugs for towing ships and logs. The wages paid by the company average \$150,000 per annum. Owing to certain alterations and repairs being made, the mill was in active operation only about six months.

The cut of the Moodyville mill for the year was: Lumber, 18,694,738 feet; 18,598 bundles laths; 81,108 feet pickets. Shipped to the following countries: Australia, 7,116,781 feet lumber, 14,500 bundles laths, 81,108 feet pickets; South America, 6,598,744 feet lumber, 4,098 bundles laths; China, 1,687,228 feet; United Kingdom, 872,038 feet; Local, 1,676,295 feet; China, per steamer, 300,429 feet; Japan, per steamer, 162,213 feet. Amount of wages paid monthly, \$5,000.

Morse's mill turned out 6,000,000 feet. The sash, door and blind factory, was running its full capacity all season. A shingle mill had been added with a capacity of 35,000 per day. Three saws with a capacity of 120,000 feet, were built and the steamer *Rowler* purchased, for the use of the company. The monthly pay sheet was \$50,000, with 220 names on it. About 2,000,000 feet of lumber from this mill went to South America. The capacity of the mill will be increased to 125,000 per day. The Royal City mills have a capacity of 45,000 feet, in ten hours, 40,000 laths, 30,000 shingles and 150 doors, and in addition mouldings, sashes, turned wood work and all kinds of house furnishings, are executed. A specialty is made of fine mantels from native woods. Employment is given ninety-five men, and \$5,500 paid out monthly in wages. The market for the product of this mill is principally local, but considerable is shipped abroad, especially to China and Japan. A large force of men is employed at the Vancouver mills, owned by Webster and Edmunds, and the concern is certain to become one of the most important in the Province.

CARRIAGE SHAFT BENDER.

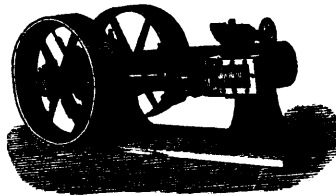
The well-known firm of Macgregor, Gourlay & Co., of Galt, Ont., manufacturers of wood-working machinery, have at present in their works a machine which promises a complete revolution in the carriage shaft bending trade. It is specially constructed for the rapid bending of carriage shafts and poles, and the rapidity with which it does its work may be judged by the fact that with only two men at the machine it will turn out 1,000 pairs of complete shafts in a day. The inventor of the machine is Mr. Thomas E. Montague, brother of Dr. Montague, M.P., Haldimand, Messrs. Macgregor, Gourlay & Co., have built several machines of a somewhat similar construction, but the advantages of that which we had the pleasure of inspecting over these formally built, are, first, that it can be drawn out in body to accommodate shafts of any length required, and next, that shafts of varied sizes can be made without changing any parts of the machine or attachments, and all this without the possibility of breaking a shaft while machine is in operation, the changes being made to the greatest possible extent by power and automatically. This machine is to be set up in the establishment of Messrs. John Heard & Co., of St. Thomas, where we understand it will be exhibited to some of the most extensive manufacturers in the United States who are engaged in the bending business. We believe it is an acknowledged fact by all who carry on that business, that all the devices for bending shafts, have heretofore been far from satisfactory, but the simplicity, certainty and perfection of work done by this machine of Mr. Montague's gives every reason to believe that at last a device has been secured which will meet the views of makers to the fullest degree. Several patents have already been granted on this invention and others are pending, both in Canada and the United States. Mr. Montague's powers of concentration as an inventor are mentioned particularly by Messrs. Macgregor, Gourlay & Co., that gentleman having come to their works with simply rough sketches of his ideas with which to sit down by the side of the draughtsman of the firm and give him dimensions and ideas of the various parts required, from which drafts were made, and from this crude mechanical idea it was found that so accurately had he

gauged the different parts that each fitted in its place without scarcely an alteration. The firm characterizes him as a "combination of inventive genius, mechanical skill and perseverance seldom found in one person." Mr. T. C. Robertson, the efficient draughtsman of the firm, made the drawings, and the completeness and accuracy with which that branch of the work was done is best evidenced by the smoothness, rapidity and certainty of work which on trial the machine shows. Mr. Montague is no novice in wood-working tools, he having had several wood-working machines made previously by the firm, besides having used for ten years a full set of ordinary wood-working machines made at this establishment, and it is only a further testimonial to the high reputation which Messrs. Macgregor, Gourlay & Co., possess, that their manufactory should have been selected for this important job.

MESSRS. GOLDIE & McCULLOCH, Galt, Ont., will merge their business into a limited joint stock Company with a capital stock of \$700,000.

**E. LEONARD & SONS**  
LONDON, CANADA.

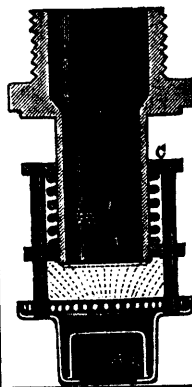
**ENGINES** for Electric Dynamos, Street Railway Service,  
AND FOR ALL OTHER PURPOSES.



THE  
**Leonard-Ball Automatic**  
Cut-off 10 to 100 H.P. plain and compound and condensing **40** to **150 H.P.** have the preference all over **Canada.**

**STEEL BOILERS, all sizes up to 150 H.P.**  
Excellent facilities for prompt shipment.

**FIRE PROTECTION.**



BUILDINGS EQUIPPED  
WITH  
**AUTOMATIC SPRINKLERS**

BY  
**ROBERT MITCHELL & CO.**

MONTREAL BRASS WORKS,  
Write for estimates. MONTREAL

**The Barber & Ellis Comp'y,**

NOS. 43, 45, 47, 49 BAY ST.

• **ACCOUNT BOOKS** •

MADE TO ORDER IN FIRST-CLASS STYLE.

**PAPER BOXES MADE FOR ALL CLASSES OF GOODS**

Correspondence Solicited.

**TORONTO, - ONTARIO.**

# KEMP MANUFACTURING CO.

PROPRIETORS OF

## Dominion Tin and Stamping Works

Corner Gerrard and River Streets, Toronto.

# GALVANIZERS

JOBGING WORK SOLICITED.

Manufacturers of all kinds of MACHINE OILERS.

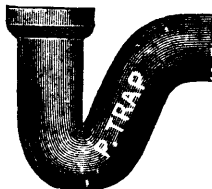
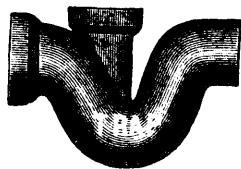
# THE ONTARIO BOLT CO. (Ltd.)

SWANSEA, NEAR TORONTO.

MANUFACTURERS OF

Bridge Rods, Gib Plates, Straps, Braces and Bolts, Drift Bolts, Washers, Prisms and Roof Rods, Bolts, Braces, Straps, Bolt Ends and Blank Bolts, Drop Forgings, Carriage Hardware Including Clips, Steps, Stump Joints, Offsets, Stay Ends, Herbrand Fifth Wheels, Sleigh Braces, Couplings, Body Loops, Threshing Machine Teeth, Pitman Irons, and all kinds of Special Work. Machine Bolts, all sizes, Coach Screws and Skein Bolts, Whiffletree Bolts, Best Elevator Bolts, Best Plough Bolts, all kinds, The Prize Tire Bolt, Best Shaft and Step Bolts, Best Eccentric Head, and Spring Bolts, Best Norway Shackle Bolts, Railway Track Bolts and Spikes, Rivets, Best Bridge and Boiler and Black Iron, Wire Nails and Pressed Spikes, Nuts, Hot Pressed, Forged and Cold Pressed, Carriage Bolts, Superb, Eclipse, Sleigh Shoe and Prize, all sizes. Howell's Patent Iron Wheels.

A. E. CARPENTER, Pres.    J. H. NEW, Vice-Pres.    HENRY NEW, Sec.-Treas.



## THE HAMILTON AND TORONTO SEWER PIPE CO'Y,

(LIMITED,)

HAMILTON, CANADA.

Successors to The Campbell Sewer Pipe Co. and The Hamilton Sewer Pipe Co.

MANUFACTURERS OF

Steam-Pressed, Salt-Glazed  
VITRIFIED

## SEWER PIPE

FLUE PIPES, CHIMNEY TOPS and SMOKE PREVENTIVES.

Established 1860.

# THE MONARCH ECONOMIC BOILER

Patented Can. May 6, 1866;  
Feb. 10, 1887.

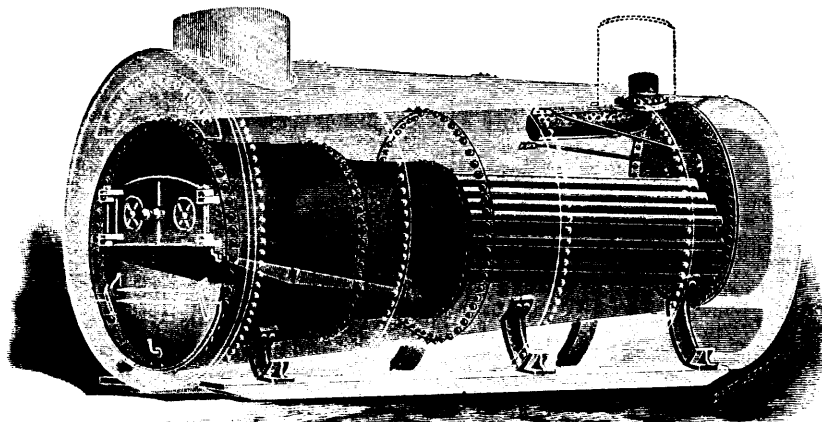
Patented U.S.A. Oct. 5, 1886;  
Aug. 23, 1887; May 8, 1888.

