

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. 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 filming, are checked below.

L'Institut a microfilmé 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 filmage 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

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

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
!! 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 filmées.

Additional comments: /
Commentaires supplémentaires:

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

Continuous pagination/
Pagination continue

Includes index(es)/
Comprend un (des) index

Title on header taken from: /
Le titre de l'en-tête provient:

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

THE CANADIAN MANUFACTURER AND INDUSTRIAL WORLD

DEVOTED TO HOME INDUSTRIES, COMMERCE, FINANCE, INSURANCE, RAILWAYS & MINING.

VOL. 2.

TORONTO, MARCH 22, 1883.

No. 7.

THE BOILER INSPECTION AND INSURANCE CO'Y OF CANADA,

(Incorporated by Act of Dominion Parliament),

ALSO CONSULTING ENGINEERS,

late THE CANADIAN STEAM USERS' INSURANCE ASSOCIATION.

Authorized Capital - - - - - \$500,000.

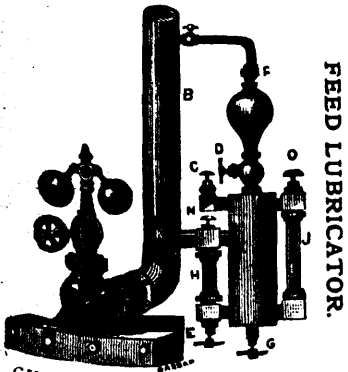
Boilers periodically inspected, and Insurance granted against explosion, covering Boilers, Buildings, and Machinery.
General Consulting Engineers for all kinds of Mechanical, Civil, and Mining Engineering Work.

HEAD OFFICE - - - - - MECHANICS' INSTITUTE, TORONTO.

SIR ALEX. CAMPBELL, Minister of Justice, *President.*
JOHN GALT, C.E. & M.E.,
General Manager.

HON. JOHN McMURRICH, President Western Assurance Co., *Vice-President.*
GEO. C. ROBB, *Chief Engineer.*
A. FRASER, *Secretary-Treasurer.*

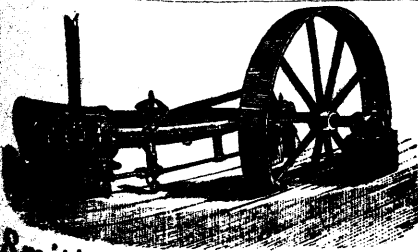
MONTREAL BRASS WORKS.
ROBERT MITCHELL & CO.,
MANUFACTURERS OF ENGINEERS' AND PLUMBERS' SUPPLIES



THE CONTINUOUS

FEED LUBRICATOR.

CIRCULARS ON APPLICATION.
MONTREAL.



Smith-Elkins
Manufacturing Co'y,
MACHINISTS,
IRON & BRASS FOUNDERS.

Machines and Boilers of the best materials and latest designs a specialty.
Saw Mills,
Shingle and Clapboard Machines,
Waterwheels, Plows, Cultivators,
Furnaces, Registers,
Mill Gearing of every description.

SHERBROOKE, - - QUE.

LEATHER BELTING.

ROBIN & SADLER,

MANUFACTURERS OF

Leather Belting,
Fire Engine Hose,
& Lace Leather.

All kinds of MILL SUPPLIES.

ROBIN & SADLER make a specialty of Double Driving Belts for mills, and in this class of belting specially—for quality of leather, smoothness of running on the pulleys, and durability, they are unsurpassed on the Continent of America.

BELTING FACTORY:

594, 596 & 598

St. Joseph Street,

MONTREAL.

Imperial Bank of Canada.

Head Office - Toronto.

H. S. HOWLAND, | T. R. MERRITT,
President. | *Vice-President.*
D. R. WILKIE, *Cashier.*

Capital Paid-Up - \$1,500,000
Rest - - - - - \$503,000

Purchases Municipal Debentures.
Issues Drafts on its Branches and Agencies in the North-West.
Transfers Monies by Telegram to Winnipeg and Brandon.
Agents in London,

MESSRS. BOSANQUET, SALT & CO.,
73 LOMBARD STREET,

with whom monies for transmission from Great Britain to Ontario and the North-West may be deposited.

A general Banking Business transacted.

McKechnie & Bertram, CANADA TOOL WORKS!

Dundas, Ont.

Supply complete outfits of Machinery for Railway Machine Shops, Locomotive Builders, Car Builders, Implement Manufacturers, Planing Factories, etc. CONTRACTS taken and fulfilled at shortest notice. Tenders given, and Price Lists and Catalogues furnished on application.

PATENTS

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

Trade Marks & Industrial Designs Registered.

Searches made. Transfers and Assignments, and all Patent Business carefully prosecuted. 13 Years' Experience.

R. A. KELLOND,
Surveyor and Expert.

111 James Street, Montreal.

WM. CRABB & CO.,
Manufacturers of all kinds of
STEEL & PINS
AND PICKER TEETH.
ALSO
Hackles, Combs and Gills,
AND MILL SUPPLIES.
NEWARK - - - - N.J.

Fire Bricks, Fire Clay,
Portland, Roman, and Canada
Cements,
Drain Pipes, Plaster,
Tiles, Flue Covers,
Furnace Blocks,
&c., &c., &c.
W. McNALLY & CO.,
Importers,
MONTREAL.

THE LARGEST MANUFACTURERS OF
STEEL AND BRASS STAMPS IN THE CONTINENT.
ENGRAVERS
TO THE DOMINION POST OFFICE
OTTAWA.
STEEL, BRASS, AND RUBBER STAMPS.
STAMPED PLATES, SEALS, &c. &c.

PILLOW, HERSEY & CO.,
Manufacturers of
Cut Nails, Horse Shoes,
Railway and Pressed Spikes,
Tacks, Brads, and small Nails
of every variety.
Carriage, Tire, Plow, and other Bolts. Hot
Pressed and Forged Nuts, &c.
Office and Warehouse:
91. ST. PETER ST. - - MONTREAL.

KNITTING MACHINES,
2 1/2, 3 1/2, 4 1/2 ins. diameter
for
FACTORY USE,
which make
FULL FASHIONED
SEAMLESS
HOSIERY,
also,
PLAIN FAMILY KNITTING AND
RIBBING MACHINES
COTTON, YARNS, MIXES & COLORS, &c.
CREELMAN BROS., MANUFACTURERS
GEORGETOWN, ONT.

McARTHUR,
CORNEILLE & Co.,
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. DALSACE,
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.

Exchange Bank of Canada.
Capital Paid up, \$500,000 Rest, \$500,000.
HEAD OFFICE, MONTREAL
Directors,
M. H. GAULT, M.P., President.
Hon. A. W. OGILVIE, Vice President.
E. K. GREENE, Alexander Buntin.
THOMAS CRAIG, Managing Director.
Branches,
Hamilton, Ont. C. M. Counsell, Manager.
Aylmer, Ont. J. C. Bisset, do
Bedford, P.Q. E. W. Moran
Sterling American Exchange bought and
sold. Interest allowed on Deposits.
Collections made promptly and remitted at cur-
rent rates.

MILLER BROS. & MITCHELL,
Machinists & Millwrights,
Manufacturers of
IMPROVED HOISTING MACHINERY,
Sole Licensees for Dominion for
Gray's Patent Noiseless Roller Mills
-AND-
Gradual Reduction Machines.
110, 112, 114 & 116 KING ST.,
MONTREAL Que.

**New York Dyewood, Extract
and Chemical Co.**
161 FRONT ST., N.Y.
All kinds of
DYE STUFFS.
Dye Woods, Extracts, Catch,
Indigo, Gambler, Cudbear, Coch-
ineal, Sumac, and Liquor
Extracts of Dyewoods.

ROYAL NAVY
TOBACCO WORKS.
PARIS, - - - ONT.
W. P. BEHNING
MANUFACTURER OF
Royal Navy Plug Tobacco
AND
FINE CIGARS.

THURBER'S
BABBIT METAL,
Nos. 1, 2, 3.
Acknowledged superior to any other
Canadian Metal is far cheaper and better than
ordinary Babbit.
Philadelphia Metal, Nos. 1 and 2, is very fine
metal at the price.
JAMES ROBERTSON & CO.
TORONTO.

THE CANADIAN MANUFACTURER AND INDUSTRIAL WORLD.

REPORTED
TO
HOME INDUSTRIES,
COMMERCE,
FINANCE,
INSURANCE,
RAILWAYS &
MINING.

VOL. II.

TORONTO, ONT., MARCH 22, 1883.

No. 7

RECIPROCITY AGAIN.

Mr. Ross (Middlesex) moved in the House of Commons on Monday last for copies of correspondence between the Government of Canada and the Government of the United States, or any Board of Trade in Canada or the United States, upon the question of reciprocal trade relations between the two countries upon the general basis of the reciprocity treaty of 1854. He made the motion, he said, for two reasons. In the first place, he wanted to see whether, as predicted, the National Policy had caused the Americans to sue for a renewal of the reciprocity treaty of 1854. In the second place, he wanted to impress upon the House the necessity of reciprocal arrangements with the United States. Our population since Confederation had increased but thirty per cent., while our exports had increased eighty per cent. Thus it would be seen that our produce increased with greater rapidity than our population. With such an increase of our products, our prosperity must be injured unless an outlet was secured for them, nor with the opening of the North-west would a solution of the difficulty be found. On the contrary, the North-west would for years be a producing rather than a consuming country, and would add to the necessity for enlarging our outside markets. Canada had spent a vast sum to develop internal communication. The items of note were forty millions. Not only this, but the whole fiscal system was changed, and the teachings of England and her political economists, as well as the tradition of our own country, were in favor of the American systems. Further, we had spent the enormous sum of \$3,104,000 on immigration in the last ten years. He contrasted an increase of population of 30 per cent. since Confederation with an increase of exports of 80 per cent., taking these figures to indicate that the home market was not keeping pace with the productive capacity of the people, and that some means for extending trade was absolutely essential to continued success.

His next point was that 90 per cent. of the export trade was done with Great Britain and the United States, the latter being the largest customer. In Ontario the total exports were \$37,000,000, of which the United States took \$29,000,000. From Quebec the United States took \$6,000,000. Nova Scotia sent one-half, New Brunswick, one-third, British Columbia, one-half, Prince Edward Island, one-third, and Manitoba, one-sixth, of their exports to the United States. Taking another set of figures to exemplify the same point and to show that Canadian raw materials, which were such a source of wealth to Canada, were just what the United States wanted,

he showed that the Americans took 60 per cent. of our agricultural products, 43 per cent. of the products of the forest, and 30 per cent. of the exports of animals and products. Further, he proved that we bought from our neighbors nearly as much as we sold them. Referring to the Reciprocity Treaty of 1854, he quoted figures to show that it had increased the Canadian trade from \$17,000,000 in 1853 to \$82,000,000 in 1865. He admitted that trade increased even after the treaty was abrogated, but held that Canada had simply been compelled to seek other markets, and had prospered, not because of, but in spite of, abrogation. He conceived it to be Canada's duty to seek for a renewal of that treaty, or one equally favorable to Canada. The Dominion was now in a better position than ever before to seek for such renewal. The people were in a prosperous condition; Confederation had been firmly established, and the country was assuming a position almost of nationality. Besides all this, the arrangement under the Washington Treaty, by which Americans hold our fisheries, would soon expire, and we would have this advantage to offer in any negotiations carried on. Canada could go in a dignified way, therefore, to seek negotiations on the subject of reciprocity, and only in that spirit would he have the Dominion's representatives approach the United States.

Mr. White (Cardwell) thought that in view of the probable abrogation of the Washington Treaty, the speech made by the hon. gentleman was at this time most inopportune. What was the meaning of such a speech? It implied that the future commercial prosperity of the country was largely dependent upon the action of the Americans, and that they had it in their power to cripple us by simply refusing to renew commercial trade relations. In the tariff bill of 1879 there was a standing offer to our neighbors on the other side of the line to come into reciprocal relations for all the natural products of the country. That bill actually contained a provision that as soon as the United States chose to withdraw the duty on our natural products our Government would withdraw the duties on similar articles upon this side. Surely no more practical or substantial evidence could be given of the willingness of the Government to renew reciprocity. If reciprocity could be got on fair terms, accept it; but nothing good could result from our going hat in hand to our neighbors and letting them know that our commercial success depended on having free access to their markets. By maintaining a dignified and self-reliant attitude we would be able to live independent of any policy which they might adopt on the other side, while we would always hold ourselves ready to meet them on fair terms on the

adoption of such reciprocal relations as might be mutually advantageous to the two countries. He held that this country did not depend upon reciprocity with the United States, and could get on very well without it. The hon. gentleman had given a number of figures to show that our market is largely dependent on the United States, and that if the duties were taken off our sales would be largely increased. This contention would hardly tally with that which the hon. gentleman had always held, namely, that the Americans paid the duty.

Mr. Charlton denied that Mr. Ross' speech was inopportune, and said that the charge of representing that Canada depended for its prosperity on the United States was unjust. The United States is our nearest neighbor and best customer, and it is of the first importance that trade between the two countries should be as little hampered as possible. Mr. White had not taken a favorable view of the treaty negotiated by the Hon. Geo. Brown in 1874, but that treaty, if ratified, would have been a great boon to the people of Canada. It had been unfairly attacked, but it was based upon sound principles. It provided for a full interchange of a number of manufactured products, and no treaty for reciprocal trade with the United States would ever be made that did not include many such products. The provision for reciprocity in the Tariff Bill of 1879 was inoperative because the Americans knew that all the gain of a few interchanges of raw products is on the side of Canada. The National Policy, notwithstanding all that had been said in its praise, had not had a sufficient time. It had come into operation just when a wave of prosperity began to flow over the civilized world, but it was not yet known how it would stand the strain of a period of general depression. At its best it will be found to be but a poor substitute for free trade with the United States. The time had come for overtures for a reciprocity treaty, and he hoped the Government would take advantage of the opportunity. Mr. Borbeau spoke in French. He justified the course pursued by the Government. Mr. McNeill said there was one noticeable exception to the countries that had benefited by the general wave of prosperity since 1878, and that was Great Britain. The motion was adopted.

