

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

THE HIGHER IT GOES THE RICHER IT GETS

MANUFACTURES FOR ITSELF PROSPERS

Vol. 20.

TORONTO, MARCH 6, 1891.

No. 5.

"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.

WENGE ARCHIL & CUDBEAR.

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

**DOMINION
DYE WOOD & CHEMICAL CO.,
TORONTO.**

ALIZARINES
FOR FAST COLORS.

SOLE AGENTS FOR
**FABER FABRIKEN
VORMALS,
FRIEDR. BAYER & CO.,
Eberfeld, Germany**

**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. R. WILKIE, Cashier. B. JENNINGS, Asst. Cashier.
E. HAY, Inspector.

Head Office, - TORONTO.

BRANCHES IN ONTARIO
Essex Centre. Niagara Falls. St. Thomas.
Fergus. Port Colborne. Sault Ste. Marie.
Galt. St. Catharines. Welland.
Toronto. Ingersoll. Woodstock.
" Cor. Wellington St. and Leader Lane. Cor. Yonge
and Queen Sta. Cor. Yonge and Bloor Sta.
BRANCHES IN NORTH-WEST.
Winnipeg. Brandon. Portage la Prairie. Calgary.
Prince Albert.

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." 73
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 GUNTA PERCHA'S RUBBER MFG. CO.
INCORPORATED IN CANADA
OF TORONTO. C.N. CANADIAN
SECTY

**BELTING
WAPPING**

**CLOTHING
HOSE**

FACTORIES
AT PARKDALE.

WAREHOUSE & OFFICE,
**43 YONGE ST.
TORONTO.**

MONTREAL OFFICE:
**91 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 I**
Dundas, Ont.

SEE ADVERTISEMENT, PAGE 178.

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 palm off on the public the products of other makers, and representing them to be ours to the injury of the reputation of our goods, we have issued the following :-

CAUTION TO THE **TRADE**

Merchants are respectfully advised 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.

WIRE 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 85 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 Belts, Coach Screws, Hot Pressed
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, 105 Mill St., Montreal.

ELECTRIC LIGHTING

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

HENRY S. THORNBERRY & 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.

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

THE FARMERS' INTEREST IN THE NATIONAL POLICY.

The Toronto *Globe* publishes the following frantic appeal to Canadian farmers :

"It is you, farmers, who must bear the brunt of the battle against monopoly and privilege, against the trusts and the combines. You have a greater voting power than any other single class, and therefore the country awaits your verdict. Yet this is no battle of the country against the town and city. The mechanics, the laborers, the solid business men, the manufacturers who do not depend upon protection are with you. The gaily-colored cartoons bearing the name of 'The Industrial League' are ignored by the highly-protected manufacturers who are afraid to face American competition because it will compel them to relinquish a part of their inordinate profit, a part of their power of fleecing you. The best manufacturers who are content with a moderate profit are not afraid of reciprocity. On the 5th of March you will have a chance of getting cheaper supplies."

In the same issue of the *Globe* in which this appeal is paraded is a report of an interview with Mr. M. W. Glendon, managing partner of the Dominion Piano and Organ Company, of Bowmanville, Ont., who, as the *Globe* puts it, gives very valuable information as to the relation of the piano manufacturing industry to the tariff, and the probable effects upon it of unrestricted reciprocity. "We are strongly in favor of complete commercial reciprocity," says Mr. Glendon, "because we can see quite clearly that it would be beneficial to our business without injustice to any other interest. We have nothing to fear from competition so long as increased markets are given. We have no combine of piano manufacturers, and the competition has had the effect of reducing prices, even for the best goods. The piano we are now making we sell at twenty-five per cent. less than an instrument of corresponding grade can be bought for in New York, the head-centre of the pianoforte trade in America. The present duty

on pianos is \$30 specific on each piano and twenty per cent. *ad valorem*. This is over-protection, and the result has been to attract more capital to the business than can be profitably employed at it. This means competition. I speak only what is known to every man in the trade when I say that there is an over-supply of pianos in this country, and that the population cannot absorb the combined output of the factories. In the effort to keep the stock from accumulating, pianos have virtually been forced upon people. There are enough pianos being manufactured in Canada to-day to meet the legitimate demand of 10,000,000 people. We must combine to reduce the output, or there must come a crash and financial distress among the manufacturers. The only alternative is an enlarged market, and that unrestricted reciprocity would give us. I do not speak of the competition from my own knowledge of the case alone. The fact is noticed by Americans in the trade who come here. They all say that they find greater efforts made here to sell goods, and a finer grade of pianos for the money than can be bought on the other side. I sincerely hope that the present policy, which means either disaster or combination, will not be continued."

The *Globe* expresses only an opinion regarding the operations of the N.P., and Mr. Glendon states facts; and these are strangely and strongly at variance. In its editorial the *Globe* tells the farmers that the piano manufacturing industry, because of the N.P., is a monopoly, a privilege, a trust and a combine; and that the overthrow of the N.P. will compel the manufacturers to relinquish a part of their inordinate profits, and of their power of fleecing them. The manager of an immense piano manufacturing industry in his interview in the *Globe* tells the farmers that under the N.P. there is no monopoly, no privilege, no trust and no combine; that he has no fear from competition, and that the competition now existing in the trade "has had the effect of reducing prices," and that the pianos his company are now making "are sold at twenty-five per cent. less than instruments of corresponding grade can be sold for in New York, the head-centre of the pianoforte trade in America." If these are facts—and who doubts them?—as far as pianos are concerned, why should the farmers desire the destruction of the N.P.? Why should the farmers, merely to please and benefit Mr. Glendon, give him the opportunity of forcing them, under unrestricted reciprocity, to pay twenty five per cent. more for their pianos than they now have to pay under the N.P.? Suppose it is a fact—and it is a fact—that there is a heavy duty upon imported pianos, Mr. Glendon shows conclusively that the duty is not a tax upon the farmers who buy pianos; for his testimony is that he sells his pianos twenty-five per cent. lower than the same class of piano can be bought for in the United States. He claims that "it is only the manufacturers of the lower grade of pianos and organs in Canada who need protection." The use of the term "lower grade" is merely a fling at other manufacturers that is undignified and without weight; but it is a fact, nevertheless, that under the N.P. competition in the trade has become so great that Canadian farmers can now buy pianos twenty-five per cent. less than they could be bought for under unrestricted reciprocity. Perhaps Mr. Glendon is greedy for exorbitant profits which competition prevents him obtaining; for he shows that, although his company has not

been engaged in the manufacture of musical instruments as long as some other concerns, they have what they claim to be the largest and best equipped factory in Canada; that the profits growing out of the business has enabled the owners to pay for it; that they have no rent to pay, and that living in Bowmanville is cheaper than in the city. If these are facts why should the farmers be asked to pay Mr. Glendon's company twenty-five per cent. more for their pianos than they now ask?

Mr. Glendon is not alone in giving testimony regarding the excellence of Canadian-made pianos, and the injury to Canadian farmers and all other users of pianos that would follow unrestricted reciprocity. In interviews recently published in the *Globe* Mr. E. G. Thomas, a manufacturer of organs at Woodstock, Ont., acknowledged that, following the destruction of the N.P., "the large number of cheap instruments turned out of American factories would have an undesirable effect on this market"; and Mr. W. B. Nelles, of the Evans Bros. Piano Manufacturing Company, of Ingersoll, Ont., anticipated that "with continental free trade there would be a certain amount of competition from the cheapest sorts of pianos made in the United States." Complaining of the low prices of pianos in Canada, the *Globe* reported Mr. Nelles as saying: "A comparison of present prices in the United States and Canada shows that there is no danger of this being made a slaughter market, for it is already a worse market than their own," and that "the only way that the piano trade of Canada might be injured by reciprocity would be by the very cheap class of instruments which are made in large numbers in the United States." In a previous issue of the *Globe* Mr. Thomas, already alluded to, explained the low price of musical instruments in Canada by saying: "There has been a lowering of the price these last ten years or more of at least twenty per cent. Competition accounts for it." This is important corroborative testimony regarding the value of the N.P. to Canadian farmers, all the more convincing from the fact that it was elicited from the witnesses by the *Globe* itself. The N.P. was inaugurated only a dozen years ago, and Mr. Thomas tells us that since that time "there has been a lowering of prices of at least twenty per cent.," accounting for it by the competition that then arose in the trade; and both Mr. Thomas and Mr. Nelles agree with Mr. Glendon that under the N.P. pianos are much cheaper in Canada than they would be under unrestricted reciprocity. This being the case, why should the farmers desire a change?

It is not in pianos alone that Canadian farmers are vastly benefited by the competition of manufacturers whose industries were brought into existence under the N.P. The *Globe* furnishes abundant evidence on this point in the testimony it has obtained from manufacturers, interviews with whom it has reported in its columns. The Waterloo Manufacturing Company, of Waterloo, Ont., are manufacturers of agricultural implements; and it was only last week that Mr. Merner, who is interested in the concern, was reported in the *Globe* as saying: "Our prices here are lower than they are in the United States. Then unrestricted reciprocity would have the effect of shortening the terms of credit and bringing our business very much nearer a cash basis than it is at present. The average term in the United States is four months, while

here credits are often prolonged to four years. We manufacture better machinery than is manufactured in the United States. We are manufacturing cheaper than the Americans, and if the terms of credit were shortened we could manufacture cheaper still." This is commended to the consideration of our farmers. Here is one of the most reliable concerns in Canada manufacturing agricultural implements, telling its customers, the farmers, that under the N.P. prices are lower here than in the United States; that they are making better implements than are made in the United States; that they give much longer terms of credit to the farmers who buy their implements than American farmers obtain, and that if they could only obtain unrestricted reciprocity they would charge American prices and grant only four months' credit as against the four years' credit they now allow. And Mr. Merner is not the only one who testifies to this effect. Mr. J. P. Macdonald, of the Macdonald Manufacturing Company, of Stratford, Ont., manufacturers of threshing machines, tells us, according to an interview published in the *Globe*: "Our prices are lower than those for American machines. Such a machine as we sell here for \$400 they sell for \$600." Why, then, should Canadian farmers desire unrestricted reciprocity, so that the Macdonald Manufacturing Company could have free access to the American market while the change would force them to pay \$600 for a machine that the Macdonald Company will now sell them for \$400? Messrs. Farren, Macpherson & Hovey are also manufacturers of threshing machines, at Clinton, Ont., and Mr. W. W. Farren, senior member of the firm, according to an interview published in the *Globe*, tells his farmer customers that "at the present time we are selling machines lower than the Americans are," and that "Canadian manufacturers give longer terms of credit than the United States men, and we are making a more substantial article." What inducement can it possibly be, then, for the farmers who are now getting a better machine at a lower price and on longer credit to swap the N.P. that guarantees them these conditions for unrestricted reciprocity that is to cost them so much, merely to benefit Mr. Farren's concern?

So, too, as regards stoves. All farmers use stoves, and naturally enough they desire to buy them as cheaply as possible. According to Mr. Thomas Doherty, who operates a stove works at Sarnia, Ont., the N. P. has brought into existence a very large number of such works in Canada, and the competition among them has depressed prices to a low point—lower than in the United States—and for this reason he wants to do away with the N. P. and have unrestricted reciprocity with the United States, where the prices of stoves are higher. According to an interview reported in the *Globe* Mr. Doherty says: "If we could get into the American market we should be relieved of a part of the high pressure of our competition here;" and that "the combination of Canadian stove manufacturers require protection from themselves. The combine has not raised prices. If the tariff walls were taken down the Canadian stove manufacturers would find themselves with easier competition than at present." Mr. Doherty here tells the farmers that under the N. P. competition has depressed prices until they are lower than in the United States; that the combination of stove manufacturers are ruining themselves by the exceedingly low prices at which they sell stoves; that

"they have not raised prices," and that the only way by which the price of stoves can be advanced is by throwing down the tariff wall and destroying the N. P. Do Canadian farmers desire unrestricted reciprocity to enable Mr. Doherty to charge them more for his stoves?

Mr. E. T. Dufton is the head of the firm of Dufton & Sons, woolen manufacturers of Stratford, Ont. Mr. Dufton explained to the *Globe* interviewer that the Canadian woolen manufacturers are so well treated by the tariff that he did not suppose there was as much as ten thousand pounds of wool per year that pays duty on entering this country. "If the United States tariff were off," Mr. Dufton said, "there would be a market for us over there that we could supply. United States woolen manufacturers have no natural advantages over us. They must pay heavy duties on their wool, while ours is free. Unless they were put on a basis with us in the matter of cost of imported wool they could not stand before our competition a year. The McKinley duty on long wools is twelve cents a pound." In this Mr. Dufton tells the farmers that as far as the manufacturers of woolen goods are concerned, they are better off now than they would be under unrestricted reciprocity. There is no Canadian duty on wool, while the American duty is twelve cents a pound, and under such circumstances, *i. e.*, if under unrestricted reciprocity Canada could continue to admit wool free, and the Americans should continue their duty at twelve cents, American woolen manufacturers "could not stand before our competition a year." Of course such circumstances could not continue, and of course Canada would have to adopt the American tariff of twelve cents a pound on wool, which would make woolen goods probably fifty per cent. higher in Canada than now. For Mr. Dufton's information it may be said that all the importations of long wool into Canada last year amounted to only five pounds, valued at two dollars, the duty paid upon which amounted to only fifteen cents. An evidence of the great benefit of the N. P. to Canadian farmers is given by Mr. Feodor Boas, who is connected with a woolen factory at St. Hyacinthe, Que. Mr. Boas has been stumping the country advocating unrestricted reciprocity, and in a speech made at Oshawa, Ont., as reported by the *Globe*, he told of the enormous profits—\$50,000 in a year—made by a certain woolen manufacturer during the year 1879-80, contrasting this fact with a proposition he had recently received from this same manufacturer "after the National Policy had worked out its natural result of over competition," as he stated it, urging a combine and temporary closing down of Canadian woolen mills. In 1879-80, when this certain woolen manufacturer spoken of by Mr. Boas, made \$50,000 in his business the N. P. had just been fairly inaugurated, and but few manufacturers had embarked in the production of woolen goods. But ten years later—in 1889-90—much capital had been invested in the business, resulting in a competition that depressed prices far below what they are in the United States; and it is because Mr. Boas wants to be enabled to obtain American prices for his wools he asks for unrestricted reciprocity. Of course this could only be at the expense of the farmers who would have to pay American prices for their woolen goods.

But why multiply illustrations? The *Globe* publishes from day to day a list of names of manufacturers who are said to be

favorable to unrestricted reciprocity, nearly every one of whom are in the same boat with those herein alluded to. When they embarked in business they had but few competitors, and they made money rapidly, thanks to the N. P. Then the N. P. was a good thing and they wished for its continuance; but others were also attracted by the inducements and invested their capital in protected manufacturing enterprises, as was expected and intended, and soon the competition became so keen that big fortunes ceased to accumulate at the expense of consumers, and now prices are at a standard where the weak, the indolent, the unskilled and the unprogressive find it impossible to keep up with the procession. They find themselves sinking in the whirling, rapid current of active business competition, and, like drowning men grasping at straws, they clutch at unrestricted reciprocity, hoping that by it they may be enabled to hold out a little longer. To enable them to obtain this condition they and the *Globe* appeal to the farmers of Canada to help them. It is not successful Canadian manufacturers who ask this thing. Those who are not afraid of healthy home competition are not the ones who ask it. Our successful manufacturers, when embarking in business under the N. P., calculated on the certainty of competition and a great deal of it. If they were among the first to enter the field, and made money rapidly because of the fact, they considered themselves fortunate, but their prosperity was but a fair reward for their enterprise. If they entered later they did it understanding that they were to compete with those already well established in business, and they all well understood that the immutable law of the survival of the fittest applied to them. They don't whine. In the days of their greater prosperity the farmers were their friends; and now that the N. P. has worked out its natural result of multiplying manufacturing establishments and of bringing down prices to a normal level through competition, they are the friends of the farmers and will not abandon them to the tender mercies of a situation where, according to the cloud of witnesses and their evidence produced by the *Globe*, the prices of nearly all necessaries of life will be greatly enhanced. Successful Canadian manufacturers and sensible Canadian farmers will maintain and continue their friendships, and will not sacrifice their mutual interests at the demand of unsuccessful or over-greedy men who cannot hold their own in the battle of life.

UNRESTRICTED RECIPROCITY IMPOSSIBLE.