Is the strongest and most

## Portable Boiler

in use, and its high economy in fuel makes it specially valuable to gold miners.

Tested evaporation 10.25 lbs. of water per pound of ordinary Nova Scotia coal.



Manufacturers of and Agents for

The Hercules Engine,  
The Straight Line Automatic Engine.  
The Armington & Sim's Automatic Engine.  
The Canada Electric Co. Dynamos & Electric Machinery.  
Saw Mill Machinery,  
Hoisting Machinery, etc.

No Charges for Cartages.

**A. ROBB & SONS**  
AMHERST, N.S.

GEO. W. SADLER, Proprietor.

# ROBIN & SADLER

MANUFACTURERS OF

# LEATHER - - BELTING

129 BAY STREET,  
TORONTO.

*and*

NOTRE DAME ST.  
MONTREAL.

Lace Leather, Loom Strapping, Cotton and Rubber Belting  
and General Mill Supplies.

G. C. CLEVELAND.

G. F. CLEVELAND.

# J. L. GOODHUE & CO.

MANUFACTURERS OF SUPERIOR QUALITY

# LEATHER BELTING

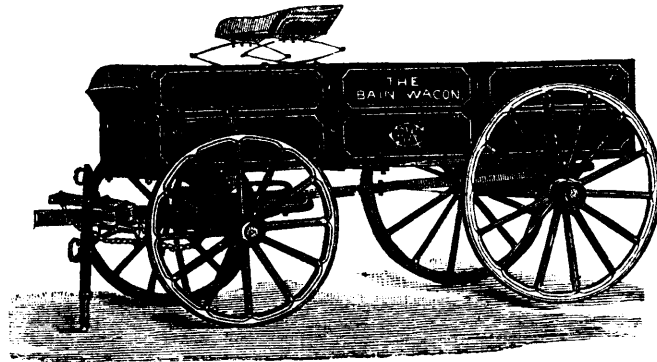
DANVILLE, - QUE.

As Saw Mill work is the hardest that Belting has to do, we refer  
*by Permission to*

Messrs. Gilmour & Co., Trenton, Ont.; The Rathbun Co., Deseronto, Ont.; Messrs. Boyd Caldwell & Son, Carleton Place, Ont.; The E. B. Eddy Manfg. Co., Hull, Que.; Messrs. Beck & Co., Penetanguishene, Ont.; Messrs. Flatt & Bradley, Casselman, Ont.; Messrs. Hall, Neilson & Co., Three Rivers, Que.; Cookshire Mills Co., Sawyerville, Que.; The Bennett Saw Mill Co., New Westminister, B.C.; The Waterous Engine Works Co., Brantford, Ont.; The Wm. Hamilton Manfg. Co., Peterborough, Ont.

# BAIN WAGON CO.

— MANUFACTURERS OF —



LIGHT RUNNING  
**FARM, SPRING AND FREIGHT WAGONS**

Also Heavy Sleighs and Steel Skein Log Trucks.

SEND FOR PRICES TO

**BAIN WAGON CO.** - **Woodstock, Ont.**

**BELL** UPRIGHT PIANOS  
REED ORGANS  
 — AND —  
**CHURCH PIPE ORGANS**

SUPERIOR QUALITY

**IN MATERIAL, WORKMANSHIP AND TONE, MODERN  
 IN DESIGN, AND CONTAINING ALL THE LATEST  
 PRACTICAL IMPROVEMENTS KNOWN.**

**Recommended by Leading Musicians throughout the World.**

SEND FOR CATALOGUES TO

**THE BELL ORGAN & PIANO CO., Ltd.**

HEAD OFFICE AND FACTORIES:

**GUELPH, ONT.**

BRANCH WAREHOUSES,

LONDON. ENG., SYDNEY, N.S.W., AND TORONTO, HAMILTON & LONDON, ONT.

# The Chatham Manufacturing Co., Ltd., Chatham, Ont.

MANUFACTURERS NOT ONLY OF

The Chatham  
Wagon

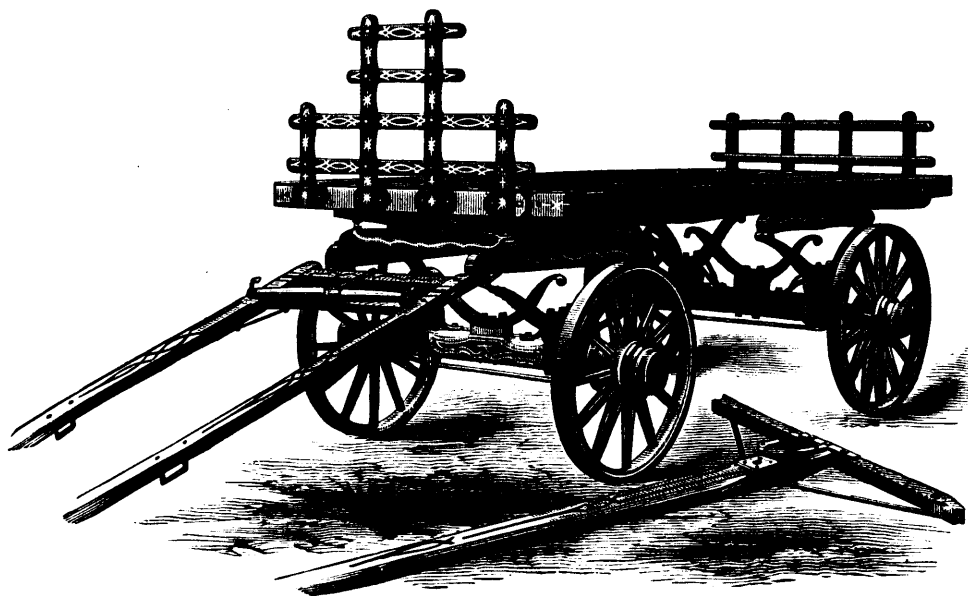
BUT OF ONE  
AND  
TWO HORSE

# LORRIES

WITH AND  
WITHOUT  
SPRINGS.

*Of a one-horse, the accompanying is a faithful cut  
Found to be as durable, and the greatest carrier and  
easiest running Lorry made in Canada. At greatly  
reduced prices.*

Correspondence Solicited.



THE CHATHAM ONE-HORSE SPRING LORRY.  
3 in. arms, 3 x 1/2 inch tire; capacity, 2 tons. The best and  
easiest running Lorry made in Canada.

Ship Plank and Hardwood  
Lumber.

## Millers' and Manufacturers' INSURANCE COMPANY.

STOCK AND MUTUAL.

### OBJECTS.

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

### METHODS.

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

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

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

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

W. E. HOWLAND,

Vice-President.

JAMES GOLDIE,

President.

HUGH SCOTT, Managing Director.

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

## THE MANUFACTURERS'

# Life and Accident Insurance Co's

HEAD OFFICE:

Traders' Bank Building

61-63 YONGE STREET, TORONTO.

Issues Life Policies upon approved plans.

Issues Accident Policies containing all modern features.

### AUTHORIZED CAPITAL:

Life Company,	\$2,000,000.00
Accident Company,	1,000,000.00

### OFFICERS:

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

### VICE-PRESIDENTS:

GEORGE GOODERHAM, Esq., President Bank of Toronto.

WILLIAM BELL, Esq., Organ Mnfr, Guelph.

S. F. MCKINNON, Esq., Wholesale Millinery, Toronto.

D. PARKES FACKLER, New York, Consulting Actuary

JNO. F. ELLIS, - Managing Director.



# THE CANADIAN MANUFACTURER

Established in 1882.

**SUBSCRIPTION PRICE, - \$1.00 A YEAR.**

DEVOTED TO THE

## Manufacturing Interests of Canada

AND THE SUPPORT OF

**CANADA'S NATIONAL POLICY**

"A COUNTRY THAT MANUFACTURES FOR ITSELF PROSPERS."

✎ ISSUED TWICE A MONTH ✎

**Specimen Copies sent free on application.**

**Advertising Rates quoted on application.**

**ADDRESS ALL COMMUNICATIONS TO**

**Canadian Manufacturer Publishing Company, Limited,  
63 FRONT STREET WEST, TORONTO.**

**FREDERIC NICHOLLS, Managing Director.**

**J. J. CASSIDEY, Editor.**

## Stop the Engine Instantly

Unfortunately that is impossible, it is several stories below, therefore to stop this countershaft is a work of minutes.

## The Accident

The stopping of the engine would have prevented or mitigated is not an unusual one. Often it results in the loss of a valuable life.

## This Line Shaft

Could have been instantly disconnected from the power in any part of the room had it been driven with a Friction Grip Pulley.