The above is the substance of what was said in the House on the subject, and there are several points in it that call for remark; but at present we shall touch upon two of them only. In the first place, we hold that Mr. White was clearly in the right when he said that the present motion was inopportune. To every Canadian of proper spirit it must appear that, as it was our neighbors who terminated the old treaty, it is their business, not ours, to make overtures for a new one, if ever a new one there is to be. The next offer must come from their side, not from ours, and that this view of the matter agrees with the sound logic of facts has been more than once admitted at meetings of their own National Board of Trade. If they think fit to make us an offer we shall give it our respectful consideration, and meantime we have left an open door, of which they can avail themselves whenever they choose. Section 6 of the Tariff Act of 1879 provides for reciprocity in natural products, the same as under the old treaty, the articles named to be free on this side of the border whenever they are made free on the other. Our Act of Parliament for the purpose has been on the Statute book for four years, and it needs but a

very short and simple Act of Congress to revive reciprocity as we had it before. No negotiations, no protracted meetings of Joint High Commissioners are necessary, but merely an Act of Congress that may be set forth in twenty lines of print.

It is pretty well understood, however, that the Americans are not likely to agree to reciprocity in natural products only, and this brings us to the second point we have now in view. Can we afford it, would it be for our interest to bargain for reciprocity in manufactured articles as well as in natural products? We say no: it would be most emphatically not for our interest to agree to anything of the kind. Manufactures on the other side are greater, longer established, and sustained by larger capitals than ours. With an open frontier they would sell millions upon millions worth of their manufactured goods, wares, and merchandize on our side, while we would be able to sell on their side but a trifling amount in comparison. They know this full well; and we fancy the majority of Canadian manufacturers know it too, and understand what it means.

The kind of reciprocity that the Americans want is no secret. On their behalf it was clearly stated by the late Israel T. Hatch, of Buffalo, a quarter of a century ago, when he was employed by the Government of Washington to report upon the working of the old treaty. Reciprocity, as they would have it, consists in the exchange of Canadian raw produce for American manufactured goods. Were we so foolish as to agree to this, our infant manufactures, now prospering and expanding under the N.P., would wither away as if by magic, and in less than twice twelve months Canada's progress would get a set back of twenty years. We say, no such reciprocity for us; hands off the N.P., under which we are doing so well, let well enough alone—no mischievous meddling with the policy under which the country is prospering so conspicuously.

But shall we continue to prosper this way? When another wave of depression comes, what then—what will the N.P. avail to save us from its effects? This is another question raised by Mr. Ross, and we shall endeavor to give it due answer on a future occasion.

THE VALUE OF SMALL INDUSTRIES.

One of the greatest inconveniences of modern industrial life from which we suffer is the incessant changes in the organized business methods. The constant march of improvement, tending to improve our organization of economical processes of manufacture, and of trade generally, carries with it certain destructive consequences. All through the middle ages and even down to our own half of the present century, most people who had been trained to an employment either by the apprenticeship system or otherwise, were accustomed to look to it with a reasonable hope that no particular change in it would ever cause them much discomfort or anxiety. Recent history has again and again shown how fallacious such hopes are, and how ill-fitted such people were to struggle with new circumstances in their industrial career. Over and over again men who worked for weekly wages have suffered what has been almost shipwreck from the introduction of machinery in their trades, from the change of the locality of industries from the multiplication of manufactured products, and from

commercial panics. The first is a change which in itself is usually a blessing, not only as cheapening the article made, but as increasing the demand for labor by the increased demand for it. No better instances can be chosen to illustrate the point than the universal adoption of the sewing machine and the railway. Before steam printing, the daily newspaper, except for very large centres of population, was an impossibility. The same holds good of nearly every industry, but it does not follow that these are unmixed advantages. With every new advance there follows new responsibilities which the man of this century has not proved equal to. Increased capacity to serve the public with a supply of goods has invariably tempted business managers to manufacture and sell wherever they could, in excess of the market requirements. The main defect of our modern system of great undertakings has been the temptation to speculate for personal aggrandizement, and the accumulation of vast private fortunes in a very short time. Neither in European countries nor in this has any remedy been found for these evils. It can only come as a result of long and painful experience. The best controlling influence over these men is the occasional word of alarm given to the public by bank managers of courage, and such institutions as Associated Chambers of Commerce and Boards of Trade. To make such effective there needs a corresponding responsive action on the part of the public; for, whatever comes upon the commercial world as disaster, it must never be forgotten that the great public have their responsibility.

There are conditions of life in some countries which make bad times and panics less keen to the average man and woman. Any change in the nature of an employment can be partially compensated for by the mixed industrial conditions found in such countries. In all parts of the world there are found small trades and professions which make each man and woman engaged in them much more of an independent and self-reliant citizen than is the ordinary hireling. Such occupations develop habits of forethought, thrift, economy and intelligence, which confer capacity, self-respect, competence and comfort. A large body of such people are found in France, a good many in Switzerland, and a considerable number in Germany. England is not without her share, but there they are fewer and are more scattered. In France a very large number of occupations are open to both sexes, and, as a consequence, the social and moral results of the condition are seen at their best. Farming, on the system of *La Petite culture*, was no doubt the basis of the entire order of industry which has grown up in trades after the same character. Any one familiar with French industrial life cannot have failed to remark the great thrift, economy, and painstaking care of the small farming class. The special crops raised on these farms are eggs and chickens, butter and cheese, and the small fruits and domestic vegetables. As compared with all other systems of farming this is decidedly in advance. The greatest gross and the largest net returns are obtained therefrom. The number of chicks and eggs which an acre of land is made to yield is surprising to travellers. Butter and cheese are raised in increased quantities without any neglect of quality. On the contrary, the French excel in butter, and in the manufacture of soft cheeses they are unrivalled in the world. The Swiss are very similar in their modes of farming

In addition to all this, and often on the same farm, the grape is cultivated to perfection. In no country in the world is there so large a quantity of farm produce raised for export as France, and it is there that poultry has reached its topmost height in quality. For many years England has drawn her largest proportion of imported butter from these farms, while the trade in the soft cream cheese is universal.

In the trades and professions France was first to show that the old domestic employments could be combined with the modern system of factories and its great sub-division of labor. Always first in industrial art, occupation was found for an army of designers and draughtsmen whose business it was to devise after their own conceptions new forms, new combinations of color. For more than thirty years the existence of this body enabled the manufacturers of France to establish a vast export trade with England in textile fabrics. The philosophical and mathematical instruments were for many years the exclusive product of men of small capital and few hands. Much of the chemical apparatus of the present day was improved and perfected in that country. So intimate has been the connection between brain and manual labor, that small workshops have stood their ground, and in many respects have led and governed the large concerns.

In Germany the same features may be traced in its industrial life, only they are less in degree and of more limited range. There chemistry and the higher mechanics furnish occupation to a much larger body of men than in any country in the world. The products of small chemical workshops are almost countless, and the spirit of emulation thus engendered in the hearts of the people have made them what they are. The production of toys of various designs furnishes work for quite a number of small works in which from five to ten people only are employed. There is an institution called the Credit Association, which enables men of small means to obtain advances of money for very short terms at rates of interest varying from six to ten per cent. Every person who borrows must be a member of the association and own shares in it, and the advances are made on the unlimited liability of the members. This society has worked on for more than a generation, and has enjoyed a remarkable success. It has enabled many a man or small association of partners to set up tailoring, shoemaking, or furniture manufacturing. Some go into building, and others into tool making and engine construction, and thus the wiping-out process in favor of *La Grande Fabrique* has been delayed. These credit associations have spread and constructed a sort of federal organization and government which have given security and permanence to the institution. The small societies of working manufacturers are exceedingly interesting as studies in political economy, teaching every workman the responsibilities of capitalists, and the virtue of caution. These societies have had an immense influence for good in the country where socialist doctrines are so eagerly taught and followed by the hireling. They have rarely, if ever, exhibited any insobriety such as indulgence in speculative trading implies. The good faith which it is necessary for them to keep with the people's bank has a steadying effect in that respect. The object of most men is to make a competence, and to do it by conducting their own affairs. Few of them have grown rich, but still fewer have become poorer, while most, if

not all of them, feel a delightful sense of independence and a freedom from fluctuating conditions. Working side by side with their rivals, and sometimes their competitors, they have a most useful effect on the quality of the work in large factories, and on the people who work in them. Nearly all the more respectable portion of the hands desire a lot as enviable as that of the self-employed artisan, and work under the stimulus of one day becoming their own capitalists. In England the number of trades and occupations open to small bodies of workmen is still important and shows a tendency to increase with the increase of thrift and economy. Since the establishment, in 1851, of the Schools of Art and Design, quite a new profession for men and women has been opened, and a large share of the designing formerly done in France is now executed by native talent. Not only for manufacturers' goods are designs made, but in house decoration and upholstery this new force finds for itself a special field. In preparing wrappers and covers, packing tins and boxes for manufactured goods, this faculty has another important sphere. Mathematical and scientific instruments and apparatus, and trades similar in character, are still in the hands of small men. Strange as it may seem there are in Lancashire, Yorkshire, Nottinghamshire and the Birmingham districts little trades rivalling and competing with their more powerful neighbors. In the same districts there are mills largely operated by the hands, who own the largest share of the capital, and these have weathered many a storm in times of trouble by their judicious management. In the north of England towns, where this system of co-operative working has prevailed, the scale of prices ruling in the district has often been regulated by the artisans' will, and they have often been the first to discuss reductions in wages and in the output of the concern. Many of these men own their own cottages, and furnish quite a contrast to the shiftless and discontented neighbors always to be met with. In some of these workmen's joint-stock factories a decidedly permanent improvement has been remarked in the dignity and bearing of the men, which in times of severe depression is a powerful factor in stilling the more restless spirits. The habits of thought, the moderation, patience and courage which self-employed labor induces, very largely promotes security and stability. The problem of the day is to limit speculation and to make fewer those terrible calamities which now and then come down upon us as panics. The fact that those countries suffer least that have the most mixed system of industry and the most contented people, seems to suggest a more general advance toward that condition of commercial life which prevails in them. Not in any hard and fast order, but in the varied and free occupation, is the happiness and permanence of the state best secured.

THE AMENDED BANKING ACT.

In our last number we gave (pp. 180—94) a synopsis of the provisions of the amendments to the Banking Act introduced by the Minister of Finance. The Act came up for discussion in Committee of the whole House on Tuesday, when Mr. Fairbanks pressed for an amendment allowing firms now calling themselves "banking companies" to retain that designation. Sir Leonard Tilley consented so to amend that the designation

should be allowed, but with the words "not incorporated" to follow it wherever used. The bill was then ordered for a third reading on Wednesday.

Mr. Fairbanks and others opposed to the measure must see that they have really no support outside of the House, and that public opinion is overwhelmingly in favor of proper restrictions upon the business of "private banking." It is nothing short of a monstrous injustice that, while the regular banks, with their millions of capital, must conform to many very strict and even onerous conditions of law, private individuals may at their own will open offices for receiving deposits and other business, without either charter or bank act to restrain them at all. The Finance Minister has done well in promptly meeting a growing danger, which recent events have shown to be already a very serious one in Canada.

THE STATE OF CANADIAN FACTORIES.

As we have frequently before counselled Canadian manufacturers, it is inevitable that factory legislation must come some day in the near future. Where manufactures are few and unimportant, such legislation is not required, but when they grow and expand then the demand for it arises. If we had no N.P. there would not be much talk about factory laws in Canada. The *Globe*, however, overdoes the thing, and alarms itself a great deal too much when it tries to get up a *lightning* picture of "the state of Canadian factories." Doubtless there are evils already cropping up that the law will have to correct, and the Dominion Government is even now taking the matter in hand. But as yet we are only just beginning to have large factories and many of them; and the evils in question will be checked ere they have very far developed. Meantime our manufacturers may even be excused a little if, in the rush of making a beginning, some things have been omitted which will be attended to by-and-by.

Mr. H. Coombs, of Charlottetown, P. E. I., accompanied by Senator Howlan, and Messrs C. H. Tupper, Josiah Wood, Paint, and Hackett, M.P's., and Mr. Austin McDonald, waited on the Postmaster-General recently to ask for a subsidy of \$25,000 yearly for a line of steamers to ply between ports in the Maritime Provinces and West Indies. The Minister received the deputation cordially, and promised to lay the matter before his colleagues.

SPECIAL NOTICES

W. H. Owens, an extensive Pump manufacturer, has removed from Belleville, where his factory was burned down last October, to Peterborough, and has now in the latter town superior facilities for turning out promptly all orders entrusted to him. Mr. Owens manufactures a variety of Pumps, the more prominent of which are the cone, model and common suction pump. He also sells mowers, reapers and agricultural implements generally. He intends enlarging his premises the coming summer, his growing business rendering such a step a necessity.—*Adv.*

To Mill Owners and Manufacturers.

ESTD

F. E. DIXON & CO.'S

PURE BARK-TANNED

Star Rivet Leather Belting!

**FIRST PRIZE FOR
LEATHER BELTING**

-AT-

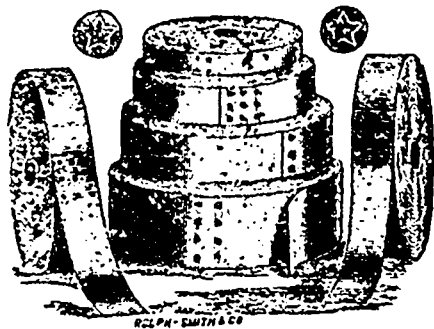
Provincial Exhibition, Ottawa, - 1875.
 " " Hamilton, 1876.
 " " London, - 1877.
 Industrial Exhibition, Toronto, 1879.
 " " Toronto 1880

EXTRA PRIZE FOR

Genuine Oak Tanned Belting.

-AT THE-

Provincial Exhibition, Hamilt, 1876.



INTERNATIONAL MEDAL

-AT THE-

Centennial Exhibition,
PHILADELPHIA, 1876.

FIRST PRIZE FOR

BELTING LEATHER

AT THE

Industrial Exhibition, Toronto, 1879.
 " " " 1880.

Our Belting is **Short Lap**, and is warranted to run straight and even on the pulleys, and certainly cannot be surpassed in quality by any other Belting in the market at the same prices.

Our **Leather is of Pure Bark Tannage**, and consequently is much more durable than the chemical tanned leather of which most of the American Belting imported into Canada is made, though sold under the name of **Oak Belting**.

To accommodate those who desire to have a really genuine article of **Oak Belting**, we beg to say that we keep in stock a quantity of

Oak Leather of the Celebrated Tannage of J. B. HOYT & Co., of New York,

and as the duties on imported rough Leather are much less than on the manufactured Belting, we are thus enabled to sell the Belting made from this quality of Leather much cheaper than it can be imported.