At a political meeting recently held in Toronto, a speaker who proclaimed himself in favor of Unrestricted Reciprocity between Canada and the United States, in endeavoring to explain how such an event would probably affect the Canadian tariff, frankly admitted that, while he was not in favor of our tariff being made at Washington, and while he failed to comprehend how the matter could be otherwise arranged, he was willing to leave the arrangement and settlement of it to such men as Sir Richard Cartwright. The orator who uttered such crude ideas is a successful business man, whose business would be seriously affected, if not entirely ruined, by unrestricted reciprocity.

Whatever else may be said of Americans, they cannot be called fools. They are keen and wide awake, and know how

to drive a good bargain; and should it ever come that unrestricted reciprocity was to be considered and arranged for, it is safe to say that they would drive as good a bargain for themselves as possible. It is not characteristic of the American people to give away valuable considerations for nothing. Sir Richard Cartwright and his party tell us that in arranging for unrestricted reciprocity with the United States Canada would not be expected to surrender her right to make her own tariff; and that under the arrangement, where there would be a free exchange of the respective products of the two countries, the American tariff would operate against the products of any other countries, even when imported through Canada, and the Canadian tariff would operate against the products of any other countries, even when imported through American ports.

This arrangement would be simply impracticable and intolerable to both Canada and the United States, which contention we will illustrate. Canada imposes no duty upon wool: the American duty averages about twelve cents per pound. Canada could not send foreign wool into the United States free, but she could manufacture it into clothing, and Canadian-made clothing would go in free. Under this arrangement, Canada, with free wool, would quickly become the manufacturer of all the woolen goods consumed in the United States. We say all, because American manufacturers paying a duty of twelve cents per pound upon their raw material could not compete with Canadian manufacturers who obtained their raw material duty free. Further, the American duty is exceedingly high upon woolen fabrics, much higher than the Canadian duty, but high as it is, it does not keep many millions of dollars worth of British and other foreign woolen goods out of the American market. Under such an arrangement as that alluded to, British and other foreign manufacturers would quickly transfer their factories to Canada, and thus avoid the high American tariff. It is supremely ridiculous to suppose that the Americans would be such fools as to permit such a condition, or that they would consider any enlarged trade that might be done with Canada a compensation for such a sacrifice.

So, too, as regards iron of all descriptions, including machinery, pig iron, tinplates, etc. Pig iron cannot be excluded entirely from the American market, even in the face of a duty of six dollars per ton. Canada imposes a duty on pig iron of only four dollars per ton, and the article could be placed on the free list if so desired; and tinplates come in free. To encourage the manufacture of tinplates in their country, the American duty will, in a few months, be raised to two and a half cents per pound. Under unrestricted reciprocity, Canada would become a bee hive of iron manufacturing industries. Steel rail mills would cease to exist in Pittsburg and Chicago, but they would reappear in Toronto and Hamilton, and supply the demand in both countries. Pennsylvania, Ohio and Alabama would continue to produce pig iron, but Canada would be the market in which it would be sold. An American tariff sixty or seventy per cent high would keep out of that country manufactures of iron from all other countries, but those of Canada would go in free, to the destruction of all similar American industries. Canada might not embark in the manufacture of tinplates, but the anticipated industry in the United States would never materialize. We might not be able to send

tinplates, as such, free into the United States, but all manufacturers of tinplates, including the dinner pail of the workman, used in the United States, would be manufactured in Canada. This would be a nice soft snap for Canada, but rather rough on our American friends. And so in a hundred other industries: for all that Canada would have to do would be to remove the duties upon the raw material of manufacturing industries, and forthwith these industries would cease to exist in the United States and find establishment here: and the alternatives that that country would have to consider would be either the abrogation of the Reciprocity treaty or the adoption of Free Trade pure and simple.

AMERICAN SENTIMENT.

THE cry for annexation grows daily louder in Canada. Mr. Goldwin Smith and other observers feel confident that the clamor cannot be stopped, and that the best thing for Canadian loyalists to do is to yield to it gracefully.

"Let us have unrestricted trade with Canada," says Mr. Blaine, "or let us have nothing to do with her."

Here, then, is the alternative.

On the one hand, the whole wealth of this country will be poured at Canada's feet. Her poky little villages will grow to be handsome American towns; her cities, little better to day than the country towns of England, will rival the splendors of our own great cities in the North-West and North. And she will be free.

On the other hand, she will continue to enjoy the blessings of a vice-regal court. She will be governed by some of Queen Victoria's innumerable grandsons, who will play at kingship in Ottawa, imposing a court ceremonial, court dresses, court etiquette on citizens and citizens' wives, whose souls have never strayed beyond the limits of a farm. Or she will be placed under the fatherly care of some peer like Lord Connamara, late Governor of Madras, who cast the eye of favor on a nursery maid, and landed in a divorce court.

Can Canada hesitate between independence and subjection to such rulers as these? Can she reject the boon so freely offered to her by the United States, and accept the legislative favors which Great Britain doles out to her so grudgingly?

No sensible man will believe it. Let Canada join the Union.—*The Illustrated American.*

We are free to admit that what our illustrated contemporary says about current politics and politicians in the United States may be a truthful reflex of the status there; but we most emphatically declare that what it says regarding Canada discloses a condition of ignorance that would be indefensible in any fifteen year old boy who had spent a few weeks of his summer vacation travelling in Canada with his eyes and ears open. This ignorance is all the more inexcusable because he who could write what we have quoted possessed opportunities of learning the falsity of the facts and the ridiculousness of the suggestions stated.

The inspiration which prompted the writing of the article quoted, was drawn from some of the utterances of Mr. Goldwin Smith, who, no doubt, wishes to see Canada become a part and parcel of the United States. Mr. Smith is a man of ability, and his utterances attract more or less attention; but on this question he is a crank, and his opinion regarding what would be best for Canada deserves no more weight than the opinion of any other intelligent thinking man in the country. *The Illustrated American* would not have to search very far through its

exchanges to have discovered that although Mr. Smith has a following, it is comparatively small; and also that an overwhelmingly large majority of the people of Canada reject his teaching, having the utmost confidence in the ability and determination of the country to march forward in the path it is now pursuing towards a great Nationality.

If the United States has determined to have nothing to do with Canada unless there be unrestricted trade between the two countries, as we are told Mr. Blaine says, then intercourse must necessarily cease. Canada does not desire to see such a condition occur, but there is one thing that is of more value to Canada than unrestricted trade—self respect. If Canada finds it to her interest to offer and accept no more than a limited reciprocity of trade with the United States; and if that country refuses to trade with us on these terms, while the unfriendly and unneighborly act would inflict more or less inconvenience and loss to us, this could be borne with better grace and more unflinchingly than any coercion that might be attempted. It will not do to say that the United States will never attempt to coerce Canada in this matter—it is doing so now, for many of the provisions of the McKinley tariff are aimed directly at Canadian industries and interests, and were intended to pinch and squeeze Canada into a compliance with Mr. Smith's plan of annexation. He calls it unrestricted reciprocity, but he has frequently said that the manifest destiny of Canada is to become a part of the American republic.

What, pray, is the meaning of the assertion that under reciprocity the whole wealth of the United States would be "poured at Canada's feet?" Could a promise to deliver the merchandize be complied with? We suppose our contemporary intended to convey the idea that Canada would have access to the American market. But is not that market now more than fully occupied? If it is not why does Mr. Blaine make such frantic efforts to capture South American markets as outlets for the surplus production of his country! And if there is an overproduction in the United States, and American farmers and manufacturers are producing more merchandize than can be consumed at home, of what benefit would it be to Canadian farmers and manufacturers to have the privilege of sending the surplus of their productions to that country? Mr. Blaine may be to his countrymen a very astute statesman, showing great ability in his endeavors to enlarge the American market by adding that of Canada thereto; but to Canadians he does not appear of such immense intellectual calibre. There are many natural products individual to each country but none common to both, and it is in these Canada would like to have reciprocity with the United States, but Canada will never consent to become a hewer of wood and a drawer of water for her neighbor. Nor will she ever consent to have her tariff laws made at Washington instead of at Ottawa. Nor will she ever discriminate in her tariff in favor of the United States or any other foreign country and against Great Britain. Canada is unchangeably determined on these points.

"AND SHE WILL BE FREE."

The Illustrated American, expressing a desire that Canada should join the American Union, tells us that with annexation our poky little villages would grow to be handsome American

towns; our cities, which are now little better than the country towns of England, would rival the splendors of the cities of the American North-West and North, and that Canada would be "free." We are also told that if Canada refuses this opportunity of annexation we will continue to be governed by some of Queen Victoria's innumerable grandsons, or be placed under the fatherly care of some peer like Lord Connemara, who is alleged to have been landed in a divorce court because of some intrigue with a servant girl.

If the writer of our contemporary's article had ever visited Canada, he would have discovered that there are fewer "poky little villages" here in proportion to population than there are in his own country; that we have quite as large a proportion of handsome towns, and that Canadian cities already rival, if not excel, the splendors of the most flourishing cities in any part of the United States. It is unfortunate that obloquy of vision should compel an otherwise fair writer to place his eye to the wrong end of his telescope when viewing Canada.

It is worse than obloquy of vision, however, to intimate that such a state of things exist, or could exist, in Canada as regards what our contemporary calls our vice-regal court. The slurs that are hurled at Canadian citizens and their wives are mean and ungenerous; and the intimation that the representative of Queen Victoria in Canada might be a roué and debauchee, indicates a lack of gentility and refinement that should not exist in one who poses as a high-toned educator of a high-toned and generous people such as Americans are supposed to be. Canadians are not disconcerted by such uncouth intimations, nor do such things swerve them from their love of Canadian institutions and their allegiance to the British Crown. The vice-regal court established in Canada is always presided over by gentlemen; and the etiquette is such as obtains with favor among all respectable people; and it is a mistake to suppose that Canadian citizens and their wives are strangers to the usages of refined society. Whatever scandalous actions such men as Lord Connemara might be guilty of in Madras they would not be tolerated in Canada, where the moral tone of the people is quite as high as that prevailing in the neighboring Republic. The case of Maria Halpin, of Buffalo, has not yet faded from the memory of Canadians who were surprised that such a libertine as her seducer should be elected President of the United States.

Canada's form of government includes a vice-regal court; and this feature will be perpetuated as long as Canadians are pleased to perpetuate it. The Governor General is received as the representative of that royalty to which Canadians are pleased to render allegiance. He is not an autocrat, neither has he any power or authority to make or unmake laws, which is more than can be said of the President of the United States. Canada can never be "governed" in the original acceptation of that word against her will by any scion of royalty; and there is no divinity hedged about any representative of royalty that places him above the councillors who are given to him by the people; and in this respect the government is freer than that of the United States, where the President's Cabinet are not responsible to the people, and where the President has the constitutional right to veto any act that the representatives of the people and of the States, in Congress assembled, may see proper to pass, and which cannot then

become law unless passed over the President's veto by a two-thirds vote of both houses of Congress. It would be impossible for any such undemocratic procedure to occur in this free country. No ministerial council could exist a day in Canada in the face of a vote by the representatives of the people in the House of Commons assembled, expressing a want of confidence in their policy. This freedom of the people of Canada is in strong contrast with a condition recently prevailing in the United States where, after an overwhelming and disastrous defeat, the defeated party continued to hold office and enforce a law that was so signally denounced and repudiated by the people. How ridiculous, then, for *The Illustrated American* to offer "freedom" to Canada as a result of annexation, when by annexation the people of Canada would surrender a larger measure of freedom than the American people ever knew.

PROTECTION IN GREAT BRITAIN.

At a recent meeting of the Belfast (Ireland) Linen Merchant's Association, discussing the effect of American tariff on the linen manufacturing industry, surprise was expressed that the United States, where the industry to be protected was a very small one, should impose as high a duty as that indicated in the McKinley bill; that the industry there consisted only of the manufacture of the coarsest fabrics, and the taxing to such an extent of the consumer for the benefit of a few manufacturers seemed as unwise as it was unexpected. Mr. Ward, the secretary of the Association, said:—"It would appear, however, that an impression widely prevailed that with a sufficient amount of protection the linen industry could be built up in the United States, and many could not understand why a great manufacturing nation, fertile in the invention of labor-saving machinery, could not manufacture linen goods as they do cotton, wool and silk, thereby utilizing a large quantity of flax plant annually grown in the Western States for seed."

Regarding this the Manchester, England, *Textile Mercury* says:—

"It appears mere waste of words to condemn the Americans for raising the duties on linens because the industry "to be protected" is a very small one, confined mainly to the production of coarse goods. Those who believe in protection do so because it enables industries to be built up where none before existed. That is why the United States has raised the tariff on linens, and although Belfast may energetically protest that it is physically impossible to establish a linen industry in the Republic, Americans are not likely to give much heed to the statements of such an interested observer. Belfast must follow other methods if it wishes to loosen the coils which are gradually crushing the life out of our foreign trade. Dogmatic statements to the effect that protection is injurious only to the countries adopting it, while all the time it is enabling vast industries to be built up abroad at the expense of our own, are not worthy of the business men of this country. One can understand the London Chamber of Commerce condemning retaliation because London ship and produce brokers, financiers and the bulk of the commercial body in the metropolis are not so much interested in the prosperity of our home trade as in the increase of imports from the Continent into the London Docks. But although the interests of Belfast, Bradford, Leeds, Nottingham and other centres lie in a totally opposite direction, their manufacturers continue to play the game of the London importer, and, through him, of the Continental producer."

This sounds queerly coming from such an avowed free trade paper as the *Mercury* is. But it shows that Britishmen are beginning to comprehend that protection is not always as bad as it has been represented to be, and that free trade is not always the unalloyed blessing that Mr. Cobden thought it would be. In fact it is pointed out that there is a difference in the interests of the British shipowners, who desire free trade so that their carrying trade with foreign nations may not be interfered with, and British manufacturers whose interests are adversely affected by the indiscriminate importations into the kingdom of the cheaper products of other nations, and by the protective tariffs of other nations. Last year the Continental trade of Belfast in linens marked a reduction from the trade of the previous year of about seven per cent. Russia has raised her duty on all imports about twenty per cent; France is working out a considerably higher tariff; Spain will probably do the same thing; Germany imposes heavy duties on about all foreign merchandise, and Britain finds herself in the anomalous and disagreeable position of being the only considerable European nation that has not yet fallen into line as a protectionist.

Sir Henry Mitchell, at a recent meeting of the Bradford Chamber of Commerce, speaking of the depression in the British textile trades, said that in view of the expiry of the French treaty early next year, and of the "frightful effects" which "these constant impositions of higher duties have upon English trade," it was the duty of the Chamber to do all they could to prevent the imposition of higher tariffs upon British goods. The *Textile Mercury*, explaining the ground it has taken in advising that Britain should adopt some policy of retaliation against nations that enforce high tariffs against British merchandise, says:

"We are free traders,—more earnestly so, perhaps, than those who condemn the slightest suggestion as to retaliation. It is because we are in favor of free trade that we advocate judicious retaliation, by which alone can the present obstructions to trade be removed. This country does not enjoy the benefits of free trade at the present time, however strongly some of us may protest our devotion to the doctrines of Cobden. There can be no free trade in England while the rest of the world continues to shut the door of commerce in our face. We may continue to buy of those who will not allow us to sell. But that was not what Cobden expected we should have to do when he led the country forty years ago; and it is not free trade—it is trade carried on under every possible disadvantage that the ingenuity of our competitors can devise. We wish to see these disadvantages removed, and retaliation is the only method by which such a result can be obtained."

We accept this testimony. Britain does not enjoy the benefits of free trade, and it is beyond any effort that that country can put forth to derive any greater benefits from it than she now has. It requires more than one to make a bargain, and Mr. Cobden made a vital mistake in supposing that because of the prestige Britain had fifty years ago she could, through his free trade policy, force and coerce all the other nations of the earth to accept and practise it. The mill of the gods grinds slow, and free trade is tottering to its fall. Protection will win.

THE CANADIAN MANUFACTURER,
\$1 PER YEAR.

BRAZILIAN-AMERICAN RECIPROCITY.