## Will it not pay you

To investigate the merits of the newest and best Grip Pulley and Cut-off Coupling, "The Waterous." It is safe, economical in belts and time.

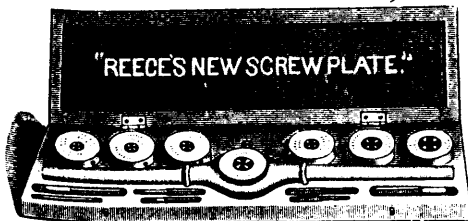
## Waterous Engine Works Co., Ltd.

BRANTFORD, CAN.

Winnipeg, Montreal and Quebec.

PERFECT THREADS AT ONE CUT.

### REECE'S NEW SCREW PLATES.



CUT SHOWING SIZE C COMPLETE IN BOX.

Size C cuts  $\frac{1}{4}$ , 5-16,  $\frac{3}{8}$ , 7-16,  $\frac{1}{2}$ ,  $\frac{5}{8}$  and  $\frac{3}{4}$  inch. Price, complete, \$20.

SIZE A, SAME STYLE,

Cuts  $\frac{1}{4}$ , 5-16,  $\frac{3}{8}$ , 7-16 and  $\frac{1}{2}$  inch. Price, complete, \$13.

SIZE B, SAME STYLE,

Cuts  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $\frac{1}{2}$  and 1 inch. Price, complete, \$21.

SIZE D, SAME STYLE,

Cuts  $\frac{3}{8}$ , 7-16,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$  and 1 inch. Price, complete, \$25.

SIZE E, SAME STYLE,

Cuts  $\frac{1}{4}$ , 5-16,  $\frac{3}{8}$ , 7-16,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$  and 1 inch. Price, complete in box, \$29.

All other Dies at Corresponding Prices.

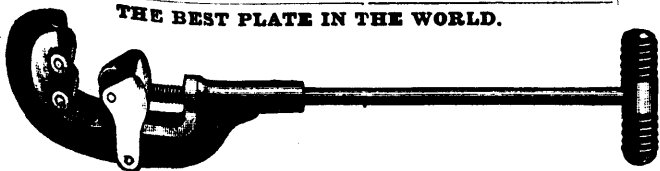
We furnish Collet and Die same as used in our Reece's New Screw Plate, to fit stocks B, D and large C stock, Little Giant, also B, and C, Willy & Russell Lightning Screw Plat.

MANUFACTURED BY

**BUTTERFIELD & CO.**

Derby Line, Vermont and Rock Island, Quebec.

THE BEST PLATE IN THE WORLD.



PATENTED IN UNITED STATES, JUNE 23, 1886.

# Canadian Rubber Co.

OF MONTREAL,

Capital, - - - \$2,000,000.

A. ALLAN,  
President.

J. O. GRAVEL,  
Sec'y-Treas.

F. SCHOLES,  
Man. Direc.



Manufacturers  
OF

**RUBBER  
SHOES**

AND

**FELT BOOTS.**

Sole agents and manufacturers of the Forsyth Pat. (Boston Belting Co.'s)

## SEAMLESS RUBBER BELTING,

For the Dominion of Canada.

All kinds of Rubber Packings. Rubber Engine, Hydrant, Suction, Steam, Brewers' and Fire Hose. Rubber Valves, Car Springs, Wringer Rolls, Carriage Cloths, Blankets, etc., etc.

MOULD GOODS OF EVERY DESCRIPTION.

Our **GARDEN HOSE** is the Best in the Market.

HEAD OFFICES AND FACTORY, MONTREAL.

J. J. MCGILL, Manager.

**WESTERN BRANCH, Cor. Yonge & Front Sts.**

J. H. WALKER, Manager.

TORONTO.

# WANTED

Every Canadian Manufacturer

AND

Every Business Man in Canada,

FROM HALIFAX to VANCOUVER,

TO SUBSCRIBE FOR THE

# CANADIAN MANUFACTURER

PUBLISHED TWICE A MONTH.

Subscription **ONE DOLLAR** per Year.

They will obtain more valuable information for the money than from any similar publication in the world.

A Record of all Manufacturing Events Transpiring in Canada.

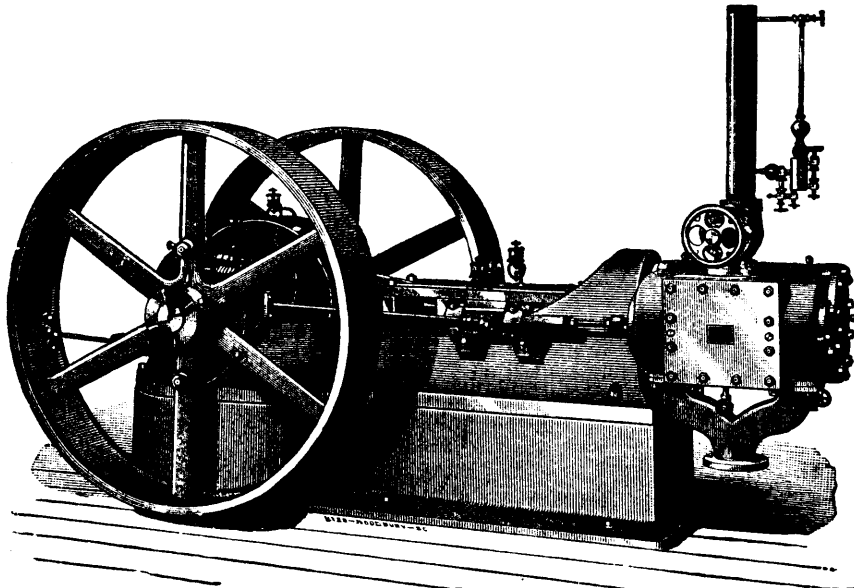
Canadian Manufacturer Publishing Company,

63 Front St. West, Toronto.

**THE CANADIAN LOCOMOTIVE & ENGINE CO., Ltd.**  
**KINGSTON, + ONTARIO.**  
 MANUFACTURERS OF  
**Locomotive, Marine & Stationary Engines.**  
**BOILERS OF ALL DESCRIPTIONS.**

Sole Licensees and Manufacturers for Canada of Armington & Sims' High Speed Engines, The "Cycle" Gas Engine, Atkinson's Patent, The "Hazelton" Boiler.

DESCRIPTIVE CATALOGUES OF THE ABOVE ON APPLICATION.



ARMINGTON AND SIMS' HIGH SPEED ENGINE FOR ELECTRIC LIGHT PLANT, &C.

**NOTICE.**

The Canadian Locomotive & Engine Co., Limited, of Kingston, Ontario, have the Exclusive License for building our Improved Patent High Speed Engine for the Dominion of Canada, and are furnished by us with Drawings of our Latest Improvements.

(Signed),

**ARMINGTON & SIMS.**

PROVIDENCE, R.I., Nov. 18, 1889.

**PATENTS**

Obtained in Canada, United States, Great Britain and all Foreign Countries.

Trade Marks, Designs and Copyrights Registered.

Examinations and Reports as to Validity. Searches made. Infringements investigated. Assignments and Agreements drawn. Advice on Patent Laws, etc.

**FETHERSTONHAUGH & CO.,** Solicitors of Patents and Experts in Patent Causes.  
 Canadian Bank of Commerce Building (2nd floor),  
**TORONTO.**



**ONTARIO CANOE CO'Y, Ltd.**  
**PETERBOROUGH, ONTARIO.**

**PETERBOROUGH CANOES,**  
**OPEN CANOES, SKIFFS,**  
**DECKED CANOES, ROW BOATS,**  
**SAILING CANOES, SINGLE HUNTERS,**  
**STEAM LAUNCHES.**

Tents and Camp Furniture.

SEND THREE-CENT STAMP FOR CATALOGUE.

**THE Polson Iron Works Co.**

(LIMITED)

CAPITAL, - - \$300,000.00.

**Iron & Steel Ship Builders & Engineers**

**HEAD OFFICE, TORONTO.**

PRESIDENT, WM. POLSON. MANAGING DIRECTOR, F. B. POLSON

DIRECTORS:

Hon. W. E. Sanford, W. C. Matthews, Jas. Worthington,  
 D. Graham, A. B. Lee, T. F. Chamberlain,  
 J. B. Miller, Thomas West.

**BUILDERS OF**

**Iron, Steel, Composite and Wooden SHIPS**

Compound and Triple Expansion

**MARINE ENGINES**

AND

**MARINE BOILERS**

Hoisting Engines, Pumping Engines, The Brown Automatic Engines for Stationary Use.

**STEAM BOILERS OF EVERY DESCRIPTION.**

Ship Building Works and Dry Dock, OWEN SOUND, ONT.  
 Engine and Boiler Works, Esplanade St., TORONTO.

# MACHINE BRUSHES

All kinds, Made to Order.

Highest Quality of Work Guaranteed.

SEND FULL PARTICULARS OF DIMENSIONS AND QUALITY WHEN ORDERING.

Old Rollers or Blocks Re-filled with special care.

## CHAS. BOECKH & SONS,

MANUFACTURERS.

Office and Warerooms: 80 York St.

Factory: 142 to 150 Adelaide St. W.

TORONTO, CANADA.