LARGE DOUBLE BELTS A SPECIALTY.

Please note that our Price List averages Twenty to Twenty-five per cent. lower than the American Price list at which all American Belting is sold in Canada.

Lace Leather of the very best quality always on hand.

All Work Warranted.

Orders Solicited.

F. E. DIXON & Co.,

81 Colborne Street, Toronto

MILL OWNERS

WHEN YOU BUY BELTING

Do you want Belting that is made from pure Leather?

Do you want Belting that will run straight and even?

Do you want Belting that is thoroughly stretched?

Do you want Belting that will run without stoppage of machinery to "take up," causing loss of men's time, etc.?

IF YOU DO, BUY

H. L. FAIRBROTHER & CO'S

AMERICAN

LEATHER BELTING.

We keep a larger stock of Leather and Rubber Belting on hand than any other Makers or Dealers in the Dominion of Canada.

ORDERS SOLICITED.

GEO. F. HAWORTH,

SOLE AGENT FOR DOMINION OF CANADA,

WAREHOUSE, 65 YONGE STREET, **TORONTO.**

Mechanics and Engineering.

ELEMENTARY PAPERS FOR YOUNG MECHANICS.

No. III.—ELEMENTS OF MECHANISM.

Machines are made for the modification and transmission of motion and force. These operations are performed at the same time, and by the same elementary parts of a machine, but much greater clearness and precision of thought can be attained by studying them separately. The modifications and changes of motion in the various parts of a machine are not so complicated, and are more readily comprehended than the changes of force; hence, it is better for the student to confine his attention first to the changes of motion, and afterwards to the forces and strains affecting the various parts.

At the outset, the student should clearly understand that no machine, no mere arrangement of levers, or screws, or wheels and pinions, can either produce or increase force. Force cannot be created or produced by any mechanical contrivance. It can only be utilised, guided, and directed to certain definite aims; and, as a general rule, the more complex the machine, the greater will be the amount of force lost by friction while passing through it. All machines, no matter how complex, are combinations of simple elements of mechanism.

These elements of mechanism are called "Mechanical Powers," and in old works on mechanics there were said to be six, viz., the Lever, the Wheel and Axle, the Inclined Plane, the Wedge, the Screw and the Pulley. A more modern classification arranges them into three divisions,—the LEVER, the INCLINED PLANE, and the PULLEY, while other writers consider that the pulley is but a modification of the lever. In considering these "Mechanical powers," the weight of the parts and the effects of frictional resistance will not be taken into account except where specially mentioned.

THE LEVER.

The Lever in its simplest form is a straight, inflexible bar which can be made to turn on a centre: this centre is called the "fulcrum." The lever is divided into two parts by the fulcrum, the one part to which the power is applied, and the other at which resistance is overcome. There are three varieties or orders of straight levers, depending upon the relative positions of the fulcrum, the power, and the weight or resistance. In a lever of the *First order*, the power and weight are at opposite ends of the lever, with the fulcrum between.

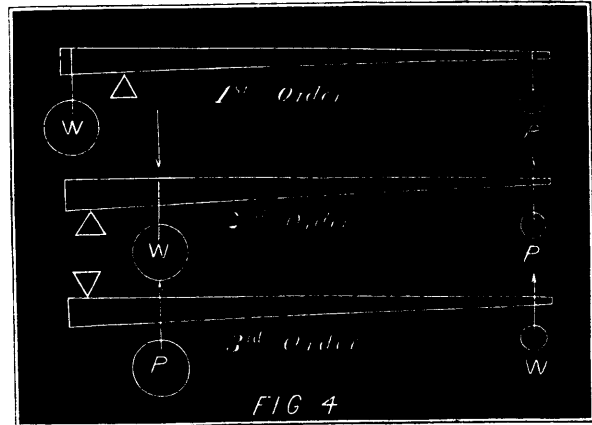
In a lever of the *Second order*, the power and weight are at the same side of the fulcrum, and the *power* is the further from the fulcrum.

In a lever of the *Third order*, the power and weight are at the same side of the fulcrum, and the *weight* is the further from the fulcrum.

Fig. No. 3 illustrates these several orders of levers.

Remembering that no machine can create power, but can merely transmit it, and that power is resistance overcome through distance, or, in other words, *power is pressure in motion* it will be plain that the weight, overcome at the one part of the lever, multiplied by the distance it moves, must be equal to the power applied, multiplied by the distance it moves, in order that the one may exactly balance the other.

The distance from the fulcrum to the point where the power is applied is sometimes called the *arm* of the lever, and the distance from the fulcrum to the point where the weight is applied is also called an arm. The length of each arm should in all cases be measured from the fulcrum, and if one arm be eight feet long and the other one foot long, then the *leverage* is said to be 8 to 1, or 8.



The following rules will be found to apply to almost all cases or calculations regarding straight levers.

1st. To find the power. Multiply the weight by its distance from the fulcrum, and divide the product by the distance of the power from the fulcrum. The result will be the power.

2nd. To find the weight. Multiply the power by its distance from the fulcrum, and divide the product by the distance of the weight from the fulcrum. The result will be the weight.

3rd. To find the distance of the power from the fulcrum. Multiply the weight by its distance from the fulcrum, and divide by the power. The result is the distance of the power from the fulcrum.

4th. To find the distance of the weight from the fulcrum. Multiply the power by its distance from the fulcrum, and divide by the weight. The result is the distance of the weight from the fulcrum.

It should be noted that in a lever of the First order, the direction of motion of the power is the reverse of the motion of the weight; and in levers of the Second and Third orders the direction of motion of both power and weight is the same.

In a lever of the First order, it may be that a *small* amount of power moving quickly, or through a long distance, is made to overcome a *large* amount of weight moving slowly, or through a short distance; or it may be the reverse of this, and great power moving a short distance be made to overcome a small amount of weight moving a long distance. Or it may be that the arms are of equal length, in which case the power and weight are exactly equal, but the direction of motion is reversed.

In a lever of the Second order, the direction of motion is not reversed, and less power, moving through longer distance, overcomes heavier weight, moving through shorter distance.

In a lever of the Third order, the direction of motion is not reversed, and greater power, moving through shorter distance, overcomes less weight moving through longer distance.

A crow-bar with a block for a rest is an example of a lever of the First order. If the bar is sixty-six inches long and the "rest" is six inches from the end, then the leverage is as 10

to 1, and each pound pressing down at the end of the long arm will lift 10 pounds at the end of the short arm. If the rest be shoved in to four inches, then the leverage will be as 62 to 4, or $15\frac{1}{2}$ to 1.

A crow-bar used without a rest, but with the end pressing upon the floor, and the operator lifting the load, is an example of a lever of the Second order.

The common arrangement of loading a boiler safety valve is an example of a lever of the Third order.

The fulcrum is at the one end, the weight to be lifted is hung at the other end, and the power is applied by the pressure of steam in the valve.

The next paper will show how to calculate the load on a safety valve with lever and weight.

ANSWERS TO QUESTIONS 3 AND 4.

No. 3. Assuming that the friction of the air is not taken into account, the cannon ball will rise so high that in falling its initial velocity of 1,200 feet per second will be regained. The question then becomes, from what height must the ball fall to acquire a velocity of 1,200 feet per second? The rule is, square the velocity and divide by 64.4. $1200 \times 1200 \div 64.4 = 22,360$ feet, or over four miles.

A Martini-Henri rifle bullet leaves the muzzle of the gun with a velocity over 1250 feet per second, while with some heavy guns the ball leaves with a velocity over 1500 feet per second.

No. 4. The two cannon balls start on a level line, and the instant they leave the barrels of the guns the action of gravity begins to make them fall, and as they have the same distance (40 feet) to fall, they will reach the ground at the same time.

The distance fallen is 40 feet, and the time occupied in falling will be the square root of the quotient of 40 divided by 16.1, which amounts to about 1.57 seconds.

MILL AND FACTORY BUILDING.

BY LOUIS M. GIBSON.

(Continued from our Last.)

ONE STOREY FACTORIES.

In the *American Architect* of Sept. 30, 1882, Mr. Atkinson says of one-story factories:—"It may be considered conclusively proved that a factory building consisting of a basement sufficiently high to secure a free circulation of air, and of one story or main floor devoted wholly to machinery, lighted and ventilated mainly from above by monitors or lanterns, can be kept more uniformly warm in winter without the use of any excess of fuel; more uniformly cool in summer, if the roof is constructed in the right manner, and can be furnished with a more adequate supply of pure air all the time, than any other description of building suited to factory uses of two or more stories in height. It may also be considered conclusively proved that when a given amount of floor surface is required on a considerable scale, it can be provided in a thoroughly substantial way at as low a cost, per square foot of floor, of available floor surface, as can be provided in any other form of building of two to seven stories in height.

"I may add, as a matter of detail, that, given a level piece of ground and a good foundation, a one-story factory building

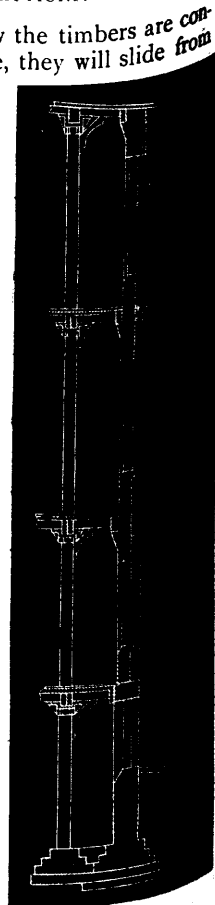
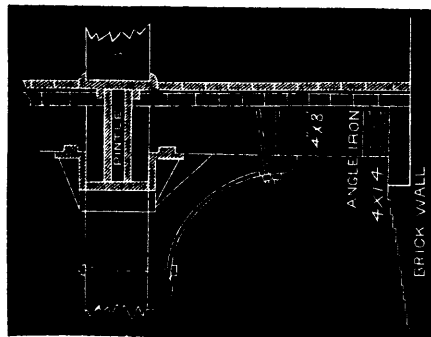
of the most substantial kind can be constructed in the manner named in this communication, at a cost of about forty thousand dollars an acre of floor surface."

Mills are built to their present great height, not through necessity, but from lack of independence and proper study in the arrangement of machinery. It is more conventional and easier to pile in the air than to spend time and study in disposing of it in a smaller space. The intelligent economist has not made himself visible as a mill builder.

GROUND PLAN AND CROSS SECTIONS.

The engraved cross sections show how the timbers are connected with the walls. In case of a fire, they will slide from their positions in a way not to disturb the brickwork. Mr. Atkinson suggests a method of recessing the posts into the walls in the way shown on the floor plan, but not in sections, which entirely relieves the walls from the weight on the interior.

The method of constructing floor supports with joists laid edgewise, presents inflammable material in such positions, and with exposed edges, as will most readily receive and communicate fire. It is difficult to conceive of a method which will present a similar disposition of material better calculated for the spread of fire. In the method described there are no



exposed edges, excepting the girders, which are not numerous. It is not easy to kindle a fire on the flat side of a board. The exact thickness of the first covering is dependent upon the weight to be carried; $2\frac{1}{2}$ " is the minimum, 4" the maximum. The concrete presents additional resistance to the passage of fire.

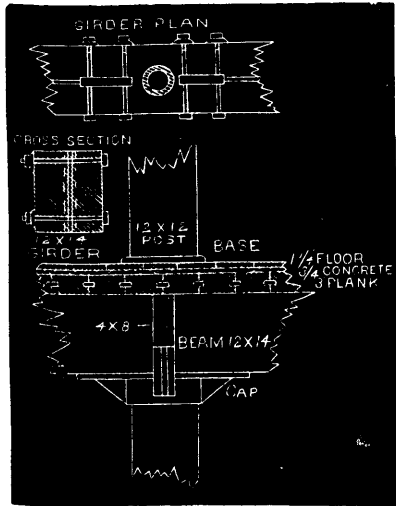
POSTS AND GIRDERS.

Posts should be bored from end to end to prevent dry-rot by allowing a circulation of air. Girders in the plan are shown with two thicknesses of material with half inch space between, bolted and keyed together at each end and in the middle. Iron caps are shown to receive the girders. These caps, in a modified form, are used upon the posts that are recessed into the walls, as well as the others. The iron plinth is the cylindrical support between the cap and base of the posts, and relieves the girders from the weight above, and prevents a settling of the inside building from the shrinkage of the lumber.

BUILDING CONSTRUCTION—BRICK WALLS.

The brick shell consists of a series of piers or buttresses to give strength and rigidity, and an intermediate filling of thinner walls. These walls have little to carry, excepting their own weight, and therefore need not be heavy. Most of the intervening space between the piers may be used for windows, thus insuring well lighted rooms.

The foundations of the walls and posts may be of stone. All that portion above the moist earth should be brick. Brick is the only building material which is not influenced by variations of temperature or other climatic conditons. Stone cracks and



walls when exposed to heat. Window sills should be of terra-cotta, which, by the way, is the perfection of brick-making. The use of stones should be entirely avoided, except when exposed to constant moisture. Stone caps over window or door openings are altogether inexcusable. Brick arches are stronger and better.

ROOFS.

The best and safest roof is constructed of 2 1/2" to 3" plank and flatways, from girder to girder, as before described, and should be covered with the best pitch and gravel composition, or metal.

Cotton duck is used to some extent in the east for roof covering, but it has not yet passed from the experimental stage, and whereas I do not know enough of the experience of others to justify my recommendation, I would be willing to try it myself. There are records of its use on ship-board, steam-boats, etc., ranging from eighteen to twenty years. A preparation for the duck covering is made of two thicknesses of asphalt paper, having a thin layer of composition asphalt between them, which is followed by a layer of rosin sized paper of heavy weight, which is tacked down. Upon this is placed 44in. cottontuck, twenty-six oz. to the yard, which is tacked with galvanized iron tacks, after which it is saturated with asphalt varnish or pine tar. The surface is then covered with a coat of lead or mineral paint. This roof covering above described was applied by Mr. Timothy Merrick to a 306x90ft. roof in Holyoke, Mass.

Roofs should be constructed with great care, and a wood covering should not be of less thickness than that described, as it is much easier to control fire before it gets through a roof than afterwards. There should be no projections beyond the wall, excepting the few inches that are necessary to drip the water into a bracketed iron gutter, below, but not directly in contact with the roof. High pitched roofs are dangerous, and should not be used. Coverings of slate or shingles cannot be recommended. Slates are subject to almost instant destruction when exposed to a moderate degree of heat.