A COMMERCIAL arrangement has been entered into by the United States and Brazil by which, after the first day of April next, certain products of the United States will be admitted into Brazil duty free, and upon certain other products there will be a reduction of twenty-five per cent. of the duty charged in the tariff now in force, or which may hereafter be adopted there. The free list includes wheat; wheat flour; corn or maize, and manufactures thereof; rye and rye flour; barley and buckwheat, and buckwheat flour; hay and oats; beans and peas; potatoes; pork, salted and pickled, and bacon, except hams; cottonseed oil; fish, salted, dried or pickled; coal, anthracite and bituminous; rosin, tar, pitch and turpentine; agricultural implements, tools and machinery; mining and mechanical machinery, tools and implements, including stationary and portable engines, and all machinery for manufacturing and industrial purposes, except sewing machines; instruments and books of art and sciences, and railroad material and equipment. The total annual average of the value of all imports of these articles into Brazil is \$20,003,939, of which the United States furnished but \$3,394,633. The articles upon which the duties are to be reduced twenty five per cent. upon imports from the United States include lard and substitutes therefor; bacon hams; butter and cheese; canned and preserved meats, fish, fruits and vegetables; manufactures of cotton, including cotton clothing; manufactures of iron and steel not included in the free list; leather and manufactures thereof, except boots and shoes; lumber, timber and the manufactures of wood, including cooperage, furniture of all kinds, wagons, carts and carriages, and manufactures of rubber. The total average value of importations into Brazil of articles embraced in this schedule is \$38,631,242, the United States supplying but \$2,035,899 worth. Taking the two schedules together, of a total annual importation into Brazil of \$58,635,182, of all these articles, only \$5,430,532 went from the United States as against \$53,204,650 from all other countries. In return for these concessions the United States admits into its markets free of duty the sugar, molasses, coffee and hides, the growth and product of Brazil. In 1888 the imports into Brazil from the United States were valued at \$7,137,008, and from the United Kingdom, \$28,314,482. In that year Brazil sold to England, France, Germany and Spain, \$61,657,280, and bought from these countries \$82,405,560. From these figures it will be seen that the balance of trade between Brazil and the United States has been greatly against the latter country. In fact, during the thirty years ended with 1888, the United States paid to Brazil in cash, over and above what was furnished in merchandise, \$798,500,000. The United States has heretofore maintained a heavy import duty upon Brazillian sugar, molasses and hides, but for a number of years coffee has been free. The United States consumes more than sixty per cent. of Brazil's production of coffee, the value of that article imported into the American market in 1869 being \$34,500,000. The exports of Brazillian sugar to the United States have varied widely from year to year, as the Cuban crop has been a success or failure: and the advantage to be derived by Brazil from the free entry of her sugar into the American market is not great, as all sugars under number 16 Dutch standard goes in there free after April 1st.

It is to be observed that this Reciprocity between Brazil and the United States is not of the unrestricted variety, such as Mr. Blaine says Canada must submit to or remain out in the cold. Brazil is not an extensive manufacturing country: and this treaty means a great deal to American manufacturers, who congratulate themselves that they have virtually obtained entire control of the trade of another country as large as their own, containing about 20,000,000 people, and exceedingly rich in natural resources. Mr. Blaine is now endeavoring to negotiate similar treaties with other South American States, providing for partial reciprocity: and it is only his desire to force Canada into annexation that withholds his consent to a similar arrangement with this country.

THE DANGER OF UNRESTRICTED RECIPROCITY.

THE town of Peterborough, Ontario, is one of the most thriving manufacturing centres in Canada. The *Review* of that place thinks the town's prosperity would be endangered by unrestricted reciprocity with the United States; and what it says on the subject is equally applicable to the whole Dominion. It says:—

"What effect unrestricted reciprocity, as proposed by the Liberals, would have upon manufacturing industries is an important question for the people of this town and district. We are building up here a manufacturing centre, and of late years—in fact ever since the beneficial effects of the National Policy began to be felt—the industrial importance of the town has grown rapidly.

"A good illustration of the advantages given by the National Policy is afforded by the recent very important addition to the town's list of factories—the Edison general electric works. At these works all kinds of electrical machinery and appliances will be made, from the smallest wire to the largest motors, electric street cars and boilers to drive the machinery. The plan of the buildings shows that an immense area will be covered, and the company expects to have six hundred employees in the shops. But why did this company wish to expend hundreds of thousands of dollars in Canada to build shops instead of doing all their work under one management in their immense shops in Schenectady? Because there is an import duty on the articles they manufacture. And in order that they would be in a position to do business in Canada they decided to establish works on this side, for by doing so they would not have to pay the duties, and could sell cheaper and meet competition. The National Policy brought the Edison works to Canada, and but for it the men who will be working and living here, and purchasing their supplies from our farmers and merchants, would remain in the United States and buy from American merchants and farmers and assist to build up the Republic instead of the Dominion. This is a practical and pointed illustration of the beneficial operations of the National Policy, for the truth of these facts is obvious to anyone and was confirmed by the company's representative in Peterborough.

"What is true of the Edison works is also true of other large industries. It was the National Policy that encouraged Mr. Brooks to come here and led to the establishment of the lock works. It was the protective tariff that encouraged Mr. Law to enter into bridge building and built up that industry from a small foundry to be the large and flourishing industry it now is, sending its products to all parts of the Dominion. It was the same tariff that enabled the carbon works to be started, the trade and output of which is steadily growing despite the efforts of the United States factories to freeze it out. The Auburn mills and other industries that have increased their

capacities and have grown up under the National Policy might be pointed to, and they teach the same lesson. The Wm. Hamilton Company's works have been greatly enlarged. That company is sending machinery across the continent to British Columbia and Peterborough mechanics are working on the machinery that will equip mills on the Pacific coast. Why, only for the fiscal and railway policy of Sir John Macdonald's administration that market could not have been entered, for, apart from other considerations, without the Canadian Pacific railway the machinery could not be sent there.

Thus the National Policy has furnished employment for our artisans, has developed our industries and has built up our town, and has by so doing built up a market for our farmers at their doors—the best and most profitable kind of a market.

“What effect would the adoption of unrestricted reciprocity have upon the town? We have seen that the industries have been developed by the National Policy. Reverse the fiscal policy and the conditions favorable to the growth of the industries will be reversed—the conditions will become unfavorable. Retrogression will take the place of advancement. The powerful manufacturing combinations in the United States—combinations formed and maintained for the very purpose of killing off opposition—will have free play upon the industries of Canada until they get the markets of this country under their control. Mr. Stevenson has told us truly of the attempts that have already been made to freeze out the lock works and the carbon works. Remove the protection and the lever of resistance to these attacks will be weakened or destroyed. And not only will these industries be affected, but all the other important and many less important industries. And the Edison works—will that company go on erecting the large buildings it proposes to erect when the very reason for their coming here is gone?

“These are hard facts, known to all of us, which the electors of Peterborough should seriously consider, and having considered them how can any elector who feels an interest in his home or his country vote for the destructive policy of the Liberal party? The people of Peterborough have been and still are anxious to secure manufacturing industries. When they learned that the Edison works and other industries were to be established some place in Canada, they were ready to pay for privileges for them in order that they might select this town for their location. On this point the people were practically unanimous, as was shown by the vote on the Edison by-law. Yet the Liberal leaders ask the people to accept a policy that would drive out such industries and make their existence here impossible. From every point of view, unrestricted reciprocity would be a disastrous and suicidal policy, one that would not only stop the growth of the town, but would drive it back to the position of a village, and its effect upon the whole country would be the same.

“This policy would also be a serious injury to the farming community. Apart from its other aspects as effecting the farmers, the loss of the markets afforded by the towns and villages—by the manufacturing industries which build up the places—would be a serious loss. The value of a good market is indicated by the higher value of farms close to cities and towns, and with the depletion of the population in the centres, these markets would be injured and the farming community would suffer. It is to the interest of all classes to have the industrial prosperity of the country increase, and it is, therefore, the duty of all who wish themselves and their country well to uphold the present fiscal policy and to reject the schemes of the present Liberal party.

“Looking at the matter from this point of view alone—and these considerations are of great importance, as they include the material welfare of the people—the policy of unrestricted reciprocity stands condemned as one that would be disastrous; and when the political effect of such an alliance with the Republic is also considered, and the evil effect it would have upon the Canadian shipping, mercantile and other interests

are added, the condemnation cannot be too emphatic and complete.”

FROM A BUSINESS STANDPOINT.

MR. W. C. VANHORNE, President of the Canadian Pacific Railway Company, has written the following letter to Senator Drummond:—

MONTREAL, Feb. 21, 1891.

My Dear Mr. Drummond.—You are quite right in assuming that the statement in the letter enclosed in your note of to day is untrue. I am not in favor of unrestricted reciprocity or anything of the kind. I am well enough acquainted with the trade and industries of Canada to know that unrestricted reciprocity would bring prostration or ruin. I realize that for saying this I may be accused of meddling in politics; but with me this is a business question and not a political one, and it so vitally affects the interests that have been entrusted to me that I feel justified in expressing my opinion plainly. Indeed, since opposite views have been attributed to me, I feel bound to do so. No one can follow the proceeding in Congress at Washington and the utterances of the leading newspapers of the United States without being struck with the extraordinary jealousy that prevails there concerning Canada—jealousy growing out of the wonderful development of her trade and manufactures within the past twelve years. It was this jealousy that prompted the anti-Canadian features of the McKinley bill. It was represented and believed at Washington that the Canadian farmers largely depended upon the United States for a market for many of their chief products and that their loyalty could be touched through their pockets and that it was only necessary to “put on the screws” to bring about a political upheaval in Canada and such a reversal of the trade policy of the country as would inevitably lead to annexation. I have found it necessary to keep well informed as to the drift of matters at Washington, because the interests of the Canadian Pacific Railway have been threatened by all sorts of restrictive measures, and from my knowledge of the feeling there I do not hesitate to say that if the result of the pending elections in Canada is what the authors of the McKinley bill expected it would be, another turn of the screw will follow. No comfort is to be found in the recent disaster to the Republican party in the United States. It was not the anti-Canadian features of the McKinley bill that caused this but too heavily increased duties on many articles the manufacture of which was intended to be forced. This increase of duties came at a time of general depression among the farmers and working classes and it was resented by them. Trade relations with Canada had nothing to do with it, they were not thinking of us.

Putting aside all patriotic considerations and looking at the question of unrestricted reciprocity from a strictly business standpoint, what in the name of common sense has Canada to gain by it at this time? Thousands of farms in the New England states are abandoned, the farmers of the Middle States are all complaining and those of some of the Western States are suffering to such an extent that organized relief is necessary. Manufacturers everywhere are alarmed as to their future and most of them are reducing their output, working on short time and seeking orders at absolute cost so that they may keep their best workmen together. We are infinitely better off in Canada. We have not abandoned farms and no distress anywhere, and there is work for everybody who is willing to work. Our neighbor's big mill pond is very low just now, but our smaller one is at least full enough to keep us going comfortably. His pond requires twelve times as much as ours to fill. It is not necessary that a small boy should be a schoolboy to know what the result would be if we were to cut our dam. Our pond would at once fall to the level of the other. Even if we were suffering from hard times we could gain nothing by

unrestricted reciprocity. No man of sense would seek partnership with one worse off than himself because he happened to be hard up. You can't make a good egg out of two bad ones.

The Canadian Pacific Railway is far away the largest buyer of manufactured articles in Canada; it buys dry goods and groceries as well as locomotives and cars; it buys pins and needles and millinery goods as well as rails and splices and spikes; it buys drugs and medicines and clothing as well as bolts and wheels and axles; it buys almost every conceivable thing and it is necessarily in close touch with the markets at home and abroad; it has built up or been instrumental in building up hundreds of new industries in the country and it is the chief support of many of them; and its experience with these markets and these industries justifies my belief that unrestricted reciprocity with the United States and a joint protective tariff against the rest of the world would make New York the chief distributing point for the Dominion instead of Montreal and Toronto; would localize the business of the ports of Montreal and Quebec and destroy all hope of the future of the ports of Halifax and St. John; would ruin three-fourths of our manufactories; would fill our streets with the unemployed; would make Eastern Canada the dumping ground for the grain and flour of the Western States to the injury of our own North-West, and would make Canada generally the slaughter market for the manufacturers of the United States, all of which would be bad for the Canadian Pacific Railway as well as for the country at large, and this is my excuse for saying so much.

I am not speaking for the Canadian Pacific Railway Company, nor as a Liberal or a Conservative, but only as an individual much concerned in the business interests of the country and full of anxiety lest a great commercial, if not a national, mistake should be made. Yours truly,
W. C. VAN HORNE.

EDITORIAL NOTES.

SHOULD the Grits triumph, all doubts will be set at rest as to what is Canada's destiny. It will not be so very many years before she is knocking at the door of your Uncle Sam.—*Buffalo News.*

WE are infinitely better off in Canada. We have no abandoned farms and no distress anywhere, and there is work for everybody who is willing to work.—*President Van Horne's Letter to Senator Drummond.*

THE height of the tariff line would have to be regulated at Washington. It would seem impossible that the American people would ever consent to permit the smaller body to have much influence in regulating the rates of duties to be levied.—*Erastus Wiman.*

THE one thing which may as well be accepted by all parties concerned as the only possible basis of any commercial arrangement between this nation and Canada, is that the people of the United States shall decide on what terms goods from Europe can be brought into this country.—*New York Tribune.*

OUR neighbor's big mill pond is very low just now, but our smaller one is at least full enough to keep us going comfortably. His pond requires twelve times as much as ours to fill. It is not necessary that a small boy should be a school boy to know what the result would be if we were to cut our dam—our pond would at once fall to the level of the other.—*President Van Horne.*

It is proposed to keep up the Custom houses along the border in order that smuggling from outside should not be permitted, and especially that Canada should not be the back door by which foreign goods could be brought into the United States free of duty. But the tariff of Canada must necessarily be as high as that of this country, against the outside world.—*Erastus Wiman.*

A VERY large number of people are inclined to think that we had better make for annexation at once, instead of making two bites on the cherry. The old parties here are rapidly breaking up, and when Sir John goes we shall be adrift without a port in sight—save annexation. The truth is that every man who preaches C. U. would prefer annexation, so that the party is virtually wearing a mask.—*Edward Farrer.*

No comfort is to be found in the recent disaster to the Republican party in the United States. It was not the anti-Canadian features of the McKinley bill that caused this, but the heavily increased duties on many articles, the manufacture of which at home was intended to be forced. This increase of duties came at a time of general depression among the farmers and working classes, and it was resented by them.—*President Van Horne.*

I HAVE found it necessary to keep well informed as to the drift of matters at Washington, because the interests of the Canadian Pacific Railway have been threatened by all sorts of restrictive measures, and from my knowledge of the feeling there I do not hesitate to say that if the result of the pending elections in Canada is what the authors of the McKinley bill expected it would be, another turn of the screw will follow.—*President Van Horne.*

THOUSANDS of farms in the New England states are abandoned; the farmers of the middle states are all complaining, and those of some of the western states are suffering to such an extent that organized relief is necessary. The manufacturers everywhere are alarmed as to the future, and most of them are reducing their outputs, working on short time and seeking orders at absolute cost, so that they may keep their best workmen together.—*President Van Horne.*

THE tariff of Canada must necessarily be as high as that of this country, against the outside world, for by the free admission of American goods (even now with a heavy duty half her imports), her revenues from customs would be so reduced that as against foreign goods the rates must continue fully as high as those in the United States, indeed, the condition of equality of tariffs must always prevail, else there would be no safety for the revenues of either country.—*Erastus Wiman.*

A FOUNDRY in New Brunswick manufactures a cook stove that they call the "N.P.," these letters being cast in raised characters on the hearth. One of these stoves is in use in a family living near St. Andrews, N.B.; and a few days ago a little two-year-old child therein, while playing around the stove, sat down on the hot hearth. A scream followed, and examination showed that the letters "N. P." were indelibly branded on the flesh of the little girl. The letters are reversed, of course, but the "P.N." of the child will never be changed.

I BELIEVE that this election, which is a great crisis and upon which so much depends, will show to the Americans that we prize our country as much as they do theirs; that we would fight for our existence as much as they fought for the preservation of their independence; that the spirit of our fathers, which fought and won battle after battle, still exists in their sons; and if I thought it was otherwise I would say the sooner the grass was growing over my grave the better, rather than I should see the degradation of the country which I have loved so much and which I have served so long.—*Sir John Macdonald.*

THE American Carriage Directory for 1891, published by Price, Lee & Co., New Haven, Conn., contains the names and addresses of 45,108 concerns engaged in the trade in the United States, of which 25,790 are carriage and wagon-makers; 9,434 dealers in vehicles; 5,283 manufacturers and dealers in materials and 4,601 manufacturers and dealers in sleighs; there being 2,563 names given for Canada. These figures show that in the United States the vehicle manufacturers have an average *clientele* of only about 1,300 persons each, while vehicle manufacturers in Canada have an average of 2,000 each. And yet some of these latter manufacturers are crying to have access to the sixty-million market.

LOUIS NAPOLEON once said to Mr. Cobden: "Yes, there are a good many free traders in my country, but you must remember that the masses are not organized. A 'vested interest' is organized and always organized. The free traders have interest, prejudice and ignorance against them, but they must ultimately win, as they have right on their side." Yes, there are a good many free traders in France, as Louis Napoleon said, and in other countries also, but Mr. Cobden's dream of universal free trade is further from realization now than it was in his day. The prejudice that exists throughout the world in this year of grace against free trade has already won for protection in every important country except Great Britain, and it will soon again prevail there.