## G. & J. BROWN M'FG CO.

(LIMITED.)

BELLEVILLE, ONT.

Engineers, Boiler Makers,  
Machinists, Foundry-  
men and Bridge  
Builders

Railway and Contractors' Supplies a Specialty

FROGS, DIAMOND CROSSINGS,

SWITCHES, HAND CARS,

LORRIES, VELOCIPEDE CARS,

JIM CROWS, TRACK DRILLS,

SEMAPHORES, RAIL CARS,

DOUBLE AND SINGLE DRUM HOISTS, ETC., ETC.

## THE WELLINGTON MILLS, LONDON, ENG. GENUINE EMERY

OAKEY'S

Flexible Twilled Emery Cloth.

OAKEY'S

Flint Paper and Glass Paper.

OAKEY'S

Emery Paper, Black Lead, etc.

Prize Medal and Highest Award Philadelphia, 1876, for Superiority of Quality, Skilful Manufacture, Sharpness, Durability, and Uniformity of Grain.

Manufacturers:

JOHN OAKEY & SONS, Wellington Mills,  
Westminster Bridge Road  
London, Eng.

Enquiries should be addressed to

JOHN FORMAN,  
467 St. Paul St., MONTREAL.

## Porous Terra Cotta

### Fireproofing.

See it in use in new Bank of Commerce Building, Toronto; new Royal Insurance Company Building Montreal; Imperial Fire Insurance Company Building, Montreal; St. Lawrence Sugar Refinery, Montreal.

The finest thing for suburban cottages. Excludes heat and cold, is cheap and durable.

Try our improved Cedar Oil for cleaning boilers. We guarantee it to satisfy or no pay.

ADDRESS

The Rathbun Company,  
DESERONTO, ONT.

## SECOND-HAND Woolen Machinery FOR SALE.

One Huddersfield Rotary Pulling Mill.  
Two Huddersfield Shearing Machines.  
One Hydro Extractor, 40-inch basket.  
Three Baling Machines for 2nd breakers.  
Three Bank Feeds for 2nd breakers.  
Two 144 Spindle Doubling and Twisting Frames.  
Five Broad Crompton Looms, 4 boxes each end.  
Ten Narrow " " " "

All of the above are in good order, and can be seen running. Also

One Brass Liffel Water Wheel, 12-in., and case.  
Two Water Wheel Gears, newly cogged.  
One Knowles Steam Pump.

For further particulars address,

ROSAMOND WOOLEN CO.

ALMONTE, ONT.

## Jas. A. Cantlie & Co.

GENERAL MERCHANTS

AND

MANUFACTURERS' AGENTS

ESTABLISHED 22 YEARS.

COTTONS—Grey Sheetings, Checked Shirtings, Denhams, Cottonades, Tickings, Bags, Yarn, Twine, etc.

TWEEDS—Fine, Medium and Low Priced Tweeds, Serges, Cassimeres, Doeskins, Etoffes, Kerseys, etc.

FLANNELS—Plain and Fancy Flannels, Overcoat Linings, Plain and Fancy Dress Goods, etc.

KNITTED GOODS—Shirts, Drawers, Hosiery, etc.

BLANKETS—White, Grey and Colored Blankets.

Wholesale Trade only Supplied.

13 & 15 St. Helen St., MONTREAL.

20 Wellington St. W., TORONTO.

Advances made on Consignments. Correspondence Solicited.

Established 1872.

## - THE ACCIDENT - Insurance Co'y of North America.

NEW FEATURE,

### JOINT INSURANCE FOR PARTNERSHIPS

IMPORTANT TO MANUFACTURING FIRMS.

MEDLAND & JONES, Gen'l Agents,  
Cor. Adelaide and Victoria Sts., TORONTO.

## THE BELL TELEPHONE CO'Y OF CANADA

—Manufacturers and Dealers in—

Telegraph & Electrical Instruments,

Electro-Medical Apparatus, Fire Alarm Apparatus,

Magnets for Mills, Electrical Gas Lighting Apparatus,

Burglar Alarms, Hotel and House Annunciators,

Electric Call Bells, &c., &c.

FOR FURTHER PARTICULARS APPLY TO

No. 12 HOSPITAL ST., MONTREAL.

## Industrial and Trade DIRECTORY.

### Acids and Aniline Dyes.

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

**DOMINION DYEWOOD & CHEMICAL CO.**, sole agents in Canada for Farbenfabriken, vormals Friedr Bayer & Co., Elberfeld, Germany, and Read, Halliday & Sons, Huddersfield, England.—All shades for woolen, cotton, leather, and paper manufacturers. Latest information on dyeing as well as dyed samples on application.

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

**MIDDLETON & MEREDITH**, Montreal, Aniline Dyes, Benzidine Colors, Dyewoods, Extracts, Chemicals.

### Agricultural Implements and Parts.

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

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

### Bridge Builders.

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

### Chemicals and Dye Stuffs.

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

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

**DOMINION DYEWOOD & CHEMICAL CO.**, sole agents in Canada for Mucklow & Co's celebrated English Dyewoods and Dye-wood Extracts, Indigo Extract, Cudbear, and all chemicals used in dyeing. Stocks kept in Montreal and Toronto.

**MIDDLETON & MEREDITH**, Montreal Agents for the Berlin Aniline Co., Berlin. Pure Aniline Dyes. The Stamford Manufacturing Co., New York, Dyewoods and Dye-wood Extracts: James Musprat & Sons, Liverpool, Soda Ash, Bleaching Powders, etc. Specialties for Cotton, Woollen and Leather Colors.

### Edge Tools, Saws and Hardware.

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

### Gloves.

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

### Hoists and Elevators.

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

### Hubs, Spokes, Handles, Etc.

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

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

### Knit Goods.

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

### Machine Tools.

**JOHN BERTRAM & SONS**, Dundas.—Machine tools and wood working machinery Toronto wareroom, 58 Yonge St. Agents—The Polson Iron Works Co. Montreal wareroom, Craig St. Agents for Quebec—The Machinery Supply Association, Montreal.

### Wood-Working Machinery.

**THE CANT BROS. CO.** of Galt, Ltd., Galt, Ont.—Wood-working machinery for builders, planers, furniture, sash and door, and wagon works. Toronto wareroom, 141-145 Front Street West. Agent, H. W. Petrie, Front Street West.

### Malleable Iron.

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

## WEBSTER'S "Vacuum" Exhaust Steam Economizer

Is the Most Improved and Modern Appliance for the Economical Use of Exhaust Steam. Saves the Heat in Exhaust Steam which would otherwise go to Waste.

Utilizes the exhaust steam for heating buildings, etc., returning the condensation to boiler, and for making hot and purified water for boiler feeding and other purposes, and the combined advantages as enumerated in our pamphlet. Orders solicited on trial for acceptance.

We refer to the largest firms in the U. S. and Canada, who have adopted it and duplicated their orders after most exhaustive tests.

**JAS. B. ANNETT**, 372 Sackville St., Toronto, Ont.

CANADIAN LICENSEE for WARREN WEBSTER & CO.

## NEWLANDS & CO. GALT, CANADA. MANUFACTURERS OF GLOVE AND SHOE LININGS SASKATCHEWAN BUFFALO ROBES.

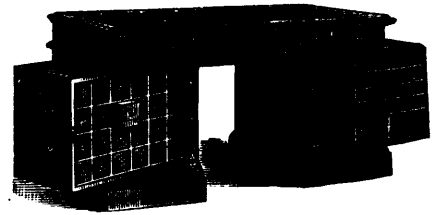
BUFFALO FUR CLOTH COATS.  
BLACK DOG SKIN CLOTH COATS.

SEND FOR PRICE LISTS.

## W. STAHLSCHMIDT & CO. PRESTON, ONT.

—MANUFACTURERS OF—

School, Office, Church and Lodge Furniture.



Rotary Desk No. 50.

SEND FOR CIRCULARS AND PRICE LIST. - - Name this Paper.

## S. LENNARD & SONS, DUNDAS, ONT.,

PATENTEES OF THE "ELYSIAN" SEAMLESS HOSIERY,  
MANUFACTURERS OF PLAIN AND FANCY HOSIERY, CAPS, TUBES,  
SASHES, ETC., ETC., ETC.

TO THE WHOLESALE TRADE ONLY.

Represented in Eastern Ontario, Quebec, Nova Scotia and New Brunswick, by

**DUNCAN BELL**, Montreal.

In British Columbia by

**E. G. ANDERSON**, Victoria, B.C.

In Western Ontario by

**S. LENNARD**, Senior Member of the Firm.

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

**Oils.**

**MCARTHUR, CORNEILLE & Co** (successors to John McArthur & Son), Montreal.—Afford best value in pure olive and lard oils, also in all other leading lines of vegetable, animal, and mineral oils for factory use.