CUPALO.

The cupalo or monitor which is commonly placed on mill buildings for turning elevator heads, etc., should be framed by continuing the upright posts used in the construction, above the roof to the proper height. Having been framed together above and below, the sides should be covered, in the first place, with 3 1/2" sheeting, as described for the roof, and finally with baked tiles, which will stand any degree of heat. These tiles could be used to advantage in protecting any frame

structures from fire, particularly elevators. Slate is about the worst material which can be used for that purpose. The tiles mentioned are such as are used in roofing. All that can be said of brick as a building material will apply to tiles.

STAIRS.

Mill stairs should be constructed with 2 1/2"x4" carriers, placed 14" on centres. The risers should be closed, and not over seven inches high; 6 1/2" would be better. A stairway is not inviting under any circumstances. If it is easy, it will be used oftener than otherwise. Treads should be 1 1/2" thick, and not less than 10 1/2" wide. All should be enclosed in brick walls extending from the basement to the roof, with tinned doors at the foot and head. Thus fire communication will be cut off from floor to floor. A stairway which would be monumental in endurance could be made inside of this brick case by springing arches from side to side, and in number and elevation one above the other corresponding to the risers, and to be covered with tiled treads. Thus the construction of the entire stairway is in masonry, and of indestructible material.

FIRE DOORS AND SHUTTERS.

It is necessary to provide doors and windows with protective means against the passage of fire. Cast iron, wrought iron and corrugated iron doors are thoroughly unreliable. Wooden doors or shutters, covered with tin or galvanized iron, serve their purpose fully. The tin should be put on in such a way that the air cannot reach the wood in case of fire. In a fire, the covering being approximately air-tight, the surface of the wood is converted into charcoal, which is a non-conductor of the heat, and prevents the further combustion of the wood. A door or shutter more than 7x4ft. should be made of three thicknesses of 7/8in. stuff, nailed and cleated together with the two outside pieces, at an angle of 45° to the frame. Smaller doors or shutters may be made in two thicknesses. Automatic fire doors and shutters are now used to some extent. They are suspended by pulleys similar to a sliding door, on an inclined runway, and are held open by a catch, which is held in position by a fusible soldered link placed at the middle, top and outside of the opening, and connected with the catch by a wire in a way not to interfere with its regular use. The solder melts at 160°, and releases the door or shutter, which slides shut by its own weight. "The alloy with which the links are soldered can be melted over a lamp, wrapped in raw cotton, without scorching it." Mr. W. B. Whiting, secretary of the Boston Mutual Fire Insurance Company, says: "I may say that I have never yet seen a well made wooden tinned door which gave way to fire, and I have no recollection of a case in which an iron door of ordinary construction has proved reliable." All doors or windows or hatchways should be provided with these doors, with or without the automatic closing device. All frames should be tin or iron covered; thus shutters can be on the inside of the wall. A new fire shutter is made by filling in an iron case with mineral wood.

BASEMENT FLOORS.

Basement floors can be made by placing 8x8in. timbers 6ft. on centres, filling in between with well rammed stone, covered with coal tar concrete to the level of the timbers, upon which is placed a 3in. floor. This will make a firm foundation for heavy machinery.

The inside woodwork should not be painted. Whitewash containing a large proportion of salt is the best. Painting green timber leads to dry rot, aside from rendering it more inflammable.

IRON SUPPORTS.

Unprotected iron posts, girders or other iron supports, are out of place in mill construction. In the nature of work done in mills, and the structural material thereof, a fire proof mill is out of the question. Subjected to heat, an iron girder will

warp and let down before a wooden one would be well fired. Cast iron cracks the instant water touches it. Iron posts and girders are sometimes covered with wood, terra cotta, teil lime composition, or other non-conducting material, to protect them from fire.

I have in mind a method of terra cotta construction with wrought and cast iron frame for the interior of mills, in which all the constructive iron work would be protected and the use of inflammable material would be discarded for all interior purposes, in so far as it pertains to the building. I do not care to go into speculative details in this series of articles.

FIRE ESCAPES.

When those employed in a mill know that there is a good chance of getting out of the burning building, they will fight fire longer than when the only means of escape is liable to be cut off, as is the case where a fire escape is not provided. They should be made in the form of a ladder 20 in. wide, with wrought iron uprights, $\frac{5}{8}$ in. x $2\frac{1}{4}$ in. and rounds $\frac{5}{8}$ in. and cast platforms anchored to the walls. The platforms should be made open in the centre, so a man can go down on the inside of the ladder. Fire escapes generally stop so far from the ground that they are chosen as the lesser of two evils: being burned to death or maimed for life. They should reach within 8 ft. of the ground. The number of such escapes necessary depends on the number of men to be taken care of.

MINING MATTERS WORTH REMEMBERING.

At present, says the *Winnipeg Commercial*, the mining interests of the North-west are attracting the attention of a large number of capitalists, not only in our own country, but also with our cousins across the line. The rich finds that have already been made will no doubt draw many to our land during the coming season, and much interest will be taken in their development. The *Colorado Mining Register* has an article under the caption which appears above, and which will not be untimely at the present juncture. It refers more particularly to silver mining, but the remarks are not inapplicable in the case of gold. It says:—"Because ten feet of development on a prospect does not show as large and rich a body of ore as a lead less pretentious on the surface does with a hundred foot shaft it is no reason why exaggeration should be resorted to in the description of the undeveloped prospect. Experience development in the San Juan country has taught us that a true fissure can be easily determined with even less than ten feet of development. All our true fissure veins that have proved themselves reliable were low grades on the surface, but large and well defined. A vein merely uncovered that showed a width of from five to ten feet, and even less, with well defined walls enclosing quartz and mineral, though it may not yield more than ten to thirty ounces of silver, may safely be developed. In other words on such a lead \$10,000 may be expended with every assurance of valuable results. Thousands of locations have been made in this country on spurs and bastard veins that will never produce a dollar. These locations have been made by inexperienced prospectors, and abandoned and relocated year after year, and will continue to be shiftless and worthless property for years to come. The time has arrived when the experienced are enabled to determine almost to a certainty the existence of a true fissure on surface development; and a true fissure vein has never failed to become profitable to a greater or less extent with intelligent development. Therefore the prospect owner need not resort to exaggeration to sell his property. A true statement of facts is all that is necessary. If a grade of his ore on the surface does not exceed fifteen or twenty ounces he is foolish to claim more for it. Some of our best paying mines indicate less than that for one hundred feet development."

INDUSTRIAL BOOK REVIEW.

See Advertisement of our *Mechanical, Engineering and Industrial Book Department*, on page 224.

DYEING AND CALICO PRINTING; including an account of the most recent improvements in the manufacture and use of Aniline Colors. Illustrated with wood engravings and numerous specimens of printed and dyed fabrics. By the late Dr. F. Crace-Calvert, F.R.S., F.C.S. Edited by John Stenhouse, LL.D., F.R.S. etc., and Charles Edward Groves, Fellow of the Chemical Societies of London and Berlin. Published in Manchester, London and New York.

This valuable book, of some 500 pages, is probably the most thoroughly scientific and practical manual that we have in the English language on dyeing and calico printing. Scattered throughout are numerous illustrations, composed of pieces of actual fabrics, showing various designs and colors on cotton and wool. Dr. Crace-Calvert, the author, who died some few years ago, stood at the head of practical chemistry in England in his day, and contributed to the industrial arts many valuable discoveries. In this edition, the book is brought up by the editors to the best art and science of the present time.

HAND-BOOK OF COTTON MANUFACTURE; or a Guide to Machine-building, Spinning and Weaving. With practical examples, all needful calculations, and many useful and important tables; the whole intended to be a complete yet compact authority for the manufacture of cotton. By James Geldard, Lonsdale, Rhode Island. 298 pages.

This is a real hand-book, full of necessary calculations, very concisely stated and worked out by quick, shorthand methods, which must save a vast amount of labor to persons laying out plans and selecting machinery for cotton mills. It is also illustrated with a number of fine engravings; and may be called a complete, practical compendium of cotton spinning as carried on in the United States, which, owing to similarity of climatic and other conditions, is the system adopted in Canada.

AMERICAN FOUNDRY PRACTICE. Treating of Loam, Dry Sand, and Green Sand Moulding, and containing a practical treatise upon the management of Cupolas and the melting of Iron. By Thomas D. West (of Cleveland), Practical Moulder and Foundry Foreman. Fully Illustrated.

The author says he has tried to select such matter as would illustrate the varied working of different castings, and to offer problems for thought and study to practical moulders. The illustrations are from drawings made by himself, and embrace all the more difficult kinds of heavy castings. Parts of the work have before appeared as articles in the *American Mechanist*, and are now expanded and in some cases re-written for the present work, making it thorough and systematic. He says that he aims to show that the moulders' trade is one that requires more than the mere muscular force necessary to pound sand; and that there is really a very large field for thought and study in foundry practice.

All the saw mill yards in the vicinity of Otterville, Ontario, are being well filled with saw logs. Lumber will be plenty next summer—if not cheap.

THE Canadian Manufacturer AND INDUSTRIAL WORLD.

Published fortnightly by the CANADIAN MANUFACTURER PUBLISHING CO., (Limited).

MECHANICS' INSTITUTE (corner Church & Adelaide Streets), TORONTO.

ANNUAL SUBSCRIPTION, IN ADVANCE, \$2.00.
CARD OF ADVERTISING RATES ON APPLICATION.

FREDERIC NICHOLLS,
Managing Editor
Toronto, Ont.

All communications to be addressed CANADIAN MANUFACTURER.

AUTHORIZED REPRESENTATIVES.

Montreal, Que.	Mr. C. R. Scott.
St. John, N.B.	Mr. J. S. Knowles.
Winnipeg, Man.	Mr. K. Graburn.
TRAVELLING CORRESPONDENT	Mr. A. L. W. Begg.

Editorial Notes.

The office of the CANADIAN MANUFACTURER has been removed to Room No. 5, Mechanics' Institute, corner of Church and Adelaide streets. One stair up, turn to the right.

Our regular publication day falling on Good Friday, we make this issue a day earlier.

In this issue we begin our Book Review Department—a new feature in the CANADIAN MANUFACTURER. It will embrace reviews of standard works on Engineering, Mechanics, and Industrial Science generally; and we hope to make it of special interest to a large circle of readers.

In connection with this new department we would invite attention to our own advertisement, on another page, of Mechanical, Industrial, and Scientific Text-books, which we offer to supply at publishers' prices. The works we offer are not published in Canada, and parties buying from us will not only get them at the very lowest price, to begin with, but will also save the fifteen per cent. duty, which we pay ourselves. We are not looking for profit in this way, but merely towards the encouragement of those practical studies, connected with the Industrial Arts, the promotion of which in our own country is the special object of the CANADIAN MANUFACTURER.

The House stands adjourned to Wednesday, March 28th; and the Senate to Tuesday, April 3rd.

A deputation from London, Ont., has been in Ottawa, asking for an increase in the duty on petroleum.

Elsewhere will be found another of Mr. Porter's letters on "Industrial England"; the subject this time being the woollen region of Yorkshire.

Five glucose establishments in the United States have consolidated themselves in one huge concern, with a capital of fifteen million dollars.

Some expressions of public opinion on labor in Europe and America, brought out by Mr. Porter's letters, will be found on another page, and are well worth reading.

Negotiations which have been going on for a commercial treaty between Spain and Germany have failed, and it is said that both countries are preparing to adopt hostile tariff measures.

Sir John Macdonald announced Monday night that for personal reasons Sir Alexander Galt has tendered his resignation, but at request of the Government he will hold office till spring.

One of the first regulations issued by the New York State Railway Commissioners recently appointed by the Legislature was that requiring railway companies to immediately report all accidents to them by telegraph.

It is announced that the Association of Canadian Bankers will hold its first convention in Windsor next September. W. Kingsley, manager of the Windsor branch of the Merchants' Bank, of Montreal, has been chosen to look after the local entertainment of the delegates. A visit to the points of interest about Detroit and a steamboat excursion to the Islands in Lake Erie have already been settled upon.

Mr. Williamson, of Toronto, accompanied by Mr. Small, M.P., waited upon the Minister of Finance last week to ask for an increased duty on scarfs and neckties. Mr. Williamson is engaged in that industry, and pays 30 per cent. duty for his raw material. The duty on made-up goods is also 30 per cent., and consequently he contends that he is not protected in any way. Sir Leonard Tilley promised his attention to the subject.

Here is something from the Winnipeg Commercial, which let the public weigh and consider:—"An idea may be formed of the immense trade done in the North-west in agricultural implements, from the fact that one firm alone gave us their opening order 3,000 ploughs, 1,300 waggons, 400 McCormick reapers, 320 seeders, 320 hay rakes and 400 mowers." Those who are in the habit of speaking disrespectfully of our own home market for our own manufactures had better make a note of these figures.

Respecting the cultivation of sorghum cane in the Ottawa district the Citizen says:—"It seems very likely that a considerable number of the farmers of this locality will go into the growing of the sorghum this season. The experiment made with it last year, so far as concerns its value for fodder, seems to have been satisfactory to most who tried it." We may infer from this that sorghum syrup-making has not so far been successful there. But in the county of Oxford, in Western Ontario, the sorghum syrup-making industry has already become of considerable importance

The Commissioner of Inland Revenue, Ottawa, has issued the following circular to the collectors throughout Canada:—
“Sir,—Until the rate of excise duty on tobacco and cigars is finally determined, the department authorizes its collectors to disregard that section in the warehousing regulations fixing a minimum quantity which can be ex-warehoused at one time. It is considered but fair that dealers should not be forced to pay duty upon any larger quantity than is required from day to day for actual consumption. Signed, E. MIALI, Commissioner.”

The American press has begun making remarks on Mr. Ross' motion in the House at Ottawa on the subject of Reciprocity. We maintain now, as we have in these columns maintained before, that while reciprocity in natural products might be mutually beneficial, reciprocity in manufactured goods would certainly operate to the advantage of the United States and to the disadvantage of Canada “by a large majority.” The question being now up again, we should be glad to hear from Canadian manufacturers what they think of it; and shall endeavor to find space for short communications giving the views of our practical men on the subject.

Sir Alexander Campbell, in reply to Mr. Power, said on Monday last that the legislation promised in the speech from the Throne stood in a fair position. With the exception of the franchise bill, all the measures had been brought down. No measure was promised on the question of licensing, the speech being carefully worded in that respect. It had been thought better to relegate the matter to the consideration of a committee of the other House, in order to secure the assent and approbation of the community at large to legislation which might be proposed hereafter. The Government would take care that every facility should be offered to get on with the business.