WHAT is the good of a policy that knocks 35 cents off each dollar? Which is best, a policy that lets a dollar buy 100 cents worth of goods or one that clips off from 30 to 50 of the 100 cents. The N.P. takes an average of 35 per cent. from every dollar paid to wage-earners. If the Dominion had reciprocity with the United States a dollar would buy 100 cents worth of goods. It doesn't do so now, it buys 65 cents worth. Well, who gets the other 35 cents? Don't ask us; go and ask the combine.—*Montreal Herald.*

What is the good of a policy that knocks 35 cents off each dollar and knocks on 70 cents? Which is best, a policy that clips off 35 of the 100 cents, or one that clips off 70 cents? If the Dominion had reciprocity with the United States a dollar would buy only 30 cents worth of goods against the 70 cents worth, it can now procure.

DURING the reign of the Mackenzie government we were obliged to close our works. We could get nothing to do. Shortly after the establishment of the N.P. we commenced to get work and have been in full blast ever since. We are stopped now only for the purpose of enlarging our works to

double their present capacity. The introduction of unrestricted reciprocity would wipe us out of existence so soon as the orders now in hand are completed; which would take about six months, as the immense establishment, the Union Bridge Company, of Buffalo, with its immense plant and capital, would wipe us out of existence as it has done a large number of similar establishments once existing in the state of New York, and our skilled workmen would require to find work and homes elsewhere.—*William Hendrie, President of the Ontario Bridge Company, Hamilton, Ont.*

THE Toronto *Globe* publishes a cartoon in which is represented a millionaire manufacturer seated in a palanquin borne by farmers, through the open windows of which is seen Sir John. The millionaire manufacturer represents such men as Feodor Boas, who made big piles of money when the N. P. was first inaugurated, by having a virtual monopoly of his trade; but who is now, as is shown in the *Globe's* picture, remonstrating with Sir John because, as a result of protection, so many others have gone into the business, resulting in a depression of prices to a point where the farmers can actually buy Canadian-made goods at rock-bottom prices. Sir John is explaining to this sore-head millionaire manufacturer that the N.P. is doing its perfect work, and that the farmers are being benefited by it. It is only the sore-heads who are kicking against the N.P. We hope the *Globe* will keep its cartoon artist busy. Give us some more pictures, please.

SIR RICHARD CARTWRIGHT and all the other brigadiers who train with him, and who desire to destroy the autonomy, yes, even the very name of Canada by annexing her to the United States, should observe an object lesson painted on the pages of American history. Benedict Arnold was a trusted and honored general in the American army. Like Sir Richard and his brigadiers, he was ambitious, and his ambition led him to betray his country. It is true he lined his pockets with British gold as the price of his treachery; but expatriated from his own country, hated by those whom he had betrayed and despised by those who had used him as a tool, under the legal protection of a foreign country he lived a life of sorrow, bowed down by the ignominy and disgrace he had brought upon himself, and glad to escape the recognition of his fellow-men, he died, unwept, unhonored and unsung. A dog eating his own vomit is a more acceptable and agreeable object than a Benedict Arnold.

I AM not in favor of unrestricted reciprocity or anything of the kind. I am well enough acquainted with the trade and industries of Canada to know that unrestricted reciprocity would bring prostration or ruin. I realize that for saying this I may be accused of meddling in politics; but with me this is a business question and not a political one, and it so vitally affects the interests that have been entrusted to me, that I feel justified in expressing my opinion plainly. Indeed, since opposite views have been attributed to me, I feel bound to do so. No one can follow the proceedings in Congress at Washington and the utterances of the leading newspapers of the United States, without being struck with the extraordinary jealousy that prevails there concerning Canada—jealousy growing out of the wonderful development of her trade and manufactures

within the past twelve years. It was jealousy that prompted the anti-Canadian features of the McKinley bill. It was represented and believed at Washington that the Canadian farmers largely depended upon the United States for a market for many of their chief products, and that their loyalty could be touched through their pockets, and that it was only necessary to "put on the screws" to bring about a political upheaval in Canada, and such a reversal of the trade policy of the country as would inevitably lead to annexation.—*President Van Horne.*

THE Canadian Pacific Railway is far away the largest buyer of manufactured articles in Canada. It buys dry goods and groceries as well as locomotives and cars. It buys pins and needles and millinery goods as well as rails and splices and spikes. It buys drugs and medicine and clothing as well as bolts and wheels and axles. It buys almost every conceivable thing, and it is necessarily in close touch with markets at home and abroad. It has built up, or has been instrumental in building up, hundreds of new industries in the country, and it is the chief support of many of them, and its experience with these markets and these industries justifies my belief that unrestricted reciprocity with the United States and a joint Protective tariff against the rest of the world, would make New York the chief distributing point for the Dominion, instead of Montreal and Toronto; would localize the business of the ports of Montreal and Quebec, and destroy all hope of the future of the ports of Halifax and St. John; would ruin three-fourths of our manufactories; would fill our streets with the unemployed; would make eastern Canada the dumping ground for the grain and flour of the western states to the injury of our own North-West, and would make Canada generally the slaughter market for the manufactures of the United States, all of which would be had for the Canadian Pacific Railway, as well as for the country at large. This is my excuse for saying so much.—*President Van Horne.*

THE Maritime saw, lead and varnish works of Mr. James Robertson in this city are well known. Besides manufacturing saws and paints of all kinds of the best descriptions at his works at Lower Cove, Mr. Robertson carries on a large business in iron, steel and other metals at his establishment on Mill street. He has also establishments in Montreal, Toronto and Winnipeg in Canada, and one in Baltimore in the United States. A *Gazette* reporter had a talk with Mr. Robertson's manager and his representative here to day on the reciprocity question, and their views, as expressed to the reporter, showed that this large and well established manufacturing firm has no desire to be thrown into competition with the larger concerns in the same lines across the border. Said they: "We would wish no change, and think it better for the manufacturing interests here for things to remain as they are. Under unrestricted reciprocity the Americans might make a slaughter market of Canada for a couple of years or so, and while, perhaps, some of the larger manufacturers here might be taken into the pool, the smaller ones would probably be crowded out. We don't think that under the present condition of things, or until Canada's manufacturing interests are established on a firmer footing, that any change would be beneficial. We are in favor of protection."—*St. John N.B., Gazette.*

There are hundreds of manufacturers in Canada who entertain similar sentiments. They are not afraid to express them

either, although the Grits attempt to intimidate them by suggesting that only the financially weak manufacturers object to the competition of the Americans. But successful manufacturers like Mr. Robertson and hundreds of others do not whine for reciprocity.

THE town of Sherbrooke, Quebec, is not a very large place, but it is one of the most important manufacturing centres in that Province, if not in Canada. Sherbrooke manufacturers are not desirous of obtaining access to the larger American market—they are satisfied to do good work, manufacture superior goods, and to build up the prosperity of Canada. Recently, some of the anti-Canadian newspapers put out the report that Sherbrooke manufacturers were in favor of unrestricted reciprocity. As an answer to this, about all the influential manufacturers there joined in publishing a manifesto in which they say:

"We unhesitatingly declare our belief that should such a result take place, our manufacturing interests would be doomed to destruction; for it would be impossible for us to compete against the enormous capital of the United States.

"We consider that our industries, by affording a home market for farm products, benefit the farming community even more directly than the manufacturers themselves, for the development of manufactures as well as of the mineral wealth of the country must be of essential importance to the agricultural interests.

"But we also feel that it is a question of labor as well as of capital, for where is the laboring man to find employment if the manufacturing establishments are to be closed? What would be the position of Sherbrooke and other manufacturing centres without the industries which have drawn population? We have a noble country, full of latent resources, our parliamentary system is more free and gives more direct representations to the people than that of the United States; our laws are well administered by judges appointed for life and not elected by popular vote. We believe that unrestricted reciprocity means, first, the ascendancy of the United States and then our absorption; our glorious history would be a dream of the past, our nationality destroyed. We are not alone in this belief—the American press affirms this to be the inevitable result. Are we with our eyes open to forfeit every privilege and denationalize ourselves at the bidding of men who court favor at Washington, or who, living in the United States and identified with them though Canadians born, would glory in their country's shame?

"We ask all true Canadians to maintain the integrity of Canada by voting for the present patriotic Government."

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 peoples' 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.

A RISING TOWN.—The Town of West Toronto Junction possesses exceptional residential and business advantages, and promises to speedily become the chief manufacturing centre of the Dominion. This town has the following railways, viz: Grand Trunk Main line (Carlton West Station); Northern Division of the Grand Trunk (Davenport Station); The Toronto, Grey and Bruce, and Credit Valley, and Ontario and Quebec Divisions of C.P.R., and Belt Line Railway (now in progress). The town offers to large manufacturers free sites, water at cost and exemption from taxation. Any information regarding the same will be given upon application to ROBT. J. LEIGH, Town Clerk, or D. W. CLENDENAN, Mayor.

Vick's Magazine for March is a splendid number—full of choice articles on a great variety of subjects. The opening article, "Village Parks," with an illustration, is a plea for parks in the larger villages, and good reasons are given why such public grounds should be established. "Winter Aspect of Trees," with five illustrations, is very readable. "Hardy Blooming Roses," gives an experiment of rose-growing in Illinois, and shows what varieties of roses can be depended upon for blooming all summer. Other articles are, "Coleus," "Carolina Wild Flowers," "the Verbena in the Garden and Window." The young people's department is entertaining, as it always is. As a magazine of rural affairs, *Vick's* meets the popular want.

The February number of *Our Homes* has reached our table, and we note continued signs of improvement. It is printed this month with new type, which gives it a clearer and much more handsome appearance than formerly. Its selections are made with judgment and good taste, and cannot fail to give pleasure to all classes of readers. The number contains a complete list of the winners in the recent error competition, in which the publishers gave away more than \$3,000 in cash. The publishers also announce a spelling match in connection with the advertisements in the February number, in which they offer \$2,000 in cash prizes. A copy of this number will be sent to any address on receipt of ten cents, by addressing Our Homes Publishing Company, Brockville, Ont.

EVERYBODY who loves dogs—and who does not—will take delight in the *Illustrated American* of the current week. The pets of the dog show now in progress in New York city are pictured in the superb style that is characteristic of this periodical, and big dogs and little, handsome dogs and ugly, are shown in great variety. A striking novelty will be found in some vigorous, life-like sketches of Sarah Bernhardt at rehearsal, which give a vivid representation of the whims, vagaries and dramatic power of the actress as exhibited during the preparations for bringing out "La Tosca." The frontispiece is a splendid portrait of General Sherman, and a few pages further along is found an equally good likeness of the late Admiral

Porter. The controversy started by the *Illustrated American* regarding the plans of the Mormons in Utah is continued in an article treating of the efforts of the Mormon leaders to lessen the effect of the exposure. The exciting events of the career of Marshal Soult are presented in type and in illustration as the second of the series of articles on Napoleon's marshals, and the remaining pages present the usual variety of entertaining topics.

ON March 2nd the Methodists throughout the world celebrated the centennial of the death of John Wesley, and those in Canada also celebrated the centennial of the introduction of Methodism into this country. The *Methodist Magazine* contributes its share to this celebration by a special Centennial number, enlarged to 112 pages. Among its articles are: "Footprints of Wesley," with many engravings; "Last Days of Wesley," by Luke Tyerman, with portrait; "Mother of the Wesleys," by Dr. Potts, with portrait; "Wesley and Methodism," by Dr. J. O. Clark; "Wesley as seen by his Contemporaries;" "Wesley and Literature," by Dr. Punshon; "Methodism in the Eighteenth Century," by the Editor; "Symposium of Methodism," by Prof. Goldwin Smith, Hon. O. Mowat, Hon. G. W. Allan, Lt. Governor Sir L. Tilley, and other leaders of thought. Other illustrated articles are: "In the Track of St. Paul," by George Bond, and "Through Hungary and Budapest." Price, single number, 20 cents. January, February and March numbers, including also centennial articles by Dr. Douglas, Dr. Stafford, William Arthur, the editor and other writers, with 324 pages and nearly 100 fine engravings, will be mailed post free for fifty cents. William Briggs, Toronto, publisher.

A WIDE variety of interesting topics is discussed in the *Popular Science Monthly* for March. First, one of the great questions of the day is treated in an article on "Supposed Tendencies to Socialism," by Prof. William Graham, of Belfast. This writer gives reasons for expecting a progressive improvement in the condition of society, but no sudden social transformation. There is an account of "Iron-working with Machine Tools," by William F. Durfee, in the *Monthly's* illustrated series on "American Industries since Columbus." Mr. Durfee will conclude this division of the series with a sketch of the steel manufacture. An audacious paradox is put forth by John McElroy, who writes of "Hypocrisy as a Social Elevator." Dr. John I. Northrop tells how one of the important fibre plants is raised and what it looks like, in a fully illustrated article on "Cultivation of Sisal in the Bahamas." There is an account of "Dr. Koch's Method of Treating Consumption," by Dr. G. A. Heron, a London physician. Attention is forcibly called to the subject of governmental wrong-doing, in Samuel W. Cooper's paper on "The Tyranny of the State." Garrick Mallery concludes his essay on "Greeting by Gesture," this instalment being fully as interesting as the former. Two articles that furnish scientific facts of industrial value are "Non-conductors of Heat," by Prof. John M. Ordway, and "The Relative Value of Cements," by Prof. Charles D. Jameson and Herbert Remley. Hon. Major A. B. Ellis has a paper on "Vodu-Worship," telling the nature of the wild ceremonies connected with this negro mystery. Other papers are "Adaptation to the Climate," by M. Saint-Yves Ménard; "Government among the Lower Animals," by J. W. Slater; and a record of the last meeting of the "International Congress of Americanists." Dr. Samuel L. Mitchell, one of the most conspicuous figures in the scientific and public life of the United States during the first quarter of this century, is the subject of the usual sketch and portrait. In the Editor's Table the woman question receives a vigorous handling under the title "A Profession for Women," and the relations of "Science and Civilization" are pointed out. There are also good things in the correspondence and other departments. New York: D. Appleton & Company. Fifty cents a number, \$5 a year.

THE newest thing in nails is a twisted wire nail which is a cross between a screw and an ordinary plain wire nail. This idea is of English origin, and it is supposed to represent as great an improvement upon the plain wire nail as that useful invention is over the old cut nail. As is well known, the common cut nail tears and crushes the fibres of the wood as it is driven in, and its tapering shape destroys the greater portion of its holding power when it is partially withdrawn. The plain wire nail, being pointed and smooth, does not crush the wood fibres as the cut nail does, but presses them aside. As the diameter of the nail is the same throughout its length, it fits as tightly and holds as firmly when partially drawn as when driven home. The twisted wire nail not only crushes the fibres of the wood less than the other forms of nail, but by its screw shape possesses a much greater holding power. Quite similar to this screw modification of the wire nail is the recent American idea of making a wood screw that will drive nearly as well as a nail and yet can be withdrawn by means of a screw driver as readily as any screw.

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 Dominion Glass Company, Montreal, will increase its capital stock to \$500,000.

MESSRS. RUSSELL & BARNETT will erect extensive nickel smelting works at Sudbury, Ont.

THE Maritime Chemical Pulp Company, at Chatham, N.B., have doubled the capacity of their works.

MR. THOMAS GIMMELL, Peterborough, Ont., has begun the manufacture of union ingrain and stair carpets.

MESSRS. SYKES & AINLEY, Glen William, Ont., manufacturers of woollens, have recently put in two new water wheels.

MR. L. C. ARCHIBALD, of Antigonish, N.S., will build and operate an extensive cheese factory at Mabou, near that place.

MESSRS. BLENKHORN & SONS, Canning, N.S., manufacturers of edge tools, have sold about 1,200 dozen axes the past season.

THE Toronto Construction and Electrical Supply Company, Toronto, has been incorporated with a capital stock of \$250,000.

THE American sailing ship *Villard*, laying in Esquimalt harbor, took in a cargo consisting of over 65,000 cases of canned salmon valued at \$350,000.

MR. CHARLES BALCOM, of Boston, Mass., is organizing a boot and shoe company with a capital stock of \$10,000 to establish a factory at Annapolis, N.S.

THE Toronto Suspender Manufacturing Company, Toronto, has been incorporated with a capital stock of \$25,000 for the manufacture of suspenders, etc.

THE Union Ice Company, of Tacoma, Wash., will establish an ice factory at Victoria, B.C., with capacity to manufacture twenty-five tons of ice per day.