**Paper Manufacturers.**

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

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

**Tanners' Supplies.**

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

**DOMINION DYEWOOD & CHEMICAL CO.**—Quercitron Bark and Quercitron Bark

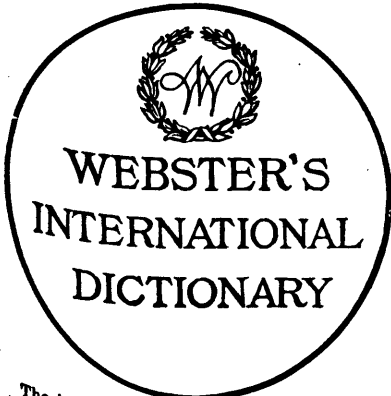
Extract. Solid and liquid Dyewoods and Anilines, specially adapted for dyeing leather Alum, acids, tin, crystals, etc., at lower prices.

**Wire Works**

**THE B. GREENING WIRE CO., Ltd.**, Hamilton, Ont.—Perforators of zinc, iron and steel; manufacturers of wire cloth all grades, wire ropes, bank and office railings, etc.

**TIMOTHY GREENING & SONS**, Dundas, Ont.—Wire manufacturers and metal perforators, wire cloth all grades, perforated sheet metals of every description all kinds of special perforating and indenting to order.

**A NEW BOOK FROM COVER TO COVER.**  
FULLY ABREAST WITH THE TIMES.



**WEBSTER'S INTERNATIONAL DICTIONARY**

The Authentic "Unabridged," comprising the issues of 1864, '79 and '84, copyrighted property of the undersigned, is now **Thoroughly Revised and Enlarged**, and bears the name of **Webster's International Dictionary.**

Editorial work upon this revision has been in progress for over 10 Years.

Not less than One Hundred paid editorial laborers have been engaged upon it.

Over \$300,000 expended in its preparation before the first copy was printed.

Critical comparison with any other Dictionary is invited. **GET THE BEST.**

**G. & C. MERRIAM & CO., Publishers,** Springfield, Mass. U. S. A.

Sold by all Booksellers. Illustrated pamphlet free.

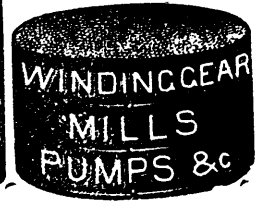
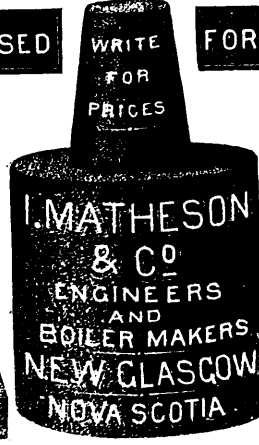
SUBSCRIBE FOR THE CANADIAN MANUFACTURER.

ONLY ONE DOLLAR A YEAR.

SPECIAL MIXTURE USED

WRITE FOR PRICES

FOR SHOES & DIES



**TINNED MATTRESS**

AND

**BROOM WIRE.**

QUALITY GUARANTEED.

MANUFACTURED BY

**THE B. GREENING WIRE CO., Ltd.**  
HAMILTON, CANADA.

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

MAKE A SPECIALTY OF

**Fine Color Work**

CHROMO ADVERTISING CARDS and NOVELTIES

also do a Superior class of Wood Engraving

**NAPANEE CEMENT CO'Y**

(LIMITED.)

**NAPANEE MILLS, - ONTARIO.**

MANUFACTURERS OF

**HYDRAULIC CEMENT**

Warranted equal, if not superior, to any native cement,

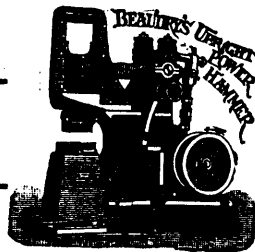
and as good, for most uses, as Portland.

Full particulars of strength, tests, etc., furnished on application. Endorsed by leading Cities, Engineers, Railways and others.

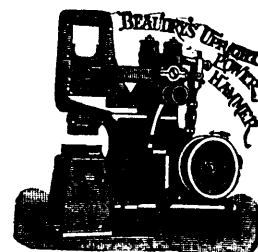
**ROACH LIME.** Particularly adapted for paper manufacturers, gas purifying, etc.



SIMPLE;



PRACTICAL

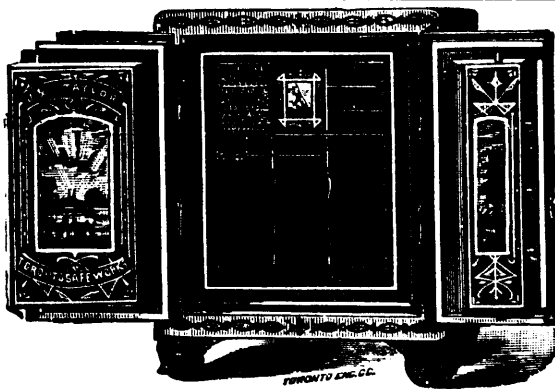


AND BEST.

## BEAUDRY UPRIGHT CUSHIONED POWER HAMMER

The most handy, compact, and above all, the most efficient tool ever invented for Manufacturers of all descriptions, Railroad Shops, Steel and Machine Forgers, File and Vice Makers, Knife and Cutlery Makers, Axle, Edge Tool and Agricultural Implement Manufacturers, Carriage Builders and, in fact, all others who need a first-class Hammer, and one of extraordinary capacity and adaptability. Correspondence solicited.

**MILLER BROS. & TOMS,** SUCCESSORS TO **Miller Bros. & Mitchell,** | Sole Makers for **MONTREAL**  
 Toronto Office, 74 York Street.



## J. & J. TAYLOR'S

Double Tongue  
and Groove  
FIRE-PROOF

# SAFES

(Patented  
January 14th,  
1886.)

Established 33 years.

All our new style Fire-proof Safes are fitted with **TWO COMPLETE TONGUES AND TWO GROOVES** on both the door and door frames, which effectually prevent the heat from passing between the door and frame into the interior of the safe.

They are also fitted with **CHILLED CHROME STEEL PLATES** under the Lock and Bolt Spindles to prevent drilling; and have **DRY AIR-CHAMBER** inside to prevent dampness to papers.

Catalogues and Prices on application.

**J. & J. TAYLOR, Toronto Safe Works**

## INTERCOLONIAL RAILWAY OF CANADA.

The direct route between the West and all points on the Lower St. Lawrence and Baie des Chaleur, Province of Quebec; also for New Brunswick, Nova Scotia, Prince Edward, and Cape Breton Islands, Newfoundland and St. Pierre.

Express trains leave Montreal and Halifax daily (Sunday excepted) and run through without change between these points in 28 hours and 5 min.

The through express train cars of the Intercolonial Railway are brilliantly lighted by electricity and heated by steam from the locomotive, thus greatly increasing the comfort and safety of travelers.

New and elegant Buffet sleeping and day cars are run on all through express trains.

### Canadian-European Mail and Passenger Route.

Passengers for Great Britain or the Continent, leaving Montreal on Friday morning, will join outward Mail Steamer at Halifax on Saturday.

The attention of shippers is directed to the superior facilities offered by this route for the transport of flour and general merchandise intended for the Eastern Provinces and Newfoundland; also for shipments of grain and produce intended for the European market.

TICKETS may be obtained, and all information about the Route; also FREIGHT and PASSENGER RATES, on application to

**D. POTTINGER,**

Chief Superintendent.

RAILWAY OFFICE, MONCTON, N.B., Nov. 24, 1890.

**N. WEATHERSTON,**

Western Freight and Passenger Agent, 98 Rossin House Block  
York Street, TORONTO.

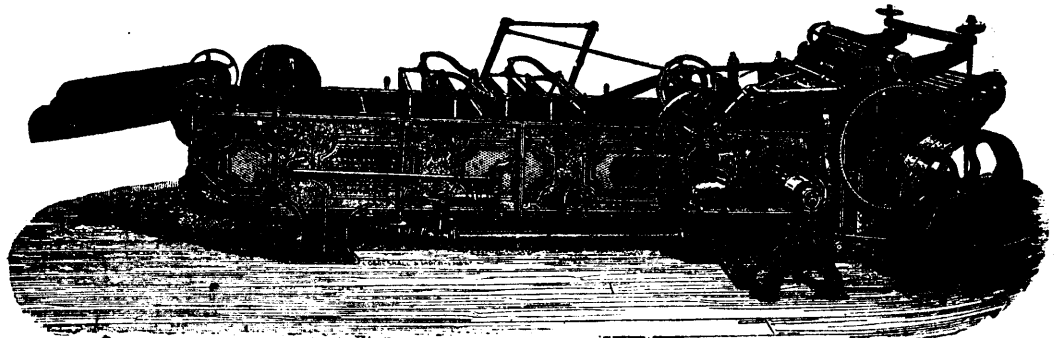
## IMPROVED WOOL WASHER

BUILT BY

**C. G. Sargent's Sons**

Graniteville, Mass.,  
U.S.A.

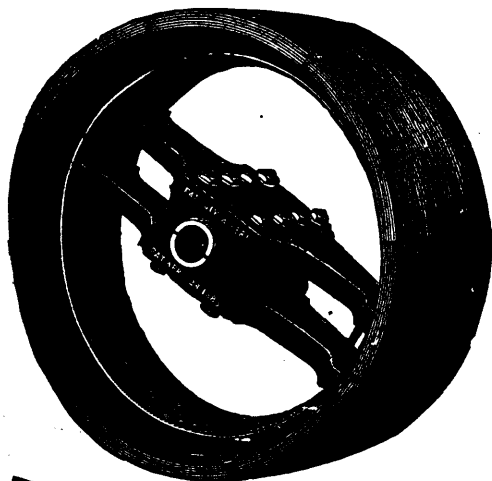
Builders of Wool Washers,  
Burr Pickers, Wool  
Dryers, etc.