“Bring down the rents,” says the *Winnipeg Commercial*, and then goes on to remark that rents there are more than double what is paid in Eastern cities of three times the population. Labor and material being dearer than in the East, higher rents are to be expected of course, but the difference falls far short of accounting fairly for the enormous difference in rents. We would counsel our contemporary to be hopeful. Just wait until there are a few more sawmills and brickyards in the Northwest, with the Thunder Bay railway section regularly in operation, and a fleet of large iron steamers, built expressly for this trade, ploughing the waters of Lake Superior. There will be a wonderful change then, and it should not now be very long in coming, either.

The *New York Produce Exchange Bulletin* says:—It is reported from Washington, that the action of the German Government in excluding American hog products from Germany will be very likely to result in reprisals or retaliatory legislation when the new Congress meets next December. There were pending in the last Congress two propositions for retaliatory legislation based upon the rumor that Germany intended to do what has now been done. These propositions were to make a discriminating duty as to German wines and German hosiery. These resolutions were introduced by Mr. Guenther,

of Wisconsin, and were referred to the Ways and Means Committee. There can be little doubt that if the decree of the German Government shall be in force next December, the Western members will be so indignant that they will demand some such retaliatory legislation as is suggested by the resolutions of Mr. Guenther.

The bill presented to the Senate on Monday last by Sir Alexander Campbell, to amend an Act respecting insolvent banks, insurance companies, loan companies, building societies, and trading corporations, enacts that every order of a court or of a judge for the payment of money or costs or charges or expenses, made under the said Act, shall be deemed a judgment of the court, and shall bind the lands, and may be enforced against the person or goods and chattels, lands and tenements, of the persons ordered to pay, in the same manner in which judgments or decrees of any Superior Court obtained in any suit may bind lands or be enforced in the province where the court enforcing the same is situated. The debts due to any person against whom such order for payment of money, costs, or expenses has been obtained may be attached and garnished in the same manner as debts due by a judgment debtor may be attached and garnished by a judgment creditor in any province where attachment and garnishment of debts is by the law allowed.

The following from the *Mail's* Montreal correspondence is certainly “important, if true”:—The action of the Government in the abattoir case has been keenly canvassed here today in importing circles. It is universally approved of and rejoiced at by all manufacturing companies and importing merchants who conduct their dealing with the Customs honestly and fairly. It is stated here by men from twenty-five to forty years in the wholesale business that of late years, since the rush or hasty fortunes in commerce became so intense, the Government has lost a third at least of its Customs by every species of fraud by unscrupulous parties, not confined to any one line of trade either, but in all departments of commerce. The seizures here last year alone go very far indeed to prove these statements. In reference to the penalty of seven thousand dollars inflicted on the abattoir delinquents—only it has not unfortunately fallen on the real perpetrators, but chiefly on innocent parties—it was stated in *The Mail* that the Minister of Customs had taken a new departure in inflicting the maximum penalty on the victims of their predecessors' crimes. Whilst the decision is a wonderful step in advance towards preventing illegal practices here, yet I am informed the Minister in his wisdom took the most lenient view of the case, considering the present directors and officers were blameless, and pronounced for the minimum in place of the maximum penalty. It is a fact that the Government could have confiscated all the machinery entered for the abattoir, amounting to thirty-five thousand dollars. The result, however, of the action of the Minister is believed here to be just what was needed to arrest the fraudulent, if anything can do it, in their nefarious career.

The Massey Manufacturing Company, of Toronto, has purchased a site for an up-town warehouse at the corner of Princess and William Streets, Winnipeg, the consideration being \$7,000 cash.

Financial and Commercial.

TORONTO, Wednesday, March 21, 1883.

Last week was one of considerable depression in stocks; important failures in Montreal being named as one of the causes. In Toronto there was something of a recovery on Monday, but since then the market has suffered a relapse. The following are the closing quotations on the Toronto Stock Exchange for Tuesday, March 20, compared with those for Wednesday, March 7, thirteen days before:—

	March 7.		March 20.	
	Asked.	Bid.	Asked.	Bid.
BANKS				
Montreal	207½	207½	199	198½
Ontario	113	112½	111½	111
Molson	126	125½	121	120½
Toronto	186½	186½	181½	180
Merchants'	135	134½	133	132½
Commerce	142	141	139½	139½
Imperial	160½	160½	159	158½
Federal	199½	199	200½	200
Dominion	115	114½	114½	114
Standard	115	115	115	113
Hamilton				
MISCELLANEOUS.				
British America			118	115½
Western Assurance	150½	149½	153½	
Canada Life				
Confederation Life Association				
Consumer's Gas		118½		
Dominion Telegraph			91	
Montreal Telegraph				
Globe Printing Co'y				
N. W. L. Co.	58s.	57s. 6d.	59s.	57s. 6d.
Ontario and Qu'Appelle			200	195

Montreal quotations for Tuesday, March 20, compared with those for Wednesday, March 7, thirteen days before:—

	March 7		March 20.	
	Asked.	Bid.	Asked.	Bid.
BANKS.				
Montreal	207½	207	199½	199½
Ontario	113	112½	111	110½
People's		85		80
Molson	132	130	122	
Toronto	186½	186	181½	181
Jacques Cartier	115	111	110	106
Merchants'	126	125½	121½	121
Quebec	58	56		
Exchange	165½	159		158
Union	92	85	90	
Commerce	134½	134½	133	132
Federal	161	160½		
MISCELLANEOUS.				
Montreal Telegraph	124½	123½	123	122
Dominion Telegraph				
Richelieu and Ontario Nav.	71	69½	69	68
City Passenger Railway	146½	146	145	142
Montreal Gas	192	191½	180½	180½
Canada Cotton			117½	114½
Dundas Cotton			92½	92
Ontario Investment			150	149½
St. Paul M. & M. rd.	143	142½	153½	
North-West Land Co			60s	57s. 6d.
Canadian Pacific	61	59		

The bank statement for February is considered favorable on the whole. One unwelcome item is, however, an increase of overdue debts to the amount of \$406,000.

The following items under liabilities show an increase as compared with the previous month:—

Circulation	\$322,462
Dominion Government deposits on demand	328,022
Provincial Government deposits on notice	81,915
Other deposits on notice	819,938
Due to banks in foreign countries	159,894

The following show a decrease:

Dominion Government deposits on notice	\$600,000
Securities for contracts, &c.	36,092
Provincial deposits on demand	10,730
Miscellaneous deposits on demand	1,580,188
Due to banks in United Kingdom	531,870
Miscellaneous liabilities	83,370
Total liabilities	\$1,437,969

The following increases in assets are shown:

Specie	\$637,721
Due from foreign banks	118,069
Loans to Dominion Government	80,367
Loans to Provincial Governments	28,176
Loans to other banks	49,593
Current loans and discounts	906,769
Overdue notes (unsecured)	229,912
Other overdue debts (unsecured)	59,870
Overdue debts (secured)	116,675
Real estate other than bank premises	29,899
Mortgages on real estate sold	3,836
Bank premises	12,084
Directors' liabilities	40,044
Average amount of specie held during the month	763,643
Average Dominion notes	192,182

There has been a decrease in

Total assets	\$1,239,361
Dominion notes	54,375
Due from banks in the United Kingdom	288,886
Dominion Government debentures or stock	102,200
Other debentures	91,844
Loans on Stock, &c	1,440,466
Loans to municipalities	581,405
Loans to other corporations	499,336

The great snow storm of Sunday and Monday blocked the railways everywhere, and must have been a serious hindrance to business. Comparing the present commercial situation with that of a year ago a contemporary says:—"Our merchants were then doing a large trade with the North-west, and had good reasons to hope that it would turn out profitable. Cotton factories could not supply the demand: the sale of imported goods was brisk, and there were but few failures taking place. But now an entirely different condition of affairs exists. Millions of money are locked up in Manitoba and North-west lands, in colonization companies and other financial schemes; the rate of money is 1 per cent. higher; merchants are in no hurry to lay in stocks of cotton or other goods, as the supply is much greater than the consumption, and they will probably buy to greater advantage later on. And last of all there is an increasing number of failures, brought about by too keen a competition between merchants and by dabbling in outside speculations. Looking the facts squarely in the face, it is no wonder that the value of our bank securities are depreciating. While not in any way trying to influence prices, but hoping that the financial sky would become clearer, we have from week to week stated with truth the bare facts respecting the commercial situation, and any different results could hardly have been anticipated. The bank statements for the year ending April and May will in all probability be gratifying, but the large "rests" piled up the last few years are likely to be put to the uses they were intended before the next era of prosperous times strikes us." There is doubtless much truth in all this, but still the picture seems to us to be darker than the facts warrant. It is highly probable

that the opening of navigation, the influx of immigrants, and the revival of summer activity in the North-west, will soon create an improved and more cheerful situation.

The stock of the Winnipeg Stock Exchange has been all taken up—\$10,000 in 40 shares of \$250 each. It opened for business on the first of March.

Reports by telegraph to *Bradstreet's* last week from the trade centres of the country show improvement in some localities, but it cannot be said that the spring trade is generally satisfactory to those who expected an active and profitable movement. The iron market is better as to tone, but not much improved in fact. Philadelphia reports some noteworthy sales of pig iron and steel rails at former rates. Buyers appear slow to take hold, and there is no activity to compare with that already observed in other lines. High rates for money have depressed petroleum certificates, and high carrying rates for oil have restricted business. In petroleum and grain ocean charters have advanced owing to the demand abroad. There were 233 failures in the United States reported to *Bradstreet's* during the week, 25 more than in the preceding week, and 93 more than that in the like week of 1882, and 83 more than in the like week of 1881. Canada and the Provinces had 42 failures, an increase of 8.

Christopher Sheppard, manufacturer of harness ornaments, is asking his creditors to accept 25 cents on dollar. Liabilities \$2,500.

The sheriff has taken possession of the stock of W. B. Thomson, grocer, of this city on a judgment of \$900. His liabilities are about \$2,000.

Jas. C. Gillispie, boot and shoe dealer, of Pictou, N.S., has secured the Bank of New Brunswick at the expense of his other creditors. His liabilities are stated at \$5,000.

Henry Geraid, dealer in dry goods, Montreal, has again failed. He has had many ups and downs, and the trade do not appear surprised at his present difficulties. His liabilities will amount to \$15,000.

Charles Young, an old established boot and shoe dealer of St. Catharines, has called a meeting of his creditors. His liabilities are stated at \$3,000. The trade has looked upon the account as a weak one for some time.

The creditors of J. F. McRae, merchant tailor, Yonge-street, Toronto, have granted him an extension. Liabilities are about \$9,000 and assets \$15,000. Has given credit rather freely, and extended his business too rapidly.

A. D. Jones commenced in the dry goods business in Emerson, Man., about two years ago. He complains of dulness in trade, and asks an extension from creditors. His liabilities are about \$8,000, and he shows a surplus of \$3,000.

The creditors of J. A. Moore and Co., crockery, etc., Winnipeg, have been asked to grant an extension of 3, 6 and 9 months. They owe about \$65,000, and claim a surplus of \$30,000. Most of the creditors have agreed to the arrangement.

In Manitoba, Mulin & Latham, and Creighton & Cattanach, of Emerson, are reported in trouble, J. B. Rutherford, grocer, Stone-wall, has obtained an extension. The millinery stock of Mrs. Clarkson, of Winnipeg, has been sold out by the sheriff.

Wm. Neal, a dry goods merchant in St. Thomas, has assigned with liabilities of \$20,000, assets nominally \$18,000. He compromised in 1879 at 75c. on dollar, this left him but a small margin to work on, and although an industrious, careful man he has been unable to work through.

A St. Catharines wholesale and retail grocery firm—John Nay and Co. has called a meeting of creditors. They state they have met with severe losses and that their liabilities, amounting to \$35,000, will exceed their assets by \$13,000. Brown, Baltour and Co. of Hamilton, are principal creditors.

J. B. Powell and Co. who have been in the dry goods business in Whitby since 1857 have assigned in trust to A. R. Carmichael, of Toronto. They have always been regarded a first-class credit mark—paid their bills promptly and were in good credit with the trade. The position of the estate has not transpired.

W. B. Desmarteau & Co., wholesale grocers, of Montreal, are in difficulties, and creditors are pressing them. W. B. D. failed in 1869, and again in 1880. He compromised at 40 cents in the \$ and resumed. His trade has always been with a weak class of customers, which is one of the principal causes of his non-success.

In July, 1876, Malcolm Morrison, grocer, of Pictou, N.S., obtained a compromise from his creditors on liabilities of \$5,000. Since that time he has established a credit with the trade, and it was generally thought he was improving his position. He has proved a disappointment, having assigned in trust with liabilities of \$9,000.

J. G. Robinson, vinegar manufacturer, of Belleville, and formerly a grocer in Ottawa, assigned a few days ago, with liabilities of \$60,000, assets probably \$20,000. His real estate was settled on his wife a few years ago. She mortgaged it and allowed him to use—it is claimed—\$10,000, which she figures as a creditor for. He has lost considerable by endorsing.

Geo. Jackson, plow manufacturer, London, has assigned in trust with liabilities of \$55,000. The estate will pay about fifty cents on the dollar. The business was an old established one and the general impression seemed to be that progress was being made. The failure of the Mahon Banking Company is assigned as one of the causes of Jackson's troubles.

Edward Perry commenced the dry goods business in Collingwood in Feb'y, 1881, with a capital of \$1,000. He is now offering his creditors 75c. on the dollar. His liabilities are \$9,000 and assets \$6,000. His wife has a claim against the estate for \$2,500, and she is to endorse his paper and give a mortgage on her property as further security. The creditors are likely to accept.

Edwin Wallace, proprietor of The Great Dominion Tea Co., Toronto, has confessed judgment to J. W. Cowan and Co. for \$3,500. His total liabilities are about \$10,000, with assets of \$7,000. The unsecured creditors will obtain very little from the estate. The trade complain that Wallace has deceived them, having shown a statement of his affairs recently with a surplus of over \$3,000.

Lewis Arnett, dealer in dry goods, Winnipeg, is asking an extension of time from his creditors. He carried on business in Ontario for many years, and removed to Winnipeg three years ago, having at that time a capital of about \$10,000. He made money rapidly, and at one time showed a surplus of \$7,500. His affairs have become extended and he now finds himself with a stock on hand of \$150,000, and unable to meet his bills. He shows a surplus of \$45,000, his liabilities being about \$125,000.