THE Electric Boot and Shoe Company has been organized at Annapolis, N.S., and will immediately start a factory for the manufacture of boots and shoes.

MR. ARCHIBALD CAMPBELL, manufacturer of carpets, Markham, Ont., has been introducing some new machinery into his mill. He will soon enlarge his works.

MESSRS. BLENKHORN & SONS, manufacturers of edge tools, Canning, N.S., get out about 1,200 dozen axes in the season. They employ on an average ten men.

THE Boynton Wall Plaster and Cement Manufacturing Company, Kingston, Ont., has been incorporated with a capital stock of \$60,000 for the purpose of manufacturing cement, etc.

THE Drummond-McCall Pipe Foundry Company is being incorporated at Montreal with a capital stock of \$50,000 to establish works and manufacture cast iron gas, water and other pipes, etc.

LA COMPAGNIE DE MONTRES COURVOISIER (The Courvoisier Watch Company) are applying for incorporation with a capital stock of \$40,000, headquarters at Montreal, to manufacture gold and silver watches and other jewellery.

MESSRS. W. H. VERITY & SON, manufacturers of agricultural implements, Exeter, Ont., have recently added two large brick buildings to their establishment, thereby considerably increasing their capacity of production.

THE Peterborough Lock Company, Peterborough, Ont., sold \$120,000 worth of their products in 1890 against \$57,000 worth in the preceding year. The company will increase its capital stock \$50,000 for the purpose of increasing the capacity of their works.

THE Montreal Water Power Company, Montreal, are applying for incorporation with a capital stock of \$2,000,000 and authority to construct, operate and maintain systems of waterworks for the supply of water to cities, towns, corporations, etc., in the Province of Quebec.

THE Ottawa Powder Company is being incorporated at Buckingham, Que., with a capital of \$25,000 to manufacture gun powder,

blasting powder, fuses, detonators, dynamite, nitro-glycerine, etc., and also electric batteries and appliances used in connection with explosives.

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 World*.

THE British Columbia Sugar Refining Company, who recently established sugar refining works at Vancouver, B.C., are now manufacturing fine grades of sugar. A bonus was voted to the company on condition that the works should be in operation and turn out 100 barrels refined sugar by July 1st next; but this condition was complied with on January 29th.

CLARENCE DEBECK, lately of the Brunette mills, New Westminster, has completed arrangements for starting a large saw mill concern on the northwestern coast of the mainland. The mill will have a cutting capacity of 100,000 feet per day, and will be a modern concern in every respect. Mr. DeBeck will be the moving spirit of the new enterprise.—*New Westminster, B.C., Morning Ledger*.

THE Dominion Government have issued an Order-in-Council admitting at a reduced rate of duty copper smelted from Canadian ore. At present importers have to pay a duty of 10 per cent. *ad valorem*, but under the order copper smelted from Canadian ores will be admitted on the payment of 10 per cent. on the actual cost of smelting only. This will make a difference in the case of pig copper of at least 5 per cent.

THE William Hamilton Manufacturing Company, Peterborough, Ont., are interesting themselves in having an American manufacturing concern establish works in Peterborough for the manufacture of shingle mill machinery. The machinery is at present manufactured by a company in the United States, where some 300 men are employed in the works. The company wish to establish a Canadian branch and will bring with them valuable patterns for which they hold the patents.

"PLATINUM is found in the Saskatchewan in connection with gold, with which it is frequently secured and sometimes adulterated. At present prices it would pay our miners to give more attention to this increasingly valuable metal, not only as a matter of present profit, but also with a view to the possibility that although the fountain head of the gold has as yet eluded discovery, the platinum might lead to the source of both these now equally precious metals."—*Edmonton Bulletin*.

THE following parties have recently placed orders with the Menasha Wood Split Pulley Company, Menasha, Wis., for their hickory pulleys and hangers, cone pulleys, friction clutch pulleys, etc.: Messrs. Fuller, Warren & Co., Milwaukee, Wis.; Appleton Chair Company, Appleton, Wis.; W. B. Munroe, Cadott, Wis.; Manchester Locomotive Works, Manchester, N.H.; Gurney Refrigerator Company, Fon der Lac, Wis.; Manufacturers' Investment Company, Appleton, Wis., and the Morgan Company, Oshkosh, Wis.

THE Gutta Percha & Rubber Company, of Toronto, are manufacturers of Maltese Cross fire hose. The fire department of Halifax, N.S., are now using a lot of this hose bought fifteen years ago, 1,000 feet additional of the same having been ordered from the company recently. The same company have recently sent some of this hose to Victoria, B.C., for the use of the Imperial Government, and some 3,000 feet of their Baker Fabric fire-hose has just been supplied to the city of Quebec. The city of Toronto having already in use some 3,500 feet of this brand, has supplemented it by a further order.

MESSRS. JULIAN SALE & Co., manufacturers of pocket books, satchels and all kinds of fancy leather goods, who have hitherto operated their factory in Bleecker Street, Toronto, with office at 24 Front Street East, have removed both factory and office to more extensive premises at Oakville, Ont. They have associated themselves with Mr. W. T. Marlatt, tanner, of that town, and under the firm name of Sale & Marlatt they will carry on the business of tanners and dealers in fine leathers used in bookbinding and other branches of light manufacturing. They have added every appliance necessary to complete their plant, and are fully equipped for the successful manufacture of the lines of fancy leather goods already so well known.

MESSRS. YOUNG BROS., manufacturers of fulling mills, washers, steam pumps, etc., Almonte, have shipped one of their fulling mills to the woolen factory of James McLaren, Wakefield, Que. The fulling mills and washers made by this firm are highly spoken of,

while their steam pumps are unsurpassed for power at a low price. J. H. Wylie & Co., woolen manufacturers and flour millers, made a test of one of these pumps recently at their flour mills. They threw a jet across the Mississippi with a 1½ inch smooth nozzle. We may explain that this was not the Mississippi whose dimensions are the boast of our American neighbors, but the Canadian Mississippi that flows through Almonte. Still, the distance across was 225 feet, and at that distance it covered a building on the opposite bank.—*Journal of Fabrics.*

PEOPLE talk of a western boom as if it was a thing far away and never to reach this Canada of ours, but any one who takes a trip up to Eureka will find right here in our midst a genuine western boom in full blast. Land has advanced by leaps and bounds and now is held at fancy prices; speculators are buying and selling and fortunes will be made in real estate. Lots are being staked out, and plans for a big city are being surveyed and streets located and everything looked like a genuine boom. What is the cause of all this? The smelting works. Here will be located enormous smelting furnaces, giving employment to thousands of men, and putting into circulation thousands of dollars monthly. A large number of men and teams are now employed in hauling sand and stone for the foundations. The branch railway is being pushed forward as rapidly as the season of the year will admit.—New Glasgow, N. S., *Enterprise.*

As an instance of the commercial and mechanical attention which is being directed to our western borders, we note that 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 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. Whethan and William Hickory are the incorporators. It is a remarkable fact that the Dominion government seems to have grasped the situation on the west coast in a much greater and more positive degree than the United States has, for besides subsidizing large lines of steamers to develop the trade, every available facility is and has been given to transcontinental railroad lines and the general requirements of commerce are being upheld in a sense which is clearly a national one.—Cleveland, O., *Marine Record.*

NOW-A-DAYS it is scarcely considered to be inapropos for those who desire to popularize articles or objects in which they are interested, to go a little out of the way in order to give them prominence. At a recent meeting of the City Council, among the correspondence submitted, was one from an American rubber house, which wished to receive a Corporation order for hose and other appliances manufactured out of their raw material. The document consisted of a printed circular, inviting its receiver to "sit in with them." It observes that the President will, in his address of welcome, invite the guests to entangle themselves in the cabinet of elastic sociability while the treasurer will mesmerize himself and pass into a state of dynamic frenzy, after which the chef will introduce the "menu" in which are, among others, the following items: "Fish—Rubber Minnows," decidedly toothsome, no doubt; "Para Hams," tough as buffalo hide; tender loin, "belting," hard on the teeth; and "Emeralda Sausage," certainly not the chopped up remains of defunct felines. "African Tongues" are among the cold dishes; the "bread" being "rubber biscuit," while "cocoa nuts," with nursing bottle attachment are on the list of fruits. Ye Gods! What a feast for Luculus! or anybody who had the appetite for an ostrich, or digestive powers of somebody or some one far and away beyond the ordinary!—Victoria, B. C., *Colonist.*

FOUR of the largest locomotives ever built in the world are nearing completion at the Baldwin Locomotive Works in Philadelphia. They are being built for the Grand Trunk and will be used in the St. Clair tunnel, which runs under the bed of the St. Clair river between Port Huron, Michigan and Sarnia, Ont. The engines are intended to run in an iron tube tunnel twenty feet in diameter and are peculiarly constructed. There are five pairs of fifty-inch driving wheels on each. The water tanks are on each side of the boilers, and the cab is in the centre of the boiler, extending out over the two tanks. The locomotive is thus constructed to allow it to run backward and forward with equal facility. The cylinders are 22x28 inches, and the boiler seventy-four inches in diameter, with

capacity to carry 160 pounds of steam pressure. An idea of the enormous size of the monster engines may be formed from their weight. Each one with the water tanks filled and the starting supply of coal on board weighs 200,000 pounds, the average weight in running order, with tanks about half filled, being 180,000 pounds. The rails on which they will run weigh 100 pounds per yard. The length of the tunnel for which they are built to run over is only about four miles. They are designed to pull trains up the steep approaches in the tunnel. It requires about three ordinary locomotives for this service for each train. A satisfactory trial of one of the completed engines has been made. The other three will be finished in about ten days.

AMONG the recent improvements in the manufacture of iron and steel the use of gaseous fuel stands conspicuous. The idea of first converting the fuel into a combustible gas, and conveying this to the point where heat was required, and there igniting it, is a very old one, and, in one form or another, it has been employed for over a thousand years; but it is only within the present century that the manifold advantages of gas as a metallurgical fuel have become fully recognized by the iron and steel workers of the world. The early gas furnaces used in Silesia, Sweden and other European countries were but enlarged modifications of Geber's Tower of Anthracite, and although they were a great improvement on the furnaces in which solid fuel was burned on a grate, yet they were not able to produce a temperature sufficiently high and controllable to satisfy the demands of the rapidly developing iron and steel industries. The gas furnace most commonly used in the American iron and steel works was invented about thirty years ago by the brothers Frederick and Charles William Siemens, German engineers resident in London. The first "Siemens furnace" built in this country under the sanction of these inventors was erected at the works of John A. Griswold & Co., at Troy, N. Y., in 1867, and was used as a "heating furnace." This was followed in the same year by a heating furnace at the works of the Nashua Iron and Steel Company, Nashua, N. H., and early in 1868 the first "Siemens furnace" for melting steel in crucibles (often called a "pot furnace") was started in the works of Anderson & Woods at Pittsburg.—*The Popular Science Monthly.*

PROGRESS in the discovery of new textile fibers is evidently making great strides in these days. Only a short time ago we heard of utilizing the woolly pig for this purpose. Now it is the rabbit which is to furnish the fiber, and more beautiful than lamb's wool. The credit of making this latest discovery in the field of textile art belongs, we infer, to a resident of Australia, who appears to have made a thorough and exhaustive study of the brute, with a view to turning to some profitable account these pests of the farmers, who cultivate the soil of the South Sea Islands. He claims that the value of the rabbit as a wool-bearing animal has never been duly appreciated, and asserts that not only is its fleece equal to lamb's wool in all its essential qualities, but that it possesses a durability when woven into fabric which is superior to that of any other known animal fiber. Other facts have been brought to light by this enthusiastic investigator of the rabbit tribe no less interesting than those already referred to. For instance, it is said that garments made from rabbit's wool cloth are a certain preventive of rheumatism, and it has also been ascertained that the combing or plucking of the animals, which can be done three or four times a year, is an operation which they highly enjoy, an extremely satisfactory point when the feelings of the rabbits themselves are considered. It is estimated that the annual yield of a single rabbit, when properly cared for and combed regularly, is about one dollar's worth of wool. On the basis of such facts as these the possibilities of the rabbit wool industry appear to be practically unlimited.—*Industrial Record.*

MORE nonsense than enough has been talked about aluminum and its capabilities. From its earliest appearance, under the patronage of Napoleon III., with the absurd title of "Silver from Clay," up to the present, when the most surprising mixtures for its manufacture are daily patented, it has served as the catchword of the ignorant and knavish empire. It seems to have appealed to persons whose imaginative powers are in excess of their intellectual faculties. Struck by the low specific gravity of the metal—2.7— a cubic foot only weighing 167 pounds, and its considerable tensile strength, others have advocated its use as a material in place of iron and steel. Weight for weight, its tensile strength about equals that of mild steel of moderate quality, and concerning such factors as extension and elastic limit, the less said the better. Another cause exists for the popular superstition about the immense strength of aluminum. The alloy which has proved the most useful in which aluminum forms a part is aluminum bronze, consisting of ninety parts of copper and ten of aluminum; and it has been commonly confused with aluminum itself. Meanwhile, the practical worker

found that aluminum itself is costly to prepare, but that its alloy with copper could be obtained at a reasonable cost. The addition of only 2 per cent. of copper is seen to increase the tensile strength, while 6 per cent. more than doubles it. Another most interesting feature, and one only second in importance to the increase in strength, is the large divergence between the specific gravities of the alloys calculated from those of their constituents, and determined directly. Each 2 per cent. of copper might be expected to raise the specific gravity by 0.12, whereas the increase actually observed is only about 0.05. Thus it results that an alloy of aluminum having double the tensile strength of aluminum itself can be made, which is less than one-twentieth heavier.—*London Engineer.*

The opening of the new railway bridge across the Fraser river at Mission, on the main line of the Canadian Pacific, east of Vancouver, was made the occasion of a general celebration. A large number of leading men were present from the coast cities and other points, and congratulatory speeches were made. Harry Abbot, general superintendent of the Pacific division of the C. P. R., officiated at the first swinging of the bridge. Now that the bridge is completed, the railway will be pushed southward to the boundary of the state of Washington, which will be reached within about two months. At the boundary connection will be made with the Seattle, Lake Shore and Eastern, and a regular train service will shortly be established between Mission and Puget Sound cities. The bridge is a little more than 3,000 feet in length, the level being 70 feet above the river bed at a distance of about 90 feet from its foundations. The swing truss is 240 feet in length, affording a space of 100 feet upon either side of the centre pillars for the passage of steamers and other craft. There is 1,400 feet of trestle approach with eight spans of 150 feet, and one of 100 feet in length. The piers to be level of the tide water are constructed solidly of piles enclosed in cribbing in which is placed stone, thereby giving a solid base for the great work. From tide water upwards they are of square timber framed together. The bridge was commenced in March, 1890; its completion was somewhat delayed by temporary suspension of work, and has been fourteen months under actual construction. As instances of the magnificent timber which can be furnished in British Columbia, 50 of the sticks in the swing spans are from 78 to 97 feet in length, and many of the piles used were 85 feet in length. The river at this point is 60 feet deep.

When the length and width of the C. P. R. Pacific steamers were given out it was stated that the Esquimalt dry dock was too small to admit of their being cared for there in case of accident. Bryce Douglas, when in this province, last year, visited the dry dock, and on examination of it announced that it was quite large enough to admit of the steamers being repaired there. In order to verify this, Capt. Devereux requested him to send out sectional drawings of the steamships. This was done, and although the vessels are 485 feet over all, it is quite possible to dock them without even removing the caisson to the outer invert. The vessel, when placed on the keel blocks in dock, will be three feet above the coping, and as the measurement is 485 from the extreme ends a considerable portion of this is composed of the slope of the quarter and the slope at the bow. Although the quarter would extend over the bridge on the caisson, there would be sufficient space for a man to walk upright on the bridge. The question of building another dock has for some time been agitated, and it is possible in the near future that one will be constructed alongside the existing dock. Although the latter is quite sufficient for all present needs, yet in the event of the placing first class warships on this station their breadth of beam is too great to admit of their entering the dock. If England was engaged in a war with Russia or France, first-class ships would be placed on the North Pacific, and it would be a vital necessity to have a dry dock that was capable of accommodating them. Although hostilities are not expected in the immediate future, it will undoubtedly be the policy of the Imperial Government to prepare for emergencies, and it is very probable that instead of lengthening the present dock a second one will be constructed alongside. The present facilities and management could be used for the two docks, and in this way both could be run economically.—*Victoria, B. C., Col. onist.*

WINNIPEG, MAN.