The above represents our New Hydraulic Wool Washer, superior to Rake Machine. Send for Illustrated Catalogue.

SEND FOR CATALOGUE and PRICES.

# The DODGE "INDEPENDENCE" WOOD SPLIT PULLEYS



**WITH PATENT BUSHING SYSTEM**

*Best Belt Surface, Lightest, Strongest, Best Balanced, and Most Convenient Pulley in the World.*

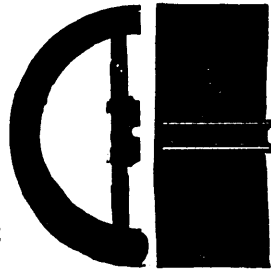
**EVERY PULLEY A SPLIT PULLEY.**

*The hole in every pulley can be readily bushed to fit any sized shaft. Bushings furnished with each pulley. Guaranteed to give from*

**30 TO 60 PER CENT MORE POWER THAN ANY IRON PULLEY.**

*Strong enough for any power required. Made in any size and width, from twelve inches to sixteen feet diameter.*

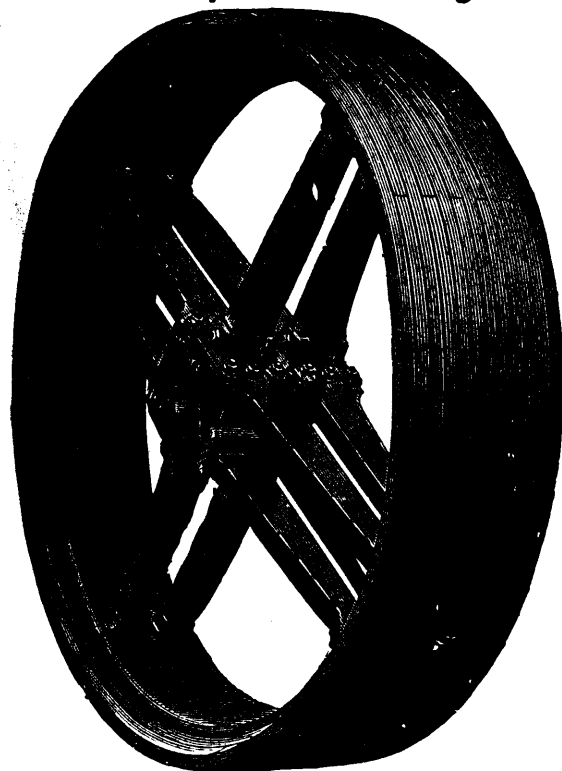
**EVERY PULLEY WARRANTED.**



*We will furnish a Pulley for any service for 30 days free of charge, if it does not meet the warranty. Prices as low as any other good Pulley. Send for Catalogue, Price List & Guarantee*

## 70 PER CENT. LIGHTER THAN CAST IRON

*And 50 per cent. Lighter than Wrought Iron or Steel Pulleys.*



### READ THE FOLLOWING:

Messrs. LEITCH & TURNBULL, Machinists, Hamilton, Ont., in their latest Catalogue, say:

Although skeptical at first, to the many advantages claimed for this pulley when introduced, we, after repeated tests, driving our elevators and seeing them at work in the various factories throughout the country, and in many unfavorable situations such as soap factories and tanneries, have come to the conclusion that, apart from their lightness and cheapness, their advantages over the old iron pulley are many. Its ease to take on or off shafting, its non-liability to injure the shaft by keys or set screws, while holding just as well, the cheapness by which it can be changed from one size to another, and in giving 30 to 60 per cent. more power with the same belt, with less tension. With all these advantages we have not only concluded to recommend it unsolicited, but intend to keep them in stock and supply them to our regular customers and the public in general.

TO THE DODGE WOOD SPLIT PULLEY CO., ADELAIDE STREET, City.

TORONTO, Dec. 6th, 1886.

DEAR SIRS,—In reply to your favor asking how we like your split pulley, we would say: We are very much pleased with them. We are using about seventy of them, from 25 in. face by 48 in. diam. down to 9 in. diam., every one of which is giving satisfaction. We don't have to take down our shafting to change a pulley or put on a new one. We are not troubled with set-screws breaking or slipping; for these and various other reasons we prefer your pulley to any other we know of.

Yours truly,

FIRSTBROOK BROS.

Toronto Packing Case Factory and Planing Mill.

TO THE DODGE WOOD SPLIT PULLEY CO., 81 ADELAIDE STREET W., CITY.

TORONTO, Dec. 6th, 1886.

GENTLEMEN,—The Wood Split Pulleys we purchased from you have given perfect satisfaction. We have much pleasure in stating that we have found them to be everything you claim for them, and much superior to the old kind.

We remain, yours truly,

MCDONALD, KEMP & CO.

TO DODGE WOOD SPLIT PULLEY CO., TORONTO.

Dec. 10th 1886.

GENTLEMEN,—We have given the Wood Split Pulley a thorough test in our works, and we are well pleased with their working, and can recommend them to our customers and others requiring pulleys.

Yours truly,

JOHN DOTY ENGINE CO.

F. W. DOTY.

### WASTE OF POWER.

According to the best scientific authority it cost one horse power to keep in motion one ton of metal or weight; thus for every unnecessary 2,000 pounds weight on your line shaft, cost you one horse power. To maintain a horse power cost from \$25 to \$125 per year. Any manufacturer who will take the pains to investigate the unnecessary weight by Heavy Iron Pulleys, too tight belts, etc., will be surprised to find the enormous waste of power consumed in this manner. **60,000 Dodge Patent Wood Split Pulleys now in use.** Our capacity being now equal to 100 Pulleys per day, we shall hereafter keep in stock for immediate shipment all sizes.

**SEND FOR ILLUSTRATED CIRCULAR AND REFERENCE LIST.**

# THE DODGE WOOD SPLIT PULLEY CO., TORONTO.

FACTORY.—

West Toronto Junction.

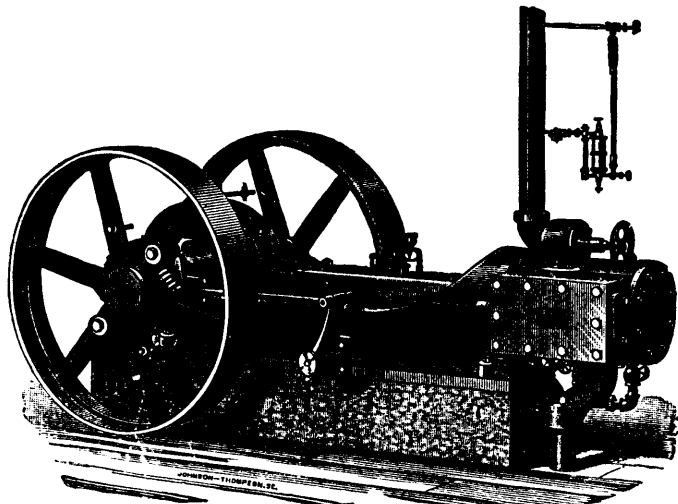
GENERAL OFFICES.—

83 King Street West, City.

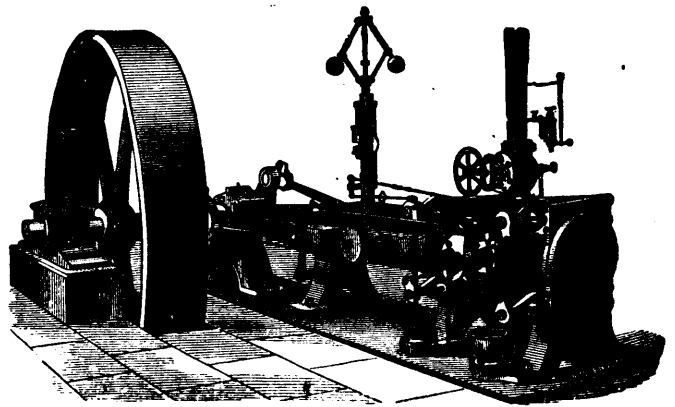
**TAKE NOTICE:—Our List of Prices for the DODGE PATENT WOOD SPLIT PULLEYS is for ALL SPLIT-PULLEYS.**