Fogarty & Bro., wholesale boots and shoes, Montreal, have not yet obtained a settlement with their creditors. Their indebtedness amounts to \$150,000; the principal creditors are J. H. Mooney & Sons, \$14,000; Canadian Rubber Company, \$18,000; D. R. Northey & Co., \$14,000; H. J. Fisk & Co., \$10,000; Whitney, Wardlaw & Co, \$8,000. All these firms are located in Montreal. The firm has been doing a wholesale and manufacturing business for some years past, and their retail trade has been one of the best in Canada. The failure was unexpected.

The suspension of R. Carrie & Co., dry goods merchants of Toronto, was announced on the 20th. The failure was not unexpected, *Bradstreet's* agency not having rated them for the past two years. The liabilities are estimated at \$80,000, and assets about

the same. The Ontario Bank are creditors for \$55,000, but secured by customer's paper. The house has the sympathy of the trade, and will, no doubt, be able to make satisfactory arrangements for continuing the business. The principal creditors are D. Morrice, of Montreal, \$8,000; Hamilton Bros., Manchester, \$5,000; Leaf, Sons and Co, \$5,000.

Thos. H. Hodgson, produce exporter, of Montreal, has suspended with heavy liabilities, being variously estimated at from \$200,000 to \$500,000. The business has been carried on under style Abram Hodgson and Son for many years. During 1878-79, considerable money was made, profits being in the neighborhood of \$150,000. The past season he is reported to have lost a large amount in butter, and his connections in Liverpool have repudiated Hodgson's claim to certain balances amounting to some \$50,000 or \$60,000. He has been arrested at the instance of the Bank of Montreal on a charge of fraud.

OPINIONS OF THE NEW YORK BANKERS ON THE PRESENT STRINGENCY.

As the prospective ease or stringency of the money market is at present attracting considerable attention in the commercial as well as the speculative community, the following opinions of the New York bankers on the subject will be of interest. They are clipped from the *New York Mail* :—

President Baldwin, of the Fourth National Bank, said to-day: "No currency is coming from the country, and I see little prospect for immediate relief unless the Secretary of the Treasury shall prepay the bonds due May 1. The demand for Treasury relief is almost entirely in the interest of the mercantile community. Merchants are distressed because they cannot sell paper. People who can loan their money at 15 per cent. on call are not disposed to buy mercantile paper at 6 or 7 per cent., while business men cannot afford to pay more than that."

President Seney, of the Metropolitan Bank, said: "The stringency has come earlier this year than usual. Money is going West and East, and is going into the Treasury much faster than it is coming out. The Secretary could give relief if he would. As the banks are below their reserves they are in no position to take commercial paper. If the present stringency continues, some of our business houses will have considerable difficulty in getting along."

President Tappan, of the Gallatin Bank, said: "I think there will be a change for the better immediately after the 1st of April. On that date about \$7,000,000 Government interest becomes due, and this, together with the receipts of gold coin, will help bring up reserves. I think that much of the stringency is due to the operation of the law requiring banks to keep on hand a reserve equal to 25 per cent. of their deposits."

A banker who did not wish to be named said: "I am afraid we are going to have some trouble. It has seemed to me for some time that when the Government stopped buying bonds there would come something of a smash. It has been the case heretofore that whenever money became extremely tight the Treasury has come to the relief of the banks. The reduction of taxation will lessen Government revenues to an extent which will prevent this relief being given, and we shall find ourselves some day in a place where there is great stringency and absolutely no relief."

"We have been converting floating capital into fixed capital at a rate which has reduced the relative supply of loanable funds. It is very true that we have multiplied exchanges until one dollar will do as much work as five would have done a few years ago, but this very facility has brought us into a position where we run along blindly, thinking that things will come out right somehow. Our financial policy has been bad, and it will take a sharp lesson to bring needed reform."—*Toronto Mail*.

Iron and Machinery.

MONTREAL ROLLING MILLS COMPANY

The rebuilding of this company's rolling mill, which was, together with the machinery therein, almost totally destroyed by fire on the 4th of January last, is now fast nearing completion. In fact, such progress has been made that steam was got up yesterday, and unless some unforeseen cause of delay should occur, a portion of the mill will be running again to-day. As no settlement was made by the insurance companies before the 12th of January, considering the large extent of building and the great damage done to the machinery by the fire, this result is very creditable to the energy of the manager of the mill, Mr. Briggs, and the general superintendent, Mr. J. A. Higgs, under whose directions and superintendence the whole of the rebuilding has been conducted; also to the courtesy shown by many manufacturers in the city, who kindly put their orders on one side so that there should be no delay in finishing the materials required. Taking all circumstances into consideration, particularly the fact of the continued cold and inclement weather of the last two months, the work of rebuilding has been accomplished in an exceedingly short time, while the new buildings, &c., are of the most substantial character. It is expected that the whole of these mills will be in running order in the course of a fortnight, which will be a cause of much gratification to a number of deserving workmen, who have of necessity been out of employment during the rebuilding.—*Montreal Gazette*.

The South-Eastern Railway Company have transferred their headquarters from Richford, Vt., to West Farnham, Que. They have now in operation extensive new workshops at the latter place, in which they have a complete outfit of wood and iron working machinery from McKechine & Bortram, Dundas, Ont., a Brown engine from Thomson Williams Mfg. Co., Stratford, Ont., and three eighty horse power steel boilers from W. C. White, Montreal. The boilers are set with the Jarves Furnace.

At a complimentary dinner on Saturday night, 17th inst., given to the American workmen employed at the London steel works, by the manager, Mr. Thos. Muir, that gentleman said, a couple of weeks since the first ingot of crucible steel ever cast in Canada had been turned out at the new steel works, and it was thought right that the occurrence should be celebrated by such an event as that taking place. He welcomed the employes who had lately arrived from Pittsburgh, and hoped they would like Canada, and more especially that part of it called London. He was very much pleased with them and their able foreman. He said the prospects of the new works were most encouraging; they had obtained some of the best skilled men in the art of steel working that could be had, and the management had no doubt of being able to turn out such a quality of steel as would surprise Canadians. He had received enquiries from all over the Dominion as to the success of the undertaking, and though only twenty weeks had passed since the "first heat," he was happy to say everything was favorable and the London Steel Works would in a few days, be able to supply any article in the steel line that could be possibly required.

The *London Times* has published the following figures of the imperial averages of the prices of wheat from 1858 to 1882, which are worth preservation, because in a great measure they have governed prices of wheat in the United States.—"The average price per quarter for the last 25 years was 50s. 1d. The greatest extreme or range of fluctuation was 25s. 2d. in 1868, and the smallest 6s. 3d. in 1864. The highest annual average in the past 25 years was 64s. 5d. in 1867, and the lowest 40s. 7d. in 1864. The highest weekly average was 74s. 7d. on the 9th of May 1868, and the lowest weekly average 37s. 7d. on the 22nd of February, 1879; that of the 24th of December, 1864, and was very close to the latter, being 37s. 10d.

Textiles.

INDUSTRIAL ENGLAND.

THE WOOLLEN REGION OF YORKSHIRE.

[This time we copy entire one of Mr. Porter's letters to the New York *Tribune*, written from Dewsbury, describing in a general way the woollen region of Yorkshire, the cloth centre of the world—as he calls it.]

Geographically speaking, this is the centre of the woollen district of England. Dewsbury, centuries before it embarked in the shoddy business, was a place of importance in the infancy of the Christian religion. It was the largest parish in England, and had an area of 400 miles, including Huddersfield, Halifax, Bradford, and many towns of less importance. It is even claimed that Paulinus, the first Archbishop of York, preached at Dewsbury some time in the seventh century, and as proof of this the ingenuous inhabitants point to a cross on the church of the now sub-divided parish, and say it is after the model of one erected at an earlier date in commemoration of the event. This is the ancient history of Dewsbury. Its modern history, combined with that of the adjoining town of Batley, is the history of shoddy manufacture. In these towns are made shoddy blankets, shoddy beaver-faced goods, shoddy "presidents," shoddy army cloths, shoddy plushings shoddy druggets, and lately, I am told, shoddy sealskins. The shoddy trade, in fact, has taken about as deep root in Dewsbury as the story of Paulinus preaching there has in the minds of its people. Under the benign influence of its sister town, Batley (thirty years ago but a small market village), went into the business, and to-day has 30,000 population and over fifty mills and factories. United, these towns defy all Christendom in "heavy" and cheap cloths. What they contemptuously term "that iniquitous pound clause" in the United States tariff, has "throttled our trade with the States," but in spite of "hostile tariffs" Dewsbury and Batley send their goods to all the Continental countries.

A visit to Dewsbury on a bleak, wet winter day was not calculated to raise one's spirits. The station was dark and badly managed. The man at the ticket-window (called here "booking-clerk") was flirting with his sweetheart; the station-master was having a little "family settlement" with a shrill-voiced, hard-featured woman, undoubtedly his wife; an ancient bel-dame with a sharp, saucy tongue sat crouching over the fire of the only waiting room, and now and then broke out into a wild invective against a few antiquated old Yorkshire men who, with short black clay pipes, mixed with the fetid atmosphere of the room the vilest tobacco smoke. A red-nosed, skulking-looking Irishman offered to escort me to the "Royal," and carry my luggage. Accepting the proffered service I began the exploration of ancient Dewsbury. The hotels are such only in name. The "Royal," the "Scarboro," the "Wellington," on a visit faded into second-class public houses. Not a respectable hotel is in the town, and yet it has 30,000 inhabitants. The streets were narrow and crooked; beer-shops and gun-shops on every corner, no less than 150 being required to quench the diurnal thirst of the inhabitants of the town—one to every 200 souls, including babies. The windows of the clothing shops displayed only corduroy and duck suits, and blue check shirts. Dewsbury booksellers retail books very much as the costermonger of the Seven Dials sells vegetables Saturday night, by the aid of flaming lights, the books being piled on empty packing boxes. In and around the publichouses loiter the men without a job, and at the entrances of the numerous little courts, alleys, and passages insufficiently clad women shivered and gossiped. The factories are large gray stone buildings walled in like prisons, with vigilant porters stationed at all the entrances lest strangers should accidentally get into the factories and appropriate the new designs or otherwise find out some-

thing of their internal economy. The manufacturers seem about as hard and sharp as the machines which weave their mungo and shoddy into cloth. The hands are ground down to the lowest penny, and a recent strike among the operatives brought out the fact that the average earnings of all hands, including the high-priced overseers and foremen, was only 16 shillings, or \$4 a week, at Dewsbury and Batley. The rent of one or two rooms, in the poorest locality of the town, is £7 a year. These immense factories straggle along on the outskirts of Dewsbury for many miles, and without exaggeration might be said to extend in all directions for a distance of twenty two and one-half miles, with Dewsbury for a centre.

Municipal Boroughs.	Population.	Urban Sanitary Districts.	Population.
Leeds.....	309,126	Keighley.....	25,24
Sheffield.....	284,410	Todmorden.....	23,86
Bradford.....	183,032	Castleford.....	20,55
Huddersfield.....	81,825	Heckmondwike.....	9,72
Halifax.....	73,633	Bingley.....	9,542
Rotherham.....	34,732	Harrogate.....	9,42
Wakefield.....	30,573	Brighouse.....	7,94
Barnsley.....	29,789	Otley.....	6,83
Dewsbury.....	29,617	Selby.....	6,933
Batley.....	27,514	Honley.....	5,070
Doncaster.....	21,130	Skipton.....	4,73
Pontefract.....	8,798	Ilkley.....	4,700
		Tadcaster.....	4,300
		Guiseley.....	3,705
		Penistone.....	2,254

Parliamentary Borough.

Knareborough..... 5,000

Estimating the present city and town population of England at 15,000,000, it will be seen that the above places contain more than one-fifteenth of the entire urban population, but if to this should be added the population of the other small towns and villages and the rural population, the above area would contain nearly all of the 1,830,000 inhabitants of the West Riding of Yorkshire. It is, to-day, one of the busiest manufacturing spots on the globe, mills and factories having sprung up in every direction. The clear streams that formerly meandered through the green valleys are now as black as ink, and the never-ceasing smoke from the tall chimneys has tinged the verdure and the foliage with gloom. In early times this region was considered wild, and I believe was put down in Domesday Book as waste. It was originally given to the De Lacys and Earl Warren by William the Conqueror, when he parcelled out England to those who "came over" with him. Warren, who had married the old King's daughter, came in for a good share of the spoils, and managed to retain it in his family for nearly three centuries. Those old Warrens were a queer set. One of them, John, built Sandal Castle, which more properly might have been termed Scandal Castle, for it seems he built it to hold secure from her husband a neighboring Earl's wife, whom "he contracted a passion for." The De Lacys were made happy with Pontefract and a hundred and a half of manors, including Bradford, and it is said that he was so grateful that his son founded Kirkstall Abbey to prove it, and, if my memory serves me right, there was a famous narrow passage in a vault under this abbey by which women's virtue was tried; those women who had kept their honor easily passed through it, while those whose characters were suspicious, by some peculiar miracle, stuck fast. It was an easy matter in those days to make Dukes and Earls, and as soon as the Kings got fairly started at the business they were "girding on a sword, putting on a cap and circle of gold on your head, and delivering of a golden rod," with the injunction that "you shall have, as free as any other Earl, the third penny of the district;" and the deed was done. The DeLacy were not so fortunate as the Warrens, for they were dispossessed of their barony for fighting against Henry I., and it afterward fell to old John of Gaunt. But I don't suppose the present dwellers in the busy, smoky towns care or know much about the old fellows whose distant "footsteps echo through the corridors of

time," and who, at the best, were little better than their fiery leader who marched with his army in the winter through the wild hills and the then pathless district, which is now rich with modes of industry then undreamed of. That terrible Christmas he organized a plan of vengeance which involved the destruction of every living man, and every article that could minister to the sustenance of life. The country was left a waste, and the condition of the people of the West Riding was described in Edward the Second's reign as miserable and wretched in the extreme. Pestilence and famine aggravated the miseries of feudal oppression and the calamities of war.

In the time of the Stuarts the bustling manufacturers of this region were always to be found on the side of the Parliament and the people—for by that time they had learned the value of industries, and the lesson that war with its attendant uncertainty meant, in those days, ruin and devastation, where property had accumulated, and industry had dawned.