That there is success for such manufacturing undertakings, even when started on a small scale, can be illustrated even in Winnipeg. The brewery of E. L. Drewry was a small concern when it started a little over ten years ago, but it now employs over forty hands and is a flourishing institution in every sense. The harness factory of E. F. Hutchings was a small concern seven

or eight years ago, but it now gives employment to fifty hands on the average the year round, and often requires the services of over sixty for weeks at a stretch.

Five years ago there was a small struggling cigarmaker's shop in the city with five or six people at work occasionally, but that has grown into the factory of Bryan & Co., employing from thirty to forty hands according to the season, and it promises to be a really large concern before many years.

The Royal Soap Works located in the city a little over a year ago has already shown itself a success under its present able management. Its goods have driven several eastern competitors in laundry soaps out of this market already, and it promises to grow rapidly into a large and valuable industrial institution.

The Western woolen mills located at the east end of Broadway bridge has only been operated about a year by Messrs. Stephenson, Johnstone & Co., the present proprietors, but it has already proved that it must be a success under their able management. An abundant supply of local raised wool of the fine grade peculiar to this northern latitude gives them great advantage in their business. They cannot procure, and do not need shoddy here, and they are fast building up a reputation for pure wool flannels, tweeds and such like fabrics.

Numerous other illustrations could be given, but these are sufficient to prove that success awaits the manufacturer who starts here in a small way, and backs his enterprise with moderate capital, good business judgment, mechanical skill and economy.

BINDER MANUFACTURING.

The Canadian manufacturers of harvesting machinery look forward to the approaching season with better hopes than for several years. For three or four years the market has been crowded, and the position of some of the weaker ones made matters still worse. Prices have been borne down by the pressure of the unhealthy competition until all but the strongest have succumbed. Of the score of manufacturers who were in the field not more than six remain—not more than that number who do a business more than local. The failures of firms that have followed after one another fast during the past two years or so have cleared the air, and the survivors hope for better times in the future.

The history of the binder manufacturing industry is a unique and interesting one. On both sides the line the main features are the same. There was the sudden rearing of a gigantic interest consequent upon the adoption of the new harvesting binders. Too much capital rushed into the industry, and in the inevitable struggle for existence which ensued the weaker firms were crowded to the wall. In the United States the manufacturers, casting about for a relief, conceived a trust scheme. And with a capital stock of \$35,000,000 the American Harvester Company was set on foot a month or more ago. Its sudden collapse astonished everyone, and the explanation of the President that it was abandoned because its promoters found legal obstructions in the way of its operations was received with incredulity. The more avowed explanation is that there was too much jealousy among the stockholders. If this be the case there is small promise of any abatement of the over-production that affects the industry over there.

In Canada the amount of money that has gone into the bricks and mortar in the binder manufacturing industry is much greater proportionately than in the United States. And there has been in Canada much more over-production and a hotter competition than in the States. Prices in Canada last season were lower than across the border. When the binders came into use and superseded the old reapers this market was preserved by the tariff to the Canadian manufacturer. The manufacturers then doing business enlarged their capacity to meet their immediate demand for the new machines. New manufactories were established, and the industry was put upon a footing that the most sanguine patriot could hardly have expected to be sustained by the settlement of the North-West and the development of the Dominion generally. The settlement in the North-West has not reached expectation, the older provinces have been supplied, and the manufacturers have had to face the fact that the industry in future must, to a principal extent, be content with supplying renewal machines. In anticipation of this situation some of the manufacturers have looked into markets outside this continent, and trade has been opened with Australia and Japan and other nations. But the bonding privileges granted by the customs department for this branch of the industry can be availed of by only the largest of the manufacturers.

The failure last fall of Maxwell, of St. Mary's and Elliott, of London, was not unexpected by the manufacturers. The first firm,

it is said, was responsible for the lowest price cutting. The prices they are said to have accepted last season were below the low water mark. During this coming season the manufacturers hope to stiffen prices. They will meet with stout protests, no doubt, from the farmers, but it will only be a reasonable measure for their own protection. For years the farmers have been buying binders too cheap. It is too much to expect them to see and understand the necessity that requires the manufacturers to stop the descent of prices and turn them the other way, but it is the better prospect of some such move that gives to the opening of the season of 1891 a brighter color than had the close of 1890.—*Hardware.*

BELT CONTACT.

A BELT drives by friction, and by friction only. Of course it must be strong enough between the point where it has friction exerted upon it by the driving pulley and that where it exerts friction upon the driven pulley to hold together; but take away the friction, and you take away the driving power. Any one will admit this without question; yet most people who use belts deny it or forget it in their practice, or else they never know what causes friction. Belt friction is different from almost any other kind; it depends upon the arc of contact. Increase of arc of contact produces every time, under the same conditions, increase of friction of the driving power, which comes from friction. It does not make a belt any stronger between the pulleys, but it enables it to do what it is put there for—get gripped and moved along by one pulley and grip and move along the other pulley.

But while increase of arc of contact does, every time, increase the grip of the belt upon one pulley and of the other pulleys upon the belt, the increase in driving power is not in proportion to the increase of arc of contact. Doubling the arc of contact does not double the grip. There is a special ratio governing this matter. A belt that will drive ten-horse power with thirty degrees arc of contact will drive eighteen with sixty degrees, or twice as much arc of contact; twenty-four with ninety degrees, or three times the arc, and thirty-six with 180 degrees, or six times as much. With 300 degrees or ten times as much, it will drive about forty-four horse.

It costs less to increase the driving power of a belt by increasing the arc of contact than by any other way. Doubling the arc of contact costs practically nothing for belt; it merely calls for an idler, which does not wear out as belts do. Doubling or increasing the tension on the belt strains it and its fastenings, may glaze it, and costs for bearing metal and for oil in the bearings. Doubling the width costs for belt and for pulleys as well. Doubling the thickness costs for belt, and calls for increased strain on the belt, this in turn meaning that there must be an extra outlay for bearing metal and for lubricant. Pulley lagging costs something. But merely to run the belt a little further around, or even a good deal further around, calls for very little of anything else but an idler (not a tightener) to wrap the belt around the smaller pulley, and keep it there.

The figures given before show the relative amount of power that can be got out of a belt by increasing its arc of contact. Let us put it the other way about, and show how much tension it will have to be given in order to get a given drive, with various amounts of contact.

If it be necessary to have 100 pounds tension with 180 degrees contact to drive a given machine, it will take about 150 pounds where there is only 120 degrees, 200 pounds where there is only sixty degrees, or one-third as much, and 360 pounds where there is only thirty degrees, or one-tenth as much.

This means that a belt fastening that was strong enough to stand the pull requisite to drive a load, with 180 degrees arc of contact, might break with the increased strain required to be put upon it in order to drive the same load with only ninety degrees arc; or to put it in another way, a belt that was always giving out at the lacings when it had only ninety degrees arc of contact, might be made to walk right along with its load without ever letting go when it was given 180 degrees.

Those who have seen the loss of time and other damage caused by a belt-fastening breaking under the strain necessary to make the belt drive its load, should see in this something which will save them trouble and expense.

Put the idler near that pulley which has the least arc of contact, that is, provided other things are equal. That is generally, under prevailing systems of driving, the smaller of the two pulleys, the lesser arc of contact not only giving inferior position on the pulley, but inferior amount of surface of contact, both counting in belt drive.—*American Miller.*

VANCOUVER, B.C.

FIVE years ago Vancouver might be said to have had no existence. But when the Canadian Pacific Railway Company fixed on the peninsular where Vancouver now stands as the western terminus of their road, a change soon came over the features of the scene. In indulging in some laudable praises of its city, the *Vancouver Telegram* has this to say:

"Vancouver stands on the south side of Burrard Inlet, near the point where it opens on the Gulf of Georgia. Across the waters of the Gulf and round the southern end of Vancouver Island lies the passage to the broad waters of the Pacific Ocean. Burrard Inlet forms a completely land-locked harbor sheltered from every wind, deep enough to admit at low water the biggest ships, and large enough to afford safe anchorage to the combined navies of the world. At all stages of the tide the largest ships can enter the Inlet, and lie along the wharfs built for their accommodation. Nature made the harbor, and did it on the grandest scale. There was nothing left for man to do but to build the wharfs along its margin, and one of the grandest harbors in the world was at once ready to accommodate the fleets of commerce. There was no sand-bar to be removed, no obstructing rocks to be blasted out, no dredging to be done. What has cost other seaports vast expenditure to provide, nature has presented a free gift to Vancouver. In other respects the situation of the city is equally favorable. Its drainage is perfect, its sanitary condition good, the scenery that surrounds it magnificent. Across the harbor towers the grand range of the Cascades, stretching far as the eye can reach, the loftier summits wearing its snowy mantle far into the summer.

On the other side stretch the waters of English Bay and the Gulf of Georgia, with a range of blue hills beyond.

On the south and east Vancouver is shut in by the dark masses of the primeval forest, on which the woodman's axe scarce seems to have made itself felt.

Vancouver was never more prosperous than she is to-day. Her commerce is increasing, and business in the city is active. We read of depression in other parts of Canada, but in Vancouver there is none. Her prosperity is based on solid commercial and industrial foundations, not on fictitious real estate values. There is a steady demand for real estate, but not at exaggerated values.

Our factories, sawmills, foundries and other centres of industry are busy, and doing a large and paying trade.

Our harbor is full of shipping, some of them coasting craft and steam tugs, others large steamers and sailing vessels for the ocean trade for China, Japan, Australia, the Pacific Coast, the eastern States and Europe. Vancouver's position as a seaport is unrivalled. The trade of Canada with the Orient, Australia, New Zealand and the islands of the Pacific must ultimately centre here. Here, too, will be the great distributing point for the mainland of British Columbia, and perhaps also for much of the plains beyond the mountains. Already there are more than a dozen great importing houses in the city doing a large wholesale trade with the interior. We are persuaded that at no distant day Vancouver must become for the western half of Canada what Montreal is for its eastern half, with this advantage in favor of Vancouver, that her magnificent harbor will not be blocked half the year with ice, as the St. Lawrence at Montreal, and far below it, always is in winter. Vancouver is an open port at all seasons, like London or Liverpool. We believe it is yet destined to become the Liverpool of the Pacific, when the lands available for settlement in this province have become peopled with a busy population, and its agricultural, mining and manufacturing resources have been developed. The situation of the city will secure for it those advantages, and no envious rivals will be able to prevent it.

The city is handsomely laid out in broad and straight streets. The part most closely built upon lies along the harbor; and in this portion of the city some fine business premises have now been erected, which would do credit to the best streets in Toronto or Montreal. Private residences and other buildings, some of them of a very handsome description, already extend far back from the chief business streets, covering at intervals the high ground to the south of the harbor. Many of the streets are levelled and graded, the principal ones are planked or gravelled, and provided with planked side-walks. Nearly the whole city limits have now been cleared of forest and laid out in streets. The work of grading and forming the streets and constructing water-channels and side-walks is, of course, still proceeding. An immense amount of work has been done in this direction, and much still remains to be done. A large amount of underground sewerage, of a very substantial sort, has been done, and the work will be continued as required. The city is handsomely lighted with electricity, and is already provided with water-works.

gas-works and electric tram cars. An electric railway connecting Vancouver with New Westminster has been commenced, and will be carried to completion during the coming summer. Vancouver has a glorious future before it, and in all probability it will not be many years before it becomes one of the queen cities of the Dominion.

VANCOUVER DRY DOCK.

“**SPEAKING** of the proposed new dry dock at Vancouver, B.C., the Telegram of that city says:—
 “The dock when finished will be one of the largest in the world. It will have no rival on the Pacific, save at Hong Kong. Its dimensions are to be as follows: Length, 600 feet; width at the gates, 80 feet; depth of water on the sill, 28 feet. The cost of the dock, including an arsenal provided with all things needed for the repair of ships, will be not less than a million dollars. The time required for the building of dock is three years from date of commencement, which is to be not later than the 30th of August next. The engineers in charge of the undertaking are Messrs. Bell & Miller, of Glasgow and London, members of the Institution of Civil Engineers, men distinguished in their profession and possessing great experience in the construction of works of this class. The financiers are the well-known London firm of Perry, Cutbill, De Lungo & Co. Mr. Bell is now in Vancouver making the preliminary arrangements. A joint stock company will be formed by him on his return to England to carry out the work, after he has completed arrangements here. Mr. Bell asks for the company a bonus of \$200,000, to pay interest on the capital during the period of construction, when no money can be earned by the dock. Of this sum the city is to contribute half, and it is expected that the Dominion Government will contribute the other half. The money is to be paid as the work proceeds, the city's share as follows: At the end of one year from date of commencement of the works, \$50,000 will be paid, provided during that period the company shall have expended not less on the works than \$350,000; and at the end of two years from the commencement of the works, the remaining \$50,000 will be paid, provided that during the second year the company shall have expended a further sum of \$350,000 upon the works, which must be still proceeding. The subsidy that may be granted by the Dominion Government will be paid at the rate of \$10,000 per annum, the first payment to be made on the completion of the works and their acceptance by the Government. The company are to give security in \$100,000 for the proper carrying out of their contract, and are to execute a bond by the 30th of June next, binding themselves to carry out the terms of the agreement, as stated above. It is also stipulated that no Chinese are to be employed in the construction of the works. The dock is to be built in the most substantial manner of stone or of concrete made of stone and the best Portland cement, which for such work will be equal to stone.
 The building of this dock will be a matter of very great importance to the city of Vancouver. During its construction it will entail the spending for three years on this work alone for large sums of not less than \$300,000 per annum. The works during their construction will give employment to many men. The spending of so large a sum in the city every year on the work for the period mentioned, chiefly in wages, cannot but be greatly for the advantage of trade in the city, while the dock when completed will give employment to a large permanent staff of ship-builders and others, and will greatly promote the prosperity of the port as a resort for shipping. In fact the construction was a necessity, if the port was to become what all who know Vancouver are persuaded it will become, viz., one of the leading ports of the Pacific, if not the leading port. The building of the dock will be a long step in that direction. The company, of course, furnish all the capital for the construction of the works, and take the risk of the success or failure of the dock as a financial undertaking. As stated above, the bonus goes to pay interest on the company's capital during the interval which must elapse from the commencement of the works up to the time when the dock will begin to be paying property. The dock cannot earn anything at all for three years, and may not earn much over expenses for the first year or two. But that it will be a fine paying property before long we have no doubt. We think that the city of Vancouver is to be congratulated on the opportunity which has presented itself of obtaining this most needful accommodation. The outgoing City Council have done their part in the matter; it now remains for the ratepayers to do theirs. We have no doubt it will be done, and so far as the people of Vancouver are concerned the prosperity and progress of the port be made secure.
 The Collinsby Rafting and Towing Company are building a powerful steel steam tug at Kingston, Ont., the plates, machinery, etc., for which are being imported from England.



SEALED TENDERS marked “For Mounted Police Clothing Supplies,” and addressed to the Honorable the Minister of Railways and Canals, will be received up to noon on Monday, 9th March, 1891.

Printed forms of tender containing full information as to the articles and quantities required, may be had on application to the undersigned.

No tender will be received unless made on such printed forms. Patterns of articles may be seen at the office of the undersigned.

Each tender must be accompanied by an accepted Canadian bank cheque for an amount equal to ten per cent. of the total value of the articles tendered for, which will be forfeited if the party decline to enter into a contract when called upon to do so, or if he fail to supply the articles contracted for. If the tender be not accepted the cheque will be returned.

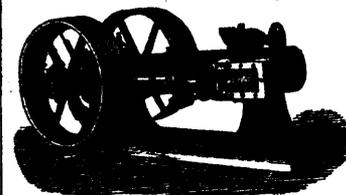
No payment will be made to newspapers inserting this advertisement, without authority having been first obtained.

FRED WHITE,
Comptroller N.W.M. Police.

OTTAWA, February 9, 1891.

E. LEONARD & SONS
LONDON, CANADA.

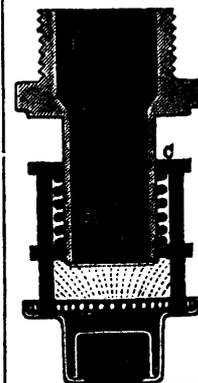
ENGINES for Electric Dynamos, Street Railway Service,
AND FOR ALL OTHER PURPOSES.



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,
MONTREAL.
Write for estimates.

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.

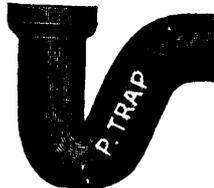
MANUFACTURERS OF

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.