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

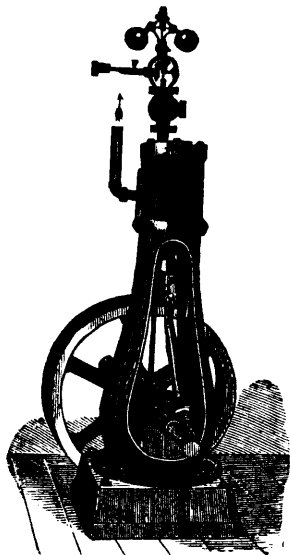




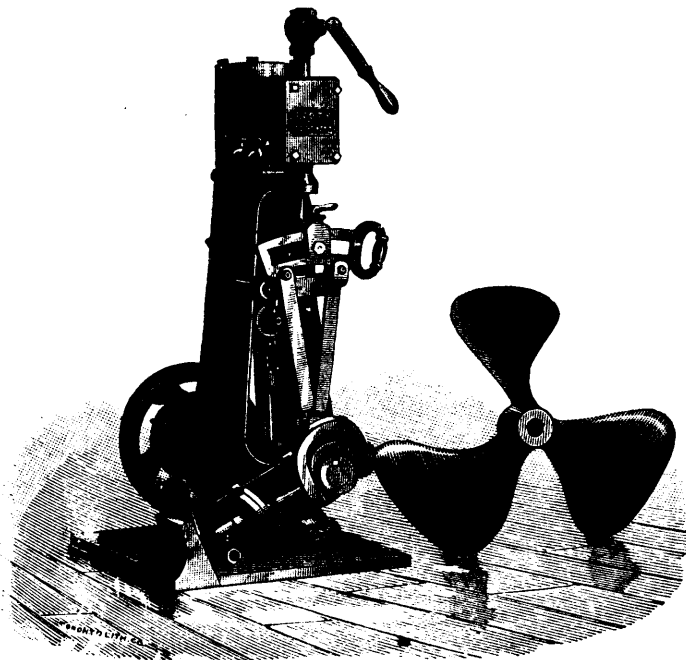
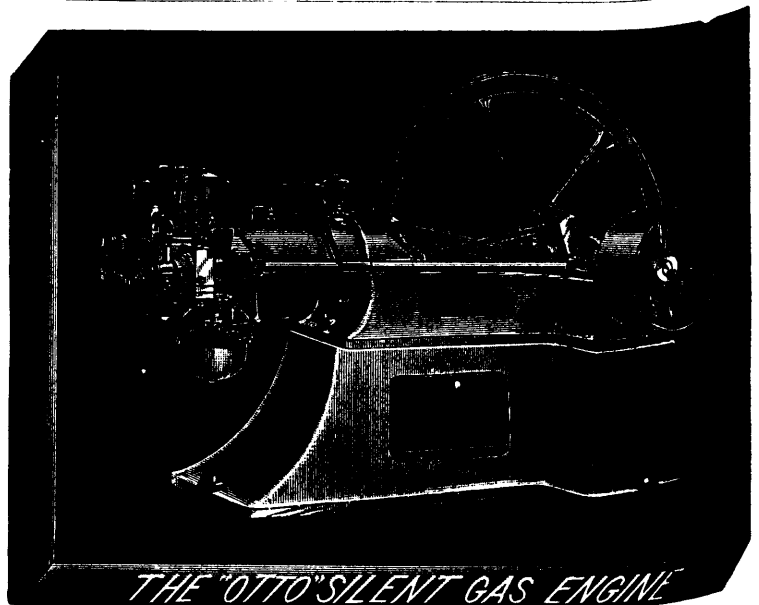
Armington & Sims Electric Light Engines.



Reynolds-Corliss Engine.



Vertical Engines.



Yacht Engines.

The John Doty Engine Co.

OF TORONTO, LIMITED.

TORONTO, ONT.

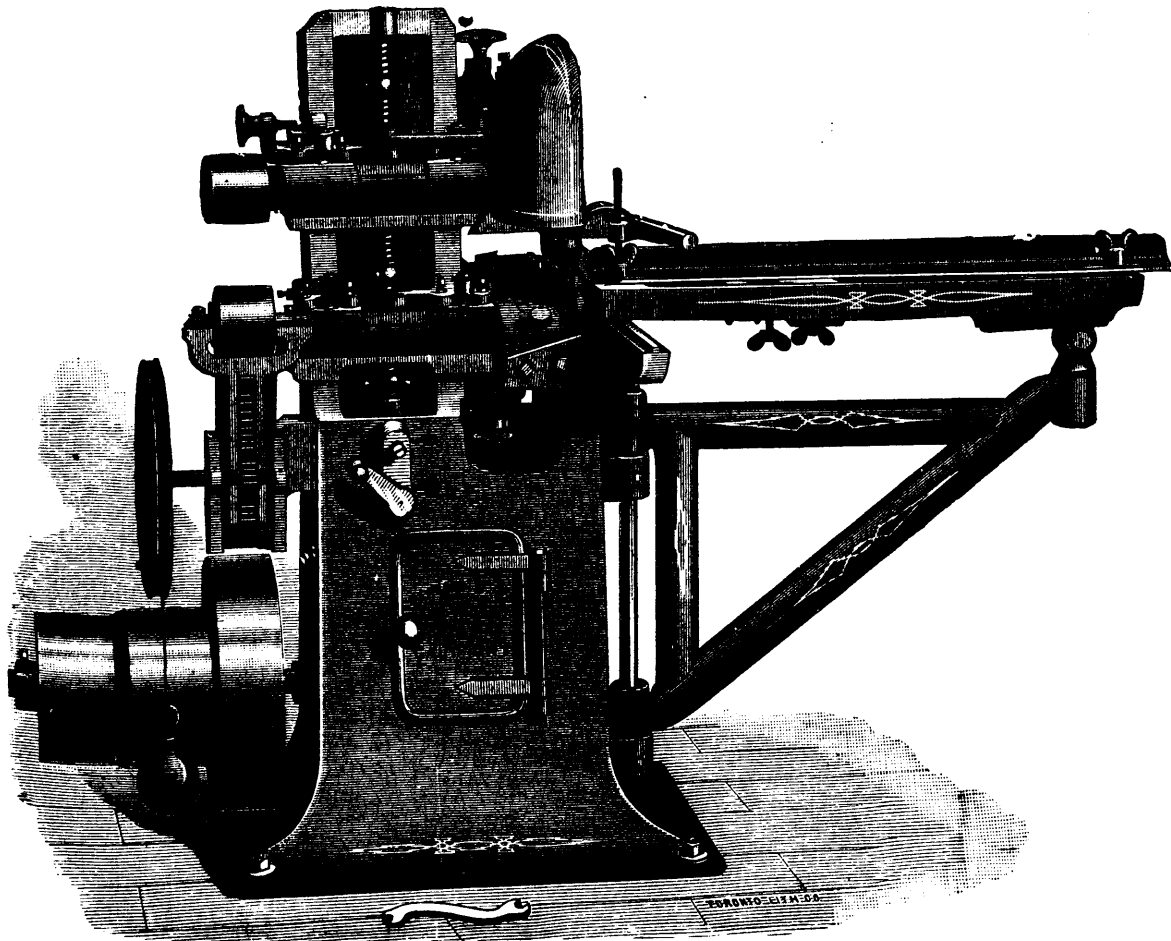
MANUFACTURERS OF

Engines & Boilers

OF EVERY DESCRIPTION.

SEND FOR CATALOGUES.

# NEW AND IMPROVED *Pedestal Tenon Machine.*



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

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

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

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

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

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

## COWAN & CO.

"Galt Foundry" Engine and Machine Works, GALT, ONTARIO, CANADA.

*Curtis and Slide Valve Engines, Boilers, and Wood-Working Machinery, all kinds; New Patterns, Highly Finished.*

# *Nova Scotia Steel Co., Limited,*

NEW GLASGOW, NOVA SCOTIA.

(Only Steel Works in Canada),

MANUFACTURERS OF

## **Hammered *and* Rolled Steel**

MADE BY THE

SIEMENS-MARTIN (OPEN HEARTH) PROCESS:

ROUND MACHINERY STEEL for Shafting, Spindles, etc. MILD STEEL for Rivets, Bolts  
Thresher Teeth and many purposes where Norway Iron is now used.

SPECIAL SECTION PLOW BEAMS, MILD STEEL CENTRE AND SOLID MOULD BOARDS,  
COULTER STEEL HARROW DISCS,  
AGRICULTURAL STEEL CUT TO PATTERN, SPRING, SLEIGH SHOE, TYRE, TOE CALK AND CROSS BAR STEEL  
STEEL NAIL PLATE.