It is supposed that Henry VII. had set on foot the manufacture of coarse woollen goods in Yorkshire, and that Wakefield, Leeds and Halifax were among the first towns to start the industry. After the ruin of the trade in the Spanish Netherlands, was established the fine woollen manufacture of Wiltshire. One of the first woollen manufacturers who seem to have figured in history was famous Jack Winchcomb. In the reign of Henry VIII. Jack is described as being "one of the greatest clothiers that ever was in England, he keeping 100 looms in his house, and in the expedition of Flodden field against the Scots, marched 100 of his own men, all armed and clothed at his own expense." In 1568, the Flemish refugees settled in various parts of the kingdom, and from that time may be dated the beginning of the woollen industry of Great Britain. In the reign of William and Mary the woollen manufacturers in England turned their artillery against that business in Ireland, and all the towns of Yorkshire petitioned Parliament to suppress all exportations of woollens from Ireland, and to utterly discourage to prosecution of its manufacture there, "lest," said this generous petition, "in time they should be able to work up all their own wool, and England be deprived of its usual supply from thence; that this was but an act of self-preservation in England, the mother country, which therefore as such had a right to dictate not only in that particular, but in some others, and moreover to command a monopoly of their raw wool." It resulted in the prohibition under severe penalty of the exportation of wool or woollen goods from Ireland, except by way of England, and in the crushing out of the industry in Ireland. After this it was supposed that the importation of China and Persian silks, and Indian painted, printed or stained calicoes, injured the woollen manufacture of England, so it was coolly prohibited. This, of course, stimulated the business of printing, painting, staining and dyeing calicoes in England. Whereupon the silk manufacturers and the woollen manufacturers "brought pressure" on Parliament to abate the "great and grievous fashion which abated the use of silk and woollen goods." One man actually had the courage to condemn the course of the silk and woollen men and justify the use of calico as interfering, he said, with neither silks, which were a dearer article, nor worsteds, which were a cheaper. His argument was denounced by the statesmen of the times as "extremely confident and foolish," and an act was passed to "preserve and encourage the woollen and silk manufacture of the Kingdom, and for the effectual employment of the poor by prohibiting the using and wearing (after December 25, 1722) of all printed, painted, stained or dyed calicoes, except those dyed all blue; also all stuffs made or mixed with cotton, except muslins, neckcloths and fustians." After the passage of this act the silk and woollen interests undoubtedly felt safe.

But a barber of Preston, who had invented a hair-dye and was peddling it through the country, and dyeing people's wigs, who was at the best rough-mannered and coarse, and whose friends upon one occasion, in a heated election contest, had

to buy him a suit of clothes in order to get him out to vote, was soon to revolutionize the woollen trade of the world, and to found the great cities the names of which are now known all over the civilized portion of the earth; and yet, as I have already shown, all this was to be accomplished within a radius of twenty-two and a half miles, and in a district which was tossed over by a victorious King to a couple of his savage adherents. The inventions of Arkwright, the barber, and or Hargreaves, gave the impetus to this trade which even in their time reached in England to the following relative importance:

	Value of Products.
Woollens.....	£16,800,000
Leather	10,500,000
Flax	1,750,000
Hemp	890,000
Glass	630,000
Paper	780,000
Porcelain.....	1,000,000
Silk	3,350,000
Cotton.....	960,000
Lead	1,650,000
Tin	1,000,000
Iron	8,700,000
Steel.....	3,400,000
Small manufactures	5,250,000
Total	£56,660,000

The eye and hand no longer helped

To guide and stretch the gently loosening thread,

but

Spools, cards, wheels and looms, with motion quick,
And the ever-murmuring sound

of the factory, with its thousands of operatives, ushered into existence the new order of things. It is of that new order of things which the subsequent letters from the great cities of the woollen region will deal with more in detail. In this letter I merely attempt a glance at the region as a whole. It is a curious fact that within the region given only three of the towns carry on the manufacture of cotton—Skip-ton, Keighley and Otley—and yet a brisk walk would take us into the great cotton districts of the world. Equally surprising is the fact (and this surprised several Yorkshire woollen manufacturers when I told them) that not a woollen or worsted mill or factory exists in Yorkshire outside of the district indicated on *The Tribune's* map. There are more furnaces at Leeds, Bradford, Normantown; linen manufactures at Barnsley; some silk manufactures at Leeds, Otley and Halifax; shoddy manufactures at Dewsbury and Batley, also carpet manufactures: while woollen and worsted manufacturing is carried on extensively at Leeds, Bradford, Huddersfield, Halifax, Saltaire, Otley, Bingley, Keighley, Cleckheaton, Wakefield, Morfield, Holmfirth, Knaresboro, and several other smaller places. Wakefield and Doncaster are the farming centres of the district. In old Camden's time liquorice was grown at Knaresboro; now it has migrated south and is an extensive industry at Pontefract. Of the entire area I have described about 13 per cent. is cultivated in grain and 44 per cent. is permanent pasture, Doncaster and Wakefield being the markets. In the last few years stock-raising has decreased. Bradford, Leeds, Pontefract, Danbury, Wakefield, Huddersfield, Doncaster, Barnsley, Rotherham and Sheffield are all on coal beds, there being in the entire district 523 coal mines. The death rate of the woollen region is not so high as in the cotton districts, though, strangely enough, it is so near: Leeds, 22.6 in 1,000; Bradford, 21.2; Huddersfield, 23; Halifax, 21.4, and Sheffield, 21.3; as against Manchester, 27; Salford, 25; Liverpool, 27, and Wigan, 25. For educational purposes most of these places have endowed grammar schools; there are nearly 200 board schools (beside a share in nearly 1,500 Church of England schools); 124 Roman Catholic schools, and 94 Wesleyan Schools. There is a Technical College at Leeds and Schools of Art at Keighley, Shifley, Halifax, London, Rotherham, Sheffield and Selby.

There are in Yorkshire twenty Parliamentary boroughs. In the districts I have described there are nine, with the following electoral votes and representation :

	Seats.		Electora votes.
Leeds	3	3 Liberals	49,414
Bradford	2	2 Liberals	27,437
Dewsbury	1	1 Liberal	10,060
Halifax	2	2 Liberals	12,055
Huddersfield	1	1 Liberal	13,268
Knaresboro	1	1 Conservative	769
Pontefract	2	2 Liberals	2,360
Sheffield	2	2 Liberals	42,402
Wakefield	1	1 Liberal	4,087

The West Riding of Yorkshire is also represented by two Liberals. The injustice of the English system of representation is glaringly shown in the case of Knaresboro, a Parliamentary borough of but 5,000 inhabitants and a vote of 769, while Todmorden, a place of over 30,000, has no representation. Halifax with 12,000 votes has the same representation as Bradford with over double the number, and as Sheffield with over three-fold the population and votes. A glance at the above table will bring out these inconsistencies. But the industry and energy of this remarkable district do not banish from it crime, and the poor, the Great Master said, "ye always have with you." It takes an army of 2,000 policemen, whose tramp may be heard on the streets, and down the alleys and courts of the cities of the cloth district, to remind society that it must not beat its wife, vivisect its children, and jump on its mother. And as the tramp is heard, society gives its family a momentary respite, but also, judging from the police returns from these cities, it goes back to its favorite pastime as the tread of the law grows fainter and fainter. But what palatial mansions do we find in the cloth districts for the poor? Fifty thousand of them last year received relief. Will Americans credit the fact that in the narrow limits of less than an area of 600 square miles the following work-house accommodation is thought necessary?

Place.	Capacity of Workhouse.	Place.	Capacity of Workhouse.
Bradford	778	Wakefield	369
Dewsbury	399	Wetherby	80
Doncaster	300	Saddleworth	200
Halifax	465	Barnsley	293
Huddersfield	450	Otley	100
Keighley	264	Bramley	214
Knaresboro	150	N. Bierley	326
Leeds, 2 }	984	Honley	208
}	490	Penistone	113
Pontefract	200	Ecclesfield	262
Rotherham	295	Eccleshall	490
Selby	189	Hewesworthy	95
Sheffield	750	Holbeck	119
Skipton	200		

And these are the "unions" of the woollen region, with accommodations amply sufficient for the poor worn-out mechanics, working for a pittance out of which nothing can be saved, with no future, only at the close of life to exchange the quick rattle of the shuttle and the spindle for the dull thud of the English Poor law.

THE COTTON AND WOOLLEN TRADE.

(From the Montreal Gazette.)

The influence of the present tariff upon the trade in cottons and woollens has been very marked, in a two-fold direction (1) in extending relations with Great Britain, and (2) in enlarging the home manufacture of these goods. The assertion that the National Policy is anti-British in its tendencies has been thoroughly exploded long since, and each new year's trade returns give further disproof of the charge. As an example, we may take the articles of cottons and woollens. The following is a

statement of the value of cottons imported from Great Britain in the past two years as compared with the period in which the Cartwright tariff was in operation :

	1878.	1881.	1882.
Bleached and unbleached	\$ 431,807	\$ 337,472	\$ 483,738
Printed, painted or colored ..	1,982,444	630,308	593,823
Jeans, denims and drillings ..	26,929		
Clothing and wearin'g apparel ..	174,288	484,986	453,429
All other	1,752,805	5,746,807	6,119,188
Total	\$4,368,273	\$7,199,573	\$7,650,119

By this statement it will be seen that a very large increase has occurred in the value of cottons imported from Great Britain as a consequence of the revival and enlargement of trade in Canada, but the classification which we have made shows that the whole of the increase occurred in a class of goods not yet manufactured in the Dominion. For, in spite of the augmented consumption of all classes of goods, and the fact that the whole importation of cottons in 1882 exceeded in value that in 1878 by \$2,780,853, or 41 per cent., the importation of ordinary grey and white cotton actually decreased in 1880 and 1881, and was only equal last year to that of 1878. The cause of this relatively large falling off is to be found in the establishment, through protection, of cotton factories in Canada, whose products have replaced the foreign article. The growth of manufactures is clearly exhibited in the statement of raw cotton imported, which shows an increase from 7,243,413 lbs. in 1878 to 18,127,322 lbs. in 1882, or 150 per cent.

The following is a statement of the imports of cotton goods from the United States :-

	1878.	1881.	1882.
Bleached or unbleached	\$ 539,773	\$ 367,191	\$ 534,810
Printed, painted or colored ..	893,681		495,484
Jeans, Denims and Drilling ..	137,492	633,762	
Clothing or wearing apparel ..	191,441	188,152	182,324
All others	719,071	632,206	774,837
Total	\$2,491,448	\$1,821,311	\$1,990,455

This exhibit, taken in connection with the statement of imports from Great Britain, indicates very clearly how successfully the National Policy has operated in extending our trade with the Mother Country. For five years before the introduction of that policy the imports of cotton goods from the United States had been steadily increasing, while those from Great Britain as steadily dwindled down, until in 1878 the import of manufactured cotton from the former country constituted 36 per cent of the whole. The National Policy has so changed the current of trade that last year the imports from the United States had declined to 20 per cent. of the whole.

In woollen goods we find that precisely similar results have been accomplished. The value of woollens imported from the United States before and since the introduction of the present tariff has been :-

	1878.	1881.	1882.
Blankets	\$ 28,998	\$ 4,174	\$ 7,401
Cloths and tweeds	10,026	15,652	21,947
Flannels	68,695	12,360	10,027
Hosiery		12,689	19,470
Dress goods		79,083	3,317
Ready-made clothing ..	128,446	27,651	25,420
All other	147,614	54,390	75,562
Total	\$383,779	\$205,990	\$164,144

The import of wollen goods from Great Britain has been :-

	1878.	1881.	1882.
Blankets	\$ 172,274	\$ 178,027	\$ 238,749
Cloths and tweeds	933,367	3,358,616	3,828,238
Flannels	261,646	256,548	452,117
Hosiery		290,662	458,642
Dress goods		1,480,221	265,662
Ready-made clothing ..	759,439	829,629	424,302
All other	5,130,623	1,064,548	2,595,201
Total	\$7,257,369	\$6,958,251	\$8,262,911

Comparing 1882 with 1878 it is seen that the value of the import of woollen goods from the United States has decreased 57 per cent., while the value of the imports from Great Britain has increased 14 per cent. It is to be noted also that, although the general trade of the country was much more prosperous in the past two years than 1878, the aggregate value of the importation of woollen goods increased only \$785,907, or 9 per cent. This result is due to the enlargement of home production. Thus, while in 1878 we imported raw wool to the amount of 6,230,084 lbs., in 1880 the import reached 7,870,118 lbs.; in 1881 further increased to 8,040,287 lbs., and last year was 9,682,757 lbs. This increase was made up wholly of the finer qualities of wool, the import from Africa having increased from 306,450 lbs. in 1878 to 1,361,246 lbs. in 1882, and that from Great Britain from 265,212 lbs. in 1878 to 2,160,630 lbs. in 1882, while the import of Leicester, Cotswold, Lincolnshire, Southdown combing wools, and other like combing wools, such as are grown in Canada, was last year only 36,073 lbs. These results are eminently satisfactory, establishing, as they conclusively do, the fact that the operation of the National Policy has been to enlarge our trade with Great Britain, contract the import of manufactured goods from the United States, and conserve to the Canadian producer the home market for such classes of goods as are manufactured in the Dominion.

In the last issue of the Ontario *Gazette* notice is given that the capital stock of "The Dundas Cotton Mills Company" has been increased from \$400,000 to \$750,000 by the issue of \$3,500 shares of one hundred dollars each.

Milling.

SPRING AND WINTER WHEAT FLOUR.

A short time ago tests were made in St. Paul as to the comparative value of spring wheat "patent" and winter wheat "patent" flour in bread-making. The conclusion based on the excess of gluten found in the former was, that a barrel of spring wheat flour would produce fifty pounds more bread than that from winter wheat. Representatives of the New York Produce Exchange disputed the above results, and have had comparative tests made of these two classes of flour by several of the most prominent bakers in New York. After careful experiments these firms state that they find there is only four pounds difference in favor of the bread-making capacity of the spring wheat "patents." This is an important question, as the bread-making qualities of the different kinds of wheat will form a basis upon which to fix their comparative market value. It is especially important to the people of the grain-producing North-West, where spring wheat is the staple product. If spring wheat has such superior bread-making qualities, and Manitoba can raise the best sample of that grain in the world, then surely the farmer in this country has a bright future before him. But, as has been urged before in these columns, it is absolutely necessary that an elevator and grading system be established here, in order that full justice may be done to the product of our country. In the hands of strangers, who, to begin with, have no liking for our country, and whose great object is to stem the tide of immigration seeking our shores, there is little to be hoped for, and the depreciation of our grain would be the great power made use of to further that end. Then let the inspection be done in Winnipeg.—*Winnipeg Commercial.*

CHICAGO, March 9.—The meeting of lumber manufacturers of the Northwest and Mississippi River has adjourned, after effecting an organization, but without limiting the production of lumber for the coming season. About three-fifths of the manufacturers in the district were represented, and the end in view cannot be accomplished till the representation is unanimous.