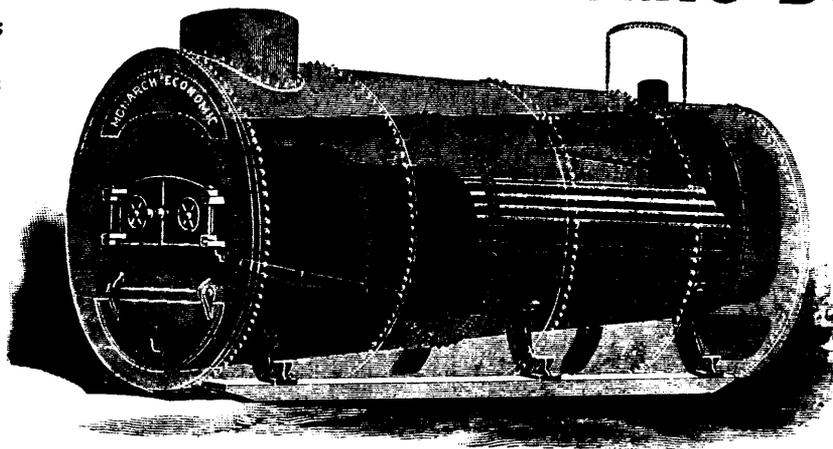
Patented U.S.A. Oct. 5, 1886;
Aug. 23, 1887; May 8, 1888.

Is the strongest and most

Portable Boiler

in use, and its high economy
in fuel makes it specially valu-
able to gold miners.

Tested evaporation 10.25 lbs.
of water per pound of ordin-
ary Nova Scotia coal.



Manufacturers of and
Agents for

- The Hercules Engine,
- The Straight Line Autom-
atic Engine.
- The Armington & Sim's Au-
tomatic Engine.
- The Canada Electric Co. Dyna-
mos & Electric Machinery.
- Saw Mill Machinery,
- Hoisting Machinery, etc.

No Charges for Cartage.

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

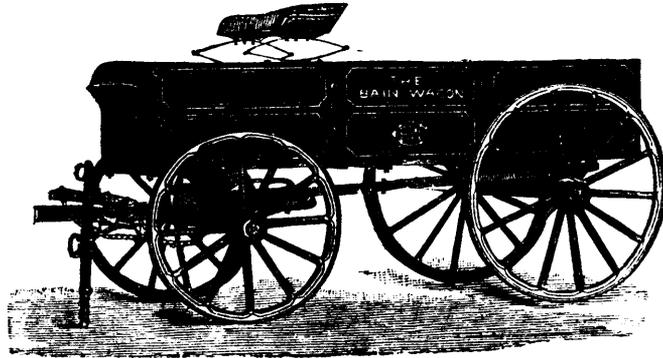
DANVILLE, - QUE.

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.O.; 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 Sleights 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.

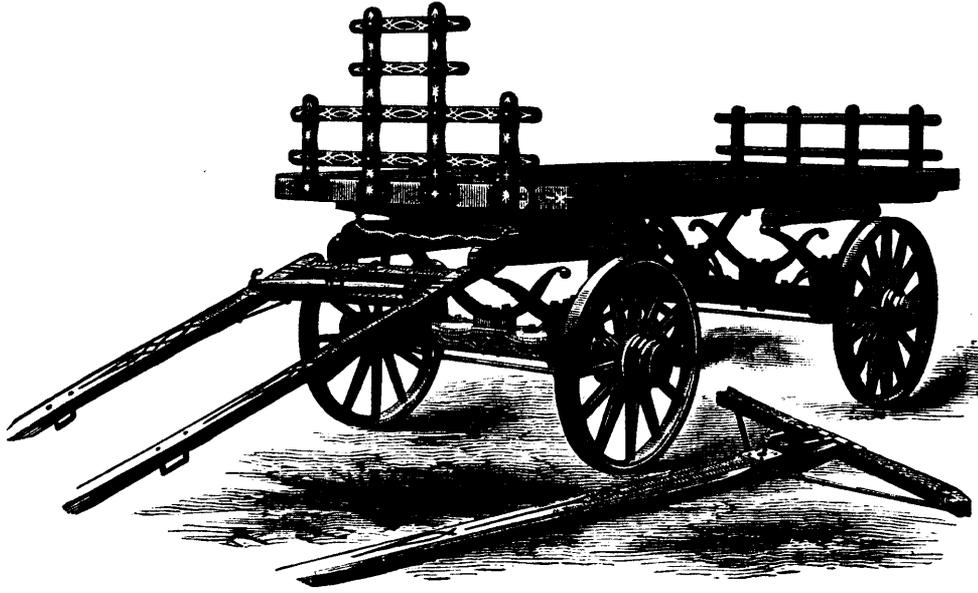
MANUFACTURERS NOT ONLY OF

The Chatham
Wagon

BUT OF ONE
AND
TWO HORSE

LORRIES

WITH AND
WITHOUT
SPRINGS.



Of a one-horse, the accompanying is a faithful out. 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 fire, as may be for the mutual interests of all concerned.

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

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

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

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

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

FOURTH ANNUAL STATEMENT OF The Manufacturers' Life Insurance Company

For the Year Ending December 31, 1890.

PRESIDENT—THE RIGHT HON. SIR JOHN A. MACDONALD, G.C.B., P.C.

| RECEIPTS IN 1890. | |
|--|---------------------|
| Premiums..... | \$161,166 82 |
| Interest and rents..... | 10,341 61 |
| Total receipts..... | \$171,408 48 |
| DISBURSEMENTS IN 1890. | |
| Death claims..... | \$44,646 18 |
| Cash for surrenders..... | 1,148 00 |
| Annuitants..... | 420 00 |
| Total payments to policy-holders..... | \$46,214 18 |
| Commission, medical fees, salaries and other expenses of management..... | \$70,603 14 |
| Re-insurances..... | 11,600 56 |
| Total disbursements..... | \$82,203 70 |
| Total disbursements..... | \$128,417 8 |
| ASSETS JAN. 1, 1891. | |
| Dominion Government Bonds..... | \$53,000 00 |
| Mortgages on Real Estate..... | 159,242 84 |
| Stocks and Debentures..... | 24,150 00 |
| Life Interests and Reversions..... | 4,500 00 |
| Office Furniture..... | 4,500 00 |
| Bills Receivable..... | 10,225 01 |
| Due from Agents..... | 5,874 60 |
| Premiums Outstanding..... | 51,907 63 |
| Interest Due and Accrued..... | 3,654 82 |
| Cash on hand and in Bank..... | 28,907 54 |
| Total Assets..... | \$345,972 44 |
| LIABILITIES. | |
| Reserve Fund..... | \$215,231 00 |
| Contingent Fund to cover sundry outstanding expenses..... | 2,606 02 |
| Total Liabilities..... | \$217,837 02 |
| Surplus on Policy holders account..... | \$128,135 42 |
| Number of Policies issued in 1890..... | 1,647 |
| Insuring..... | \$2,398,650 |
| Number of Policies in force Dec. 31, 1890..... | 4,007 |
| Insuring..... | \$6,830,525 |
| These results surpass those of any other Canadian Company in the first seven years of its existence. | |
| GEO. GOODERHAM, } WM. BELL, } S. F. MCKINNON, } | Vice-Presidents. |
| 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.

BUTTERFIELD & CO.

ROCK ISLAND, P.Q.



MANUFACTURERS OF

UPRIGHT DRILLS,

FOOT VISES

AND

BOLT HEADERS

STOCKS, DIES and TAPS

FOR

Blacksmiths', Machinists', Carriage Makers' and Gas-Fitters' Use.

SEND FOR NEW ILLUSTRATED CATALOGUE and PRICE LIST

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.

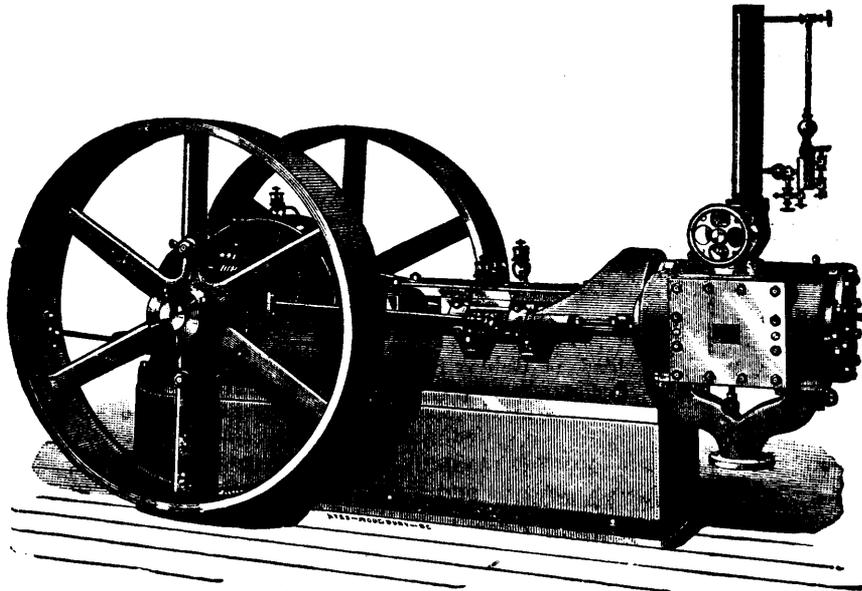
Canadian Manufacturer Publishing Company,

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.

PETHERSTONHAUGH & 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'F'G CO.

(LIMITED.)

BELLEVILLE, ONT.

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

Railway and Contractors' Supplies a Speciality

FROGS, DIAMOND CROSSINGS,
SWITCHES, HAND CARS,
LORRIES, VELOCIPED CARS,

JIM CROWS, TRACK DRILLS,
SEMAPHORES, RAIL CARS,

DOUBLE AND SINGLE DRUM HOISTS, ETC., ETC.

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.

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, Skillful 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 Fulling Mill.
Two Huddersfield Shearing Machines.
One Hydro Extractor, 40-inch basket.
Three Balling 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, Etouffes, 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.**

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 Woolen 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, Woolen 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.

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

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

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. E. ANNETT, 372 Sackville St., Toronto, Ont.

CANADIAN LICENSEE for WARREN WEBSTER & CO.

NEWLANDS & CO.

GALT, CANADA.

MANUFACTURERS OF

JERSEY CLOTHS, GLOVE AND SHOE LININGS

SASKATCHEWAN BUFFALO ROBES.

BUFFALO FUR CLOTH COATS.
BLACK DOG SKIN CLOTH COATS.

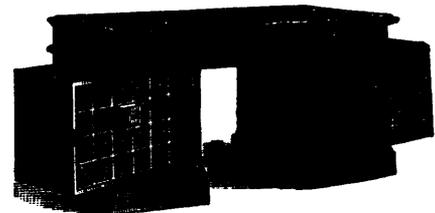
SEND FOR PRICE-LISTS.

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, TUCKERS,
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

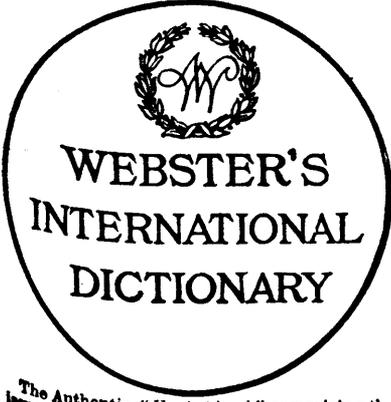
Extract. Solid and liquid Dyewoods and Anilines, specially adapted for dyeing leather Alum, acids, tin, crystals, etc., at lower prices.

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.



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.

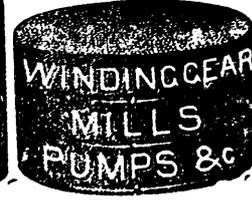
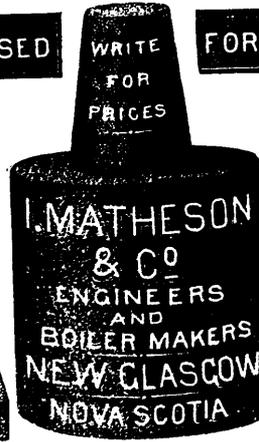
SUBSCRIBE FOR
THE CANADIAN MANUFACTURER.

ONLY
ONE DOLLAR A YEAR.

SPECIAL MIXTURE USED

WRITE FOR PRICES

FOR SHOES & DIES



Painted Screen Wire Cloth,

Painting and Quality Unexcelled.

Special Sand Screening Cloth,

Japanned Hardware, Grade Webs,

LATH CLOTH and SPECIAL STRONG POWER LOOM WEBS.

MANUFACTURED BY

THE B. GREENING WIRE CO., Ltd.

HAMILTON, CANADA.

SEND FOR CATALOGUE.

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

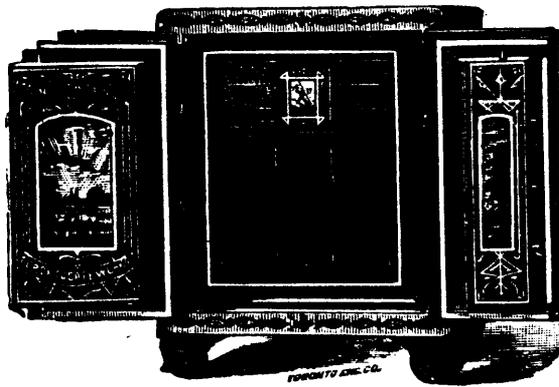


AND BEST.

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**, Canada,
 Toronto Office, 74 York Street.



J. & J. TAYLOR'S
Double Tongue and Groove
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.

See 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, MONTREAL, N.B., Nov. 24, 1890.

N. WEATHERSTON,

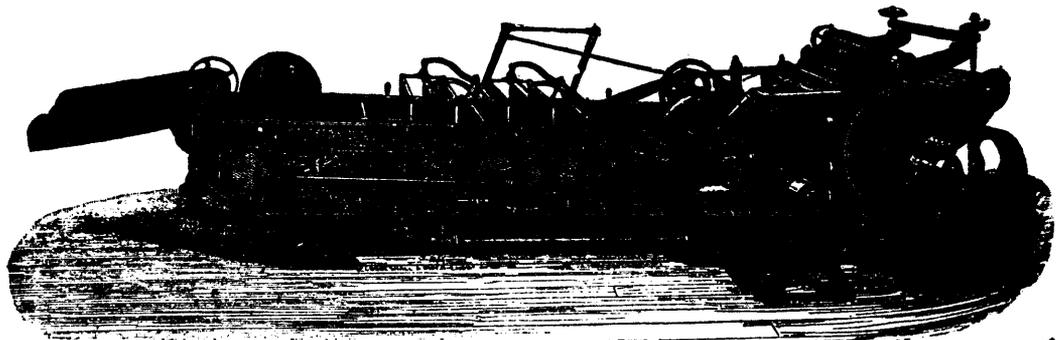
Western Freight and Passenger Agent, 93 Rossin House Block, York Street, TORONTO.

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.

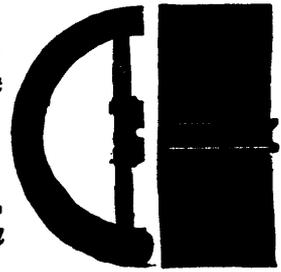
EVERY PULLEY A SPLIT PULLEY.

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 two inches to sixteen feet diameter.

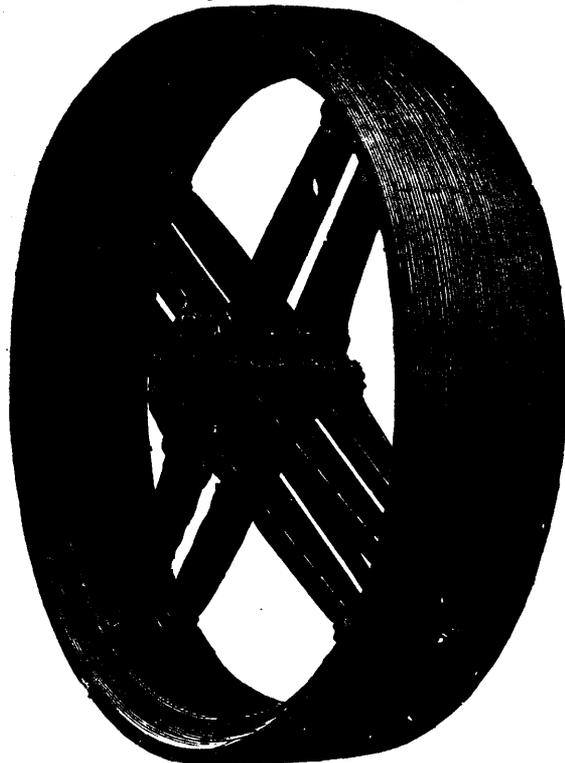
EVERY PULLEY WARRANTED.



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, Hanilton, 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 SIR,—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.

GENTS,—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. DOTT.