**III Binder Bars, Z and other Special Sections.**

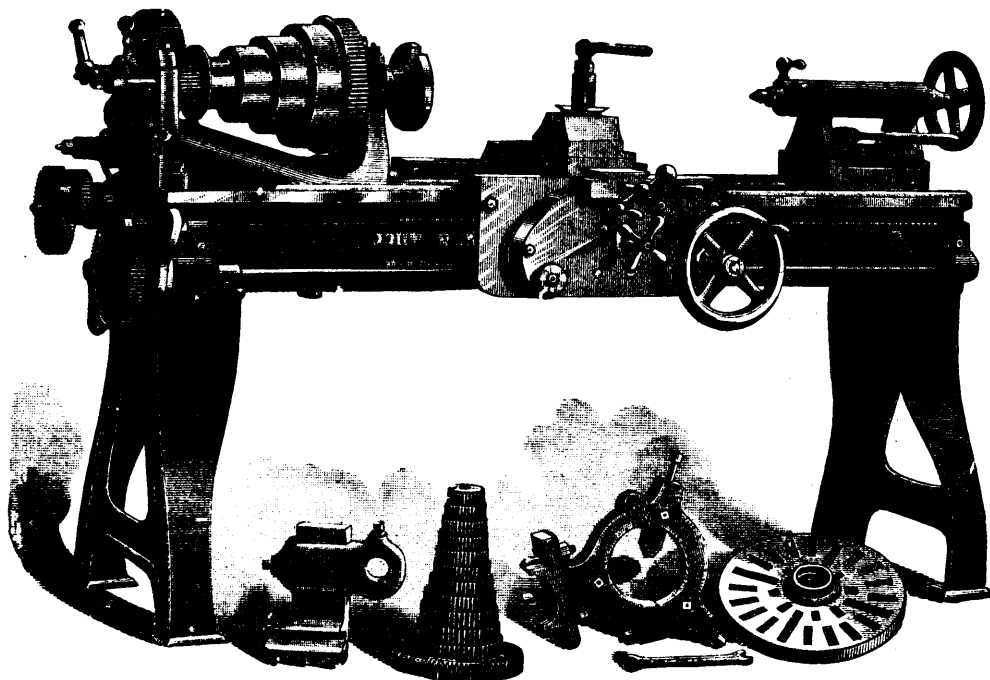
STEEL MOWER BARS.

Particular attention given to the manufacture of Rake, Cultivator and Harrow Teeth, and other  
Agricultural Spring Steel Forgings.

Canada Tool Works,

# **John Bertram & Sons,**

DUNDAS, ONT.



16-in LATHE.

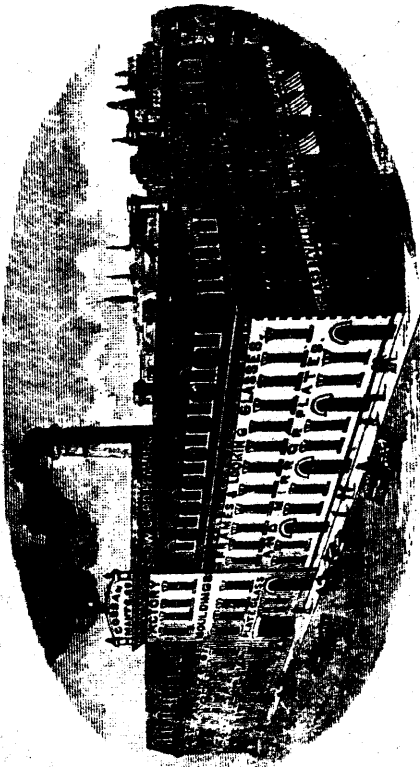
Manufacturers  
of  
Machinists' Tools  
and  
Woodworking  
Machinery

LATHES,  
PLANERS,  
DRILLS,  
MILLING  
MACHINES,  
PUNCHES,  
SHEARS,  
BOLT  
CUTTERS  
SLOTTING  
MACHINES,  
MATCHERS,  
MOULDERS,  
TENONERS,  
BAND SAWS,  
MORTICERS,  
SAW BENCHES

Locomotive and Car Machinery, Special Machinery, Price List and Photographs on application.

**Cobban Manufacturing Co'y**

Factory & Head Office: Toronto.



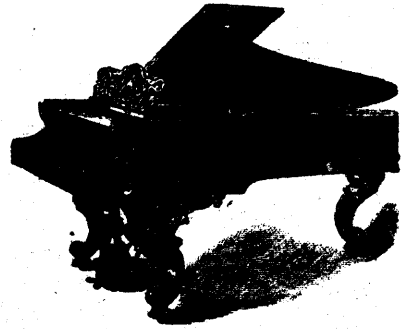
Branch: 148 McGill Street, Montreal.

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

**TORONTO.**  
**MONTREAL.**  
CLOSE PRICES. LIBERAL TERMS.

# HEINTZMAN & CO.

MANUFACTURERS OF



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

SEND FOR ILLUSTRATED CATALOGUE.

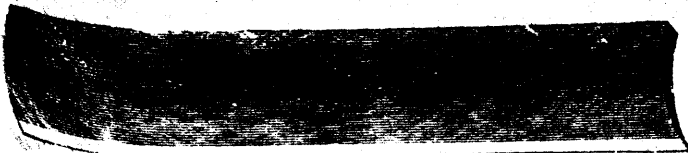
Warerooms, - 117 King St. West,  
**TORONTO.**

## GALT MACHINE KNIFE WORKS.

PLANING MACHINE  
KNIVES.



STAVE CUTTER KNIVES.



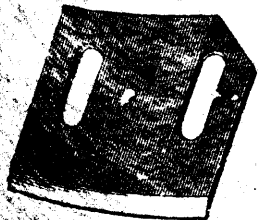
STAVE JOINTER KNIVES.



MOULDING, TENONING  
MITREING

SHINGLE JOINTER,

And other irregular shapes.



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

PETER HAY,

GALT, ONT.

## THE Polson Iron Works Co.

(LIMITED)

CAPITAL, - - \$300,000.00.

**Iron & Steel Ship Builders & Engineers**

HEAD OFFICE, TORONTO.

PRESIDENT, WM. POLSON. MANAGING DIRECTOR, F. B. POLSON

DIRECTORS:

Hon. W. E. Sanford, W. C. Matthews, Jas. Worthington,  
D. Graham, A. B. Lee, T. F. Chamberlain,  
J. B. Miller, Thomas West.

BUILDERS OF

**Iron, Steel, Composite and Wooden SHIPS**

Compound and Triple Expansion

**MARINE ENGINES**

AND

**MARINE BOILERS**

Hoisting Engines, Pumping Engines, The Brown  
Automatic Engines for Stationary Use.

STEAM BOILERS OF EVERY DESCRIPTION.

Ship Building Works and Dry Dock, OWEN SOUND, ONT.  
Engine and Boiler Works, Esplanade St., TORONTO.

"HAYES"

METALLIC LATHING.

"EASTLAKE" and  
"BROAD RIB"

Metallic Shingles.

Send for Catalogue.

Metallic Roofing Co.

OF CANADA, (Limited),

Rear 84 to 90 Yonge St.

TORONTO.



THE OSHAWA  
Malleable Iron Co.

MANUFACTURERS OF

MALLEABLE IRON

CASTINGS TO ORDER

FOR ALL KINDS OF

Agricultural Implements

AND

MISCELLANEOUS PURPOSES.

Oshawa, Canada.



HICKORY PULLEYS.

We make only hardwood bent rim spoke arm split pulley; only small split pulley; only split loose pulley with oilless bearings; only wooden hangers, in the market.

Send for discounts and circulars.

Menasha Wood Split Pulley Co.

MENASHA, Wis.

W. S. McGregor.

Manufacturers' Agent

AND BROKER

Office, 11 & 13 Front Street East,

TORONTO.

Correspondence solicited with Manufacturers desiring representative in Toronto and East.

SMITH'S FALLS  
MALLEABLE IRON  
WORKS

WM. H. FROST

MANUFACTURER TO ORDER OF

Malleable Iron Castings

FOR

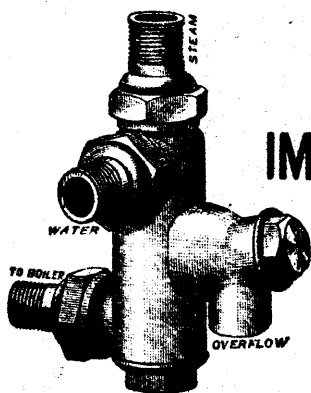
Agricultural Implements

AND OTHER PURPOSES.

Also CARRIAGE HARDWARE.

SMITH'S FALLS,

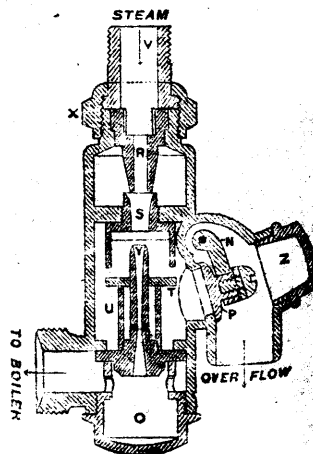
Ontario, Canada.



FEED YOUR BOILER WITH A  
PENBERTHY  
IMPROVED AUTOMATIC INJECTOR.

10,000 IN USE IN CANADA.

Cheaper than a Pump, takes up Less Room and  
Feeds the Boiler with Water at  
nearly Boiling Point.



SIMPLE, ECONOMICAL AND DURABLE.

And the Only Absolutely Automatic Injector in the Dominion.

PROMINENT FEATURES ARE: They start at about 25 lbs. steam pressure and work to 150 lbs. Lift water up to 20 feet, and work from a head as well. They require little watching, as, being automatic, they restart if feed to boiler is broken by air or sudden jarring. The parts are interchangeable and can be removed without uncoupling machine. Send for pamphlet to PENBERTHY INJECTOR CO., Detroit, Mich. Factory at Windsor, Ont. Handled largely also by Waterous Engine Works Co., Limited, Brantford; J. H. Taylor, Montreal; S. J. Shaw, Quebec; Park Bros., Chatham; McDonald & Co., Limited, Halifax, N.S.; A. R. Williams, Toronto.