WASTE OF POWER.

According to the best scientific authority it costs 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.—

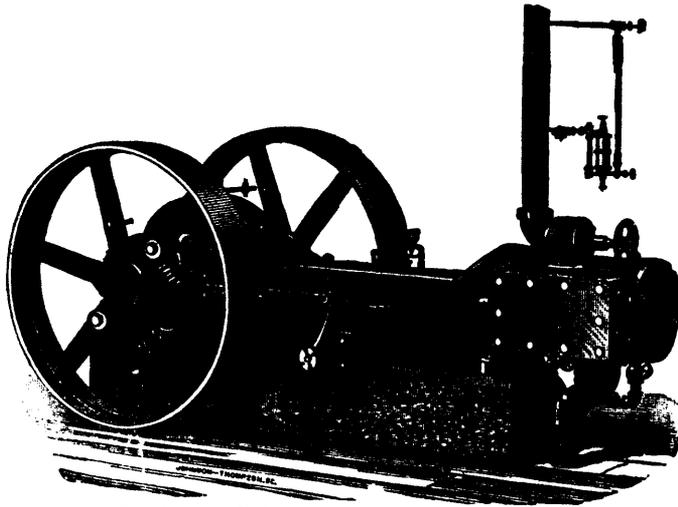
West Toronto Junction.

GENERAL OFFICES.—

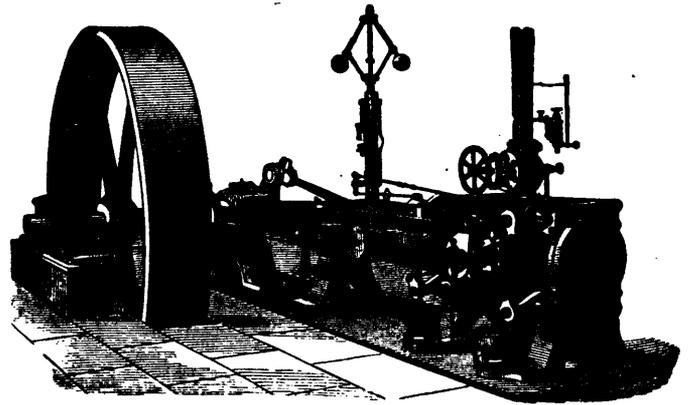
83 King Street West, City.

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

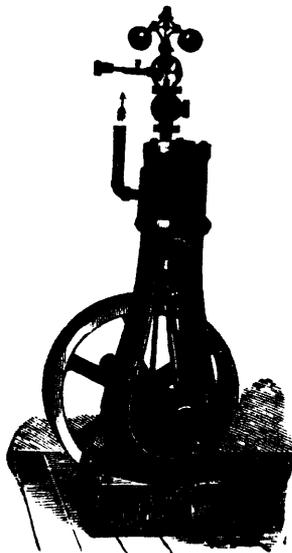
We beg you will note this fact when comparing our List with others which are for SOLID RIM, and NOT for Pulleys in HALVES.



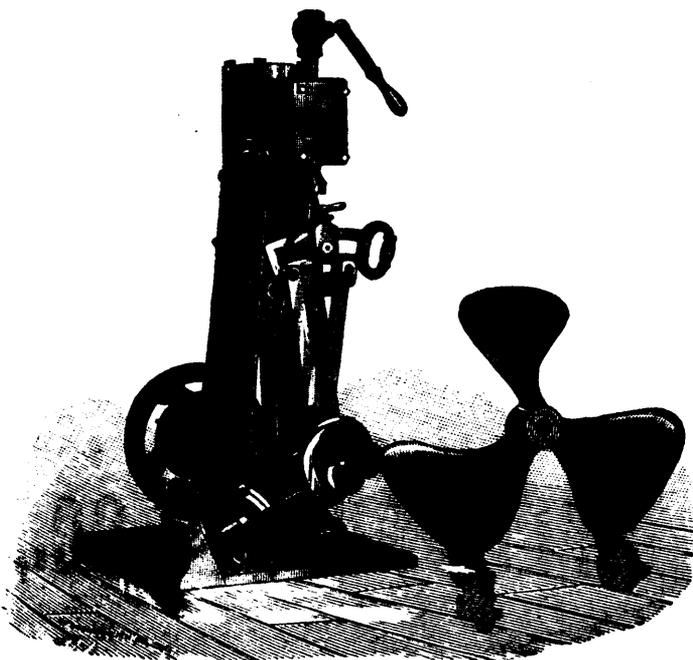
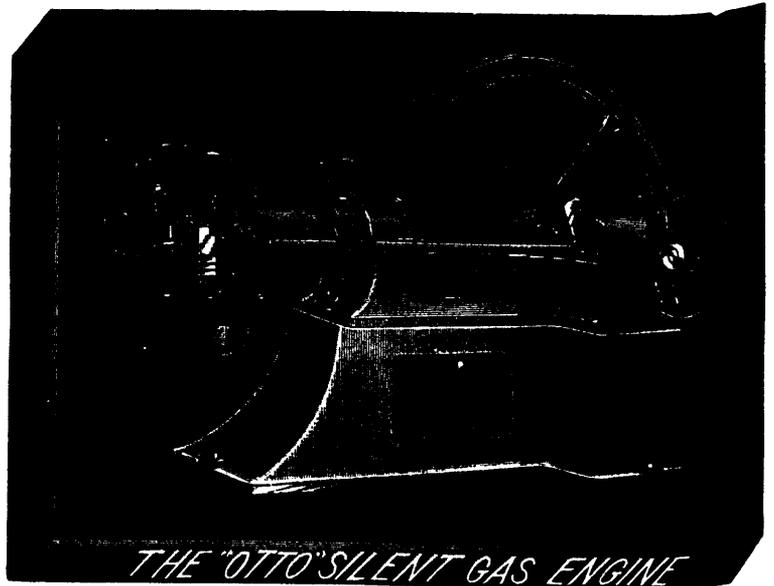
Armington & Sims Electric Light Engines.



Reynolds-Corliss Engine.



Vertical Engines.



Yacht Engines.

The John Doty Engine Co.

OF TORONTO, LIMITED.

TORONTO, ONT.

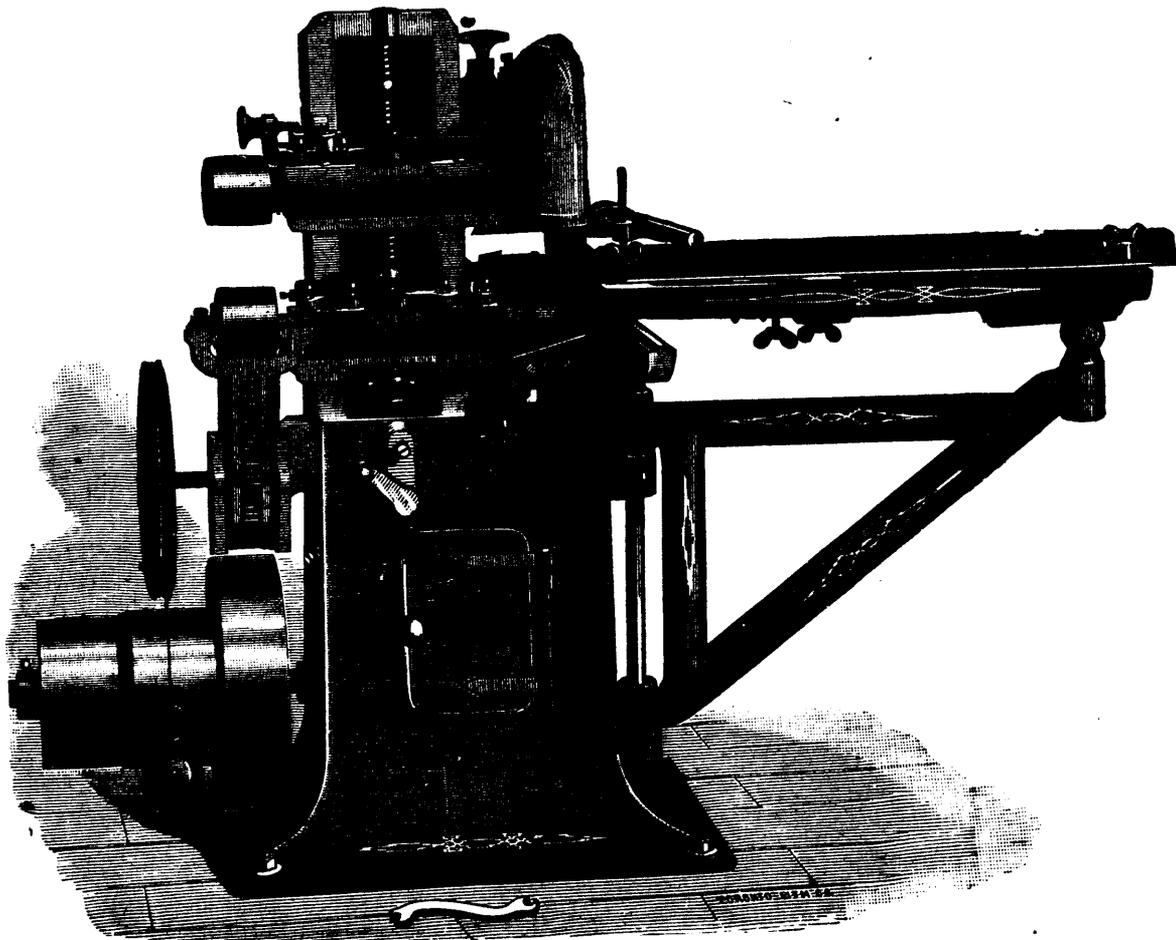
MANUFACTURERS OF

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.

 *Binder Bars, Z and other Special Sections.*

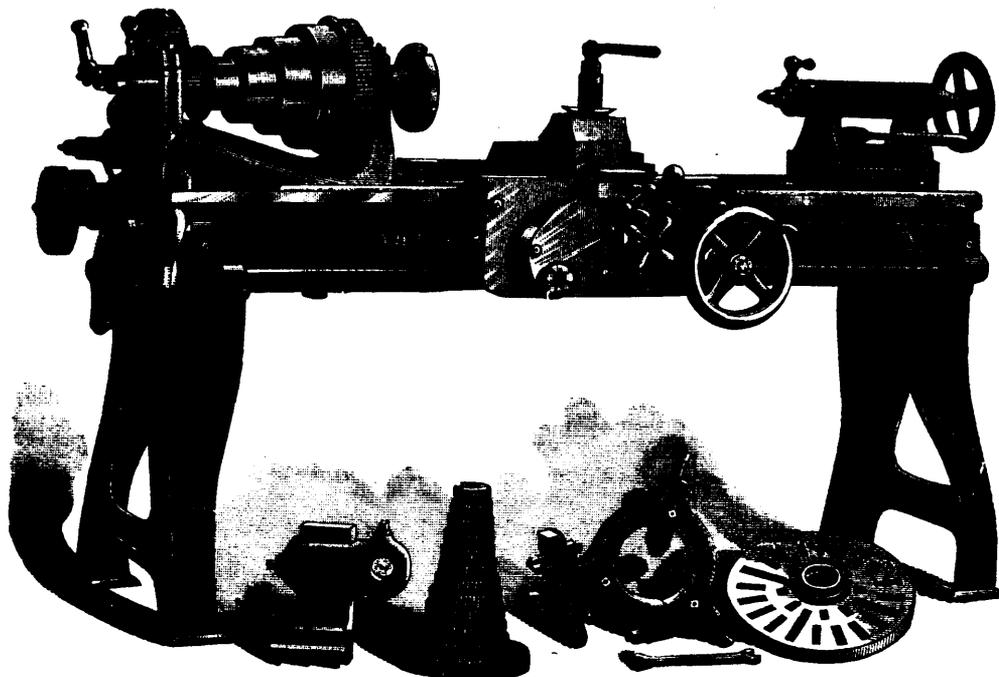
STEEL MOWER BARS.

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.



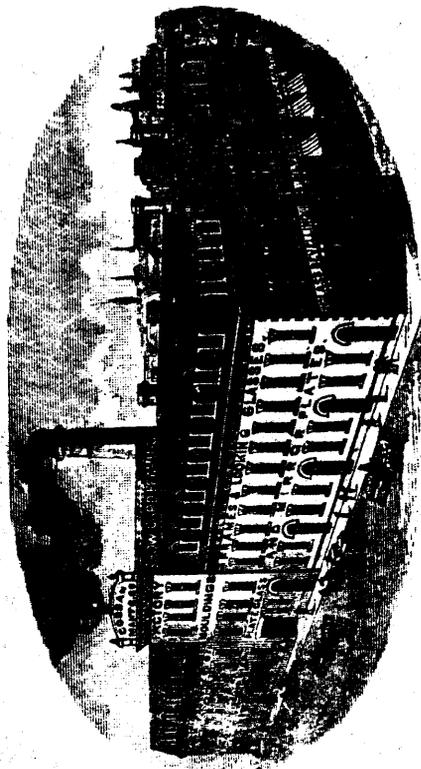
16-in. LATHE.

Manufacturers
of
Machinists' Tools
and
Woodworking
Machinery.

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

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

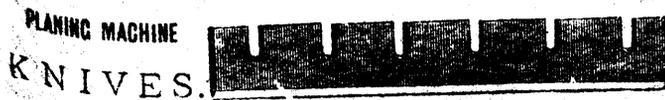
Cobban Manufacturing Co'y Factory & Head Office: Toronto.
 Branch: 148 McGill Street, Montreal.



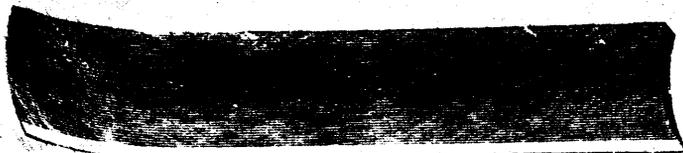
MANUFACTURERS OF
 Mantles, Over Mantles and Mirrors in Finest Hardwoods. Mouldings, Picture
 Frames and Looking Glasses. Mirror Plates: British, French, German,
 Shocks. Plate Glass Beveling and Silvering a Specialty

TORONTO.
MONTREAL.
 CLOSE PRICES. LIBERAL TERMS.

GALT MACHINE KNIFE WORKS.



STAVE CUTTER KNIVES.



STAVE JOINTER KNIVES.

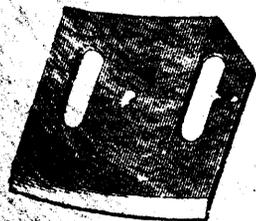


MOULDING, TENONING

MITREING

SHINGLE JOINTER,

And other irregular shapes.



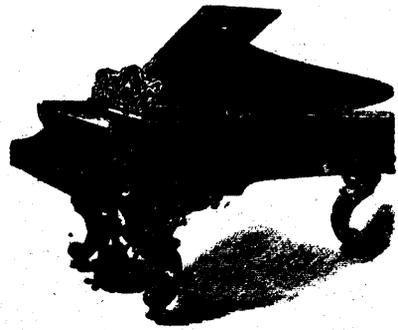
Chisels and Veneer, Paper Cutting, Leather Splitting and any special knife made
 to order. SEND FOR PRICE LIST. ALL WORK WARRANTED.

PETER HAY,

GALT, ONT.

HEINTZMAN & CO.

MANUFACTURERS OF



GRAND,
 SQUARE,
 AND UPRIGHT
PIANOFORTES.

SEND FOR ILLUSTRATED CATALOGUE.

Warerooms, - 117 King St. West,
TORONTO.

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 spok 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

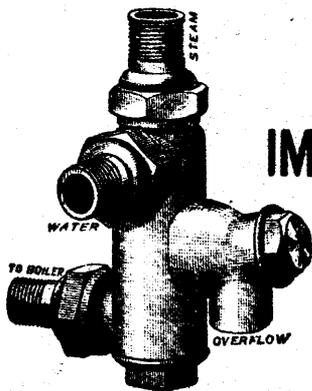
Agricultural Implements

AND OTHER PURPOSES.

Also **CARRIAGE HARDWARE.**

SMITH'S FALLS,

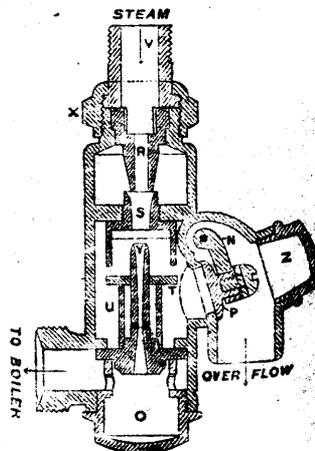
Ontario, Canada.



**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.