Railways and Shipping.

RAILROAD MANAGEMENT.—Says the N. Y. *Tribune*: It is the public belief that nearly all the reckless and wanton building of unnecessary or "cut-throat" lines at the West has been due to the speculative interests of managers. The same results have followed the same cause at the East, and ruinous railroad wars in both sections have been carried on, for no better end than to enable managers to buy stocks at low rates. The question is commonly asked whether speculation for a decline by directors and managers, in the properties committed to them in trust, ought not to be an offence rigidly and severely punished. Management for the public interests, or for the interest of genuine stockholders, becomes practically impossible when this offence is tolerated. The knowledge that it is committed by managers of a great many companies has done more than any other thing to break down confidence at home and abroad in the value of American corporate securities.

It is said that after this there will be two special through freight trains dispatched weekly from Montreal to Winnipeg.

The average rate of charge on the American railways per ton of passengers for a mile is \$3.26; the average per mile for a ton of freight was \$1.29 cents per ton per mile. The profit made out of carrying a ton of passengers a mile was 86.8 cents; the profit out of carrying a ton of freight a mile was 0.53 cents. The largeness of the difference suggests the idea that some day railway managers will be struck with the notion that the passenger traffic is worth developing.

The traffic receipts of the Grand Trunk Railway for week ending March 10th, 1883, were:—

	1883.	1882.
Passengers	\$78,421	\$96,810
Merchandise	225,370	179,473
Mails and express	11,000	9,403

Total \$314,791 \$285,686
Increase in 1883, \$29,105. The aggregate traffic for ten weeks in 1883 was \$3,102,174, against \$2,800,987 in the corresponding period last year, showing an increase of \$301,187.

The committee on railroads of the Massachusetts legislature recently gave a hearing to a large number of railroad employees who have petitioned for a repeal or modification of the existing law on the subject of color-blindness. They claim that under this law a number of worthy men are shut out from railroad employment because of the extreme rigor of the examination required by ophthalmic surgeons, who often present 150 different shades of worsted, and reject the applicant for failure to distinguish between two or more shades that are almost identical. They ask that the law be amended so as to confine the examination to the colors and shades that are used in the practical operation of railroads. From the evidence before the committee it is generally believed the law will either be repealed, as was its fate in Connecticut, or the examination will be confined to the signals, as desired by the men.—*Philadelphia Railway World.*

KINGSTON, March 19.—Folger Bros. have sold the Glendower mining property on the line of the Kingston and Pembroke railway, to an Ohio company, who will develop it under the name of the "Zanesville Iron Co." The property brought a good figure. Boilers, compressors, and other machinery has been purchased, and will be at once placed at the works. Capt. Kitts, an old experienced miner, will be superintendent. Mr. Walle, of the Bethlehem Iron Mining Co., says that the new tariff will have a tendency to crush out small iron concerns in the States. The increase of 10 per cent. in the duty will not injure the Canadian ore trade; the profits alone will be reduced. The mine owned by his company at Madoc has been shut down until navigation opens. They will ship considerable iron to Pennsylvania from Belleville this year. The company have on the island of Cuba one of the largest mines in the world; it will be developed, Mr. Martelles has gone there to build a railway.

MECHANICAL AND SCIENTIFIC TEXT BOOKS,

— FOR SALE BY —

The "Canadian Manufacturer" Publishing Company,
AT PUBLISHERS' PRICES.

WE have made arrangements to supply Mechanical, Industrial and Scientific works to our subscribers and others, at publishers' prices. These works are only published in the United States, and by purchasing from us fifteen per cent duty will be saved. Below we give the titles of a few books that we have on hand, but we can supply almost any technical work by having particulars furnished. Cash must accompany all orders, and letters of enquiry should have enclosed a three cent stamp for reply.

THE CANADIAN MANUFACTURER PUBLISHING CO. (Limited.)

- AMERICAN HOUSE CARPENTER.** A Treatise on the Art of Building, etc., etc., for the practical use of Architects, Carpenters and Stair Builders. With numerous fine wood engravings 8vo. cloth, \$5 00
- BALDWIN, WM. J. STEAM HEATING FOR BUILDINGS.** Or, Hints to Steam Fitters. Being a description of Steam Heating Apparatus for Warming and Ventilating Private Houses and Large Buildings, with Remarks on Steam, Water and Air in their Relations to Heating. To which are added useful miscellaneous tables. Third edition. With many illustrative plates..... 12mo, cloth, 2 50
"Mr. Baldwin has supplied a want long felt for a practical work on Heating and Heating Apparatus."—*Sanitary Engineer.*
- BENJAMIN, PARK. WRINKLES AND RECIPES.** Compiled from the Scientific American. A collection of practical suggestions, processes, and directions for the Mechanic, Engineer, Farmer, and Housekeeper. With a Color Tempering Scale, and numerous wood engravings. Revised by Prof. Thurston and Vander Weyde, and Engineers Buel and Rose 12mo, cloth, 2 00
- BOWMAN, F. H. THE STRUCTURE OF COTTON FIBRE IN ITS RELATION TO TECHNICAL APPLICATIONS.** Illustrated with numerous engravings and colored plates..... 8vo, cloth, 4 00
"Its special purpose is in the interest of Cotton Manufacturers, it not only fulfills this purpose but carries its teachings over a wide field."—*Providence Journal.*
- CRACE-CALVERT, DR. F. DYEING AND CALICO PRINTING.** Including an account of the most recent Improvements in the Manufacture and Use of Aniline Colors. Edited by Dr. Stenhouse and C. E. Groves. Illustrated with wood engravings and numerous specimens of printed and dyed fabrics 8vo, cloth, 8 00
- DREDGE, JAS. ELECTRIC ILLUMINATION.** General Principles, Current Generators, Conductors, Carbons and Lamps. By Conrad W. Cooke, M. F. O'Reilly, James Dredge, S. P. Thompson and H. Vivarez, chiefly compiled from Engineering, edited by James Dredge. With abstracts of the specifications deposited at the Patent Office between 1837 and 1872 having reference to Electric Lighting, prepared by Mr. W. Lloyd Wise. About 600 pages Text, nearly 800 illustrations..... 4to, cloth, 7 50
- HYDRAULICS AND HYDRAULIC MOTORS.** With numerous practical examples for the calculation and construction of Water Wheels, including Breast, Undershot, Back-pitch, Overshot Wheels, &c., as well as a special discussion of the various forms of turbines, translated from the fourth edition of Weisbach Mechanics, profusely illustrated. Second edition. 8vo, cloth, 5 00
- THE CALCULATIONS OF STRENGTH AND DIMENSIONS OF IRON AND STEEL CONSTRUCTIONS.** With reference to the latest experiments. By Prof. J. J. Weyrauch, Polytechnic Institute of Stuttgart. Translated by A. J. Du Bois. With Plates..... 8vo, cloth, 1 50
- FITZGERALD, WALTER. THE BOSTON MACHINIST.** Being a complete School for the Apprentice as well as the advanced Machinist, showing how to make and use every tool in every branch of the business; with a Treatise on Screws Gear-cutting. Sixth edition..... 8vo, cloth, 0 75
- GELDARD, JAS. HANDBOOK ON COTTON MANUFACTURE; OR, A GUIDE TO MACHINE-BUILDING, SPINNING AND WEAVING.** With practical examples, all needful calculations, and many useful and important tables. The whole intended to be a complete yet compact authority for the manufacture of cotton. With steel engravings 12mo, cloth, 2 50
- GRIMSHAW, DR. ROBT. H. SAW FILING.** A Practical Treatise on Filing, Gumming, and Swageing Saws. Fully illustrated..... 1 vol., 16mo, 1 00
- HOLLY, H. W. CARPENTERS' AND JOINERS' HANDBOOK.** Containing a Complete Treatise on Framing Hip and Valley Roofs, together with much valuable instruction for all Mechanics and Amateurs, useful Rules, Tables never before published, etc. New edition, with additions (1881) 18mo, cloth, 0 75
- SAW FILING** The Art of Saw Filing Scientifically Treated and Explained on Philosophical Principles. With explicit directions for putting in order all kinds of Saws, from a Jeweller's Saw to a Steam Saw Mill. Illustrated by forty-four engravings. Third edition. By H. W. Holly. 18mo, cloth, 0 75
- MACFARLANE, ROBT. A PRACTICAL TREATISE ON DYEING AND CALICO PRINTING.** Including the latest Inventions and Improvements. With an Appendix comprising definitions of chemical terms, with tables of Weights, Measures, etc. By an experienced Dyer. With a Supplement containing the most recent discoveries in color chemistry. By Robert Macfarlane. 8vo, cloth, 5 00
- PRINCIPLES OF ELEMENTARY MECHANICS.** Fully illustrated. Revised edition. 1882. 12mo, cloth, 1 50
"This work is designed to give more attention to the fundamental principles of mechanics. Analysis is subordinated, and what is used is of a very elementary character. No Calculus is used nor any analysis of a high character, and yet many problems which are generally considered quite difficult are here solved in a very simple manner. The principles of Energy, which holds an important place in modern physics, is explained, and several problems solved by its use. Every chapter contains numerous problems and examples, the former of which are fully solved; but the latter, which are numerical, are unsolved, and are intended to familiarize the student with the principles, and test his ability to apply the subject practically. At the close of each chapter is a list of Exercises. These consist of questions of a general character, requiring no analysis in order to answer them, but simply a good knowledge of the subject. The mechanics of fluids forms an important part of the work.
- WEST, THOMAS D. AMERICAN FOUNDRY PRACTICE.** Treating of Loam, Dry Sand and Green Sand Moulding, and containing a Practical Treatise upon the Management of Cupolas, and the Melting of Iron. By Thomas D. West, practical Iron Moulder and Foundry Foreman. Fully illustrated. 12mo, cloth, 2 50
- WOODBURY, C. J. H. FIRE PROTECTION OF MILLS.** With many illustrations. A Practical and Scientific View of the Best Methods to prevent Conflagrations in Cotton, Flour and other Mills. Showing forms of apparatus for extinguishing flames, and methods of preventing their occurrence. With a chapter on proper construction of floors and proportioning of floor beams. Also a thorough explanation of the electric light as applied to mills, and the regulations for its use adopted by the insurance companies. By C. J. H. Woodbury. Mechanical Engineer, and Expert for Various Mill Insurance Companies..... 8vo, cloth, 2 50

N.B.—Watch this page, as the different works will appear every month.

Miscellaneous.

LABOR IN EUROPE AND AMERICA.

We take from the New York *Tribune* the following criticisms, suggested by Mr. Porter's letters on "Industrial England," now being republished in our columns. Both the letters themselves and the criticisms they evoke should be of great interest to Canadian manufacturers, and to their many thousands of employees too, it may be added. Both deal with facts, and both help to bring out in sharp contrast the conditions of labor in Europe and America respectively. As far as we know, the CANADIAN MANUFACTURER is the only paper in this country that has republished even the smallest part of this most interesting series of letters:

ACTUAL AVERAGE WEEKLY EARNINGS.

"To the Editor of the *Tribune*.

"SIR,—In reply to Mr. Robert P. Porter's letter which you publish to-day, headed 'English and American Wages,' we would state that the tables of wages given in our letter of January 25 are the actual average weekly earnings of our operatives in Newark, N.J. Yours truly,

"CLARK THREAD COMPANY,
William Clark, Treasurer."

"New York, Feb. 28, 1883.

[The tables of wages referred to appeared in the CANADIAN MANUFACTURER of February 23, page 145-75.]

FREE TRADE ASSUMPTIONS CONTRADICTED.

(From *The Kingston Freeman*.)

"The letters of Mr. Robert P. Porter, late Secretary of the Tariff Commission, to the *Tribune*, comparing the manufacturing industries of England and the United States, are attracting wide attention and are worthy of careful study. The one from Leeds makes an exhibit of woollen manufacture. In contradiction of the assumption by the free traders that the woollen industry of the United States has become self-supporting and no longer needs fostering by protective duties, it is shown that within the last ten years \$94,000,000 worth of goods have come to the United States from Bradford, over \$30,000,000 from Leeds, and nearly \$69,000,000 from Glasgow, the greater part of which was woollen and worsted. On the question of wages Mr. Porter shows that the figures of the free traders taken from the census are not trustworthy as pertaining to labor in the United States. The result is obtained by taking the total amount of wages paid and dividing it by the total number of hands employed, the quotient being used to show the yearly savings of each. It is thus made to appear that the average wages of the American workman are about 11 cents an hour, being about the same as those paid in Great Britain, though the truth is something very different, as it is well known that the census report includes all persons receiving employment though many of them may not have been engaged more than a week or a month."

AN INTERESTING COMPARISON.

(From *the Syracuse Journal*.)

"Mr. Robert P. Porter, the statistician, in *The New York Tribune*, makes an approximate comparison of the English and American woollen manufactures, a task which is rendered specially difficult because of the lack of adequate statistics for such a comparison. In fact, official industrial statistics are wholly wanting in England, and while it is impossible to ascertain the number of hands employed, the annual product,

capital invested and value of material consumed can only be guessed at—which would be folly. In making a comparison of wages in this industry, in the two countries, Mr. Porter compiles a table of average weekly earnings, those in the United States being taken from the report of Mr. Carroll D. Wright for 1882, and those from England being obtained by Mr. Porter himself direct from the pay rolls of manufacturers in Yorkshire. Mr. Porter's comments on the disclosures and upon his observations are interesting and their force will be appreciated. 'And so,' he says, 'toiling and sorrowing, with no future and little hope, contented to live and die in the shadow of these giant factories, with little or no chance to better themselves, fixtures, in fact, around the mills, as the peasants were to the land in the feudal times, the English operatives slave on, while the mill-owner discusses in the club how he can produce an article a farthing cheaper per yard. The idea of cheapness pervades the whole Kingdom. It is all some people seem to live for. There is no limit to it. The struggle for cheapness sometimes brings ruin to the mill-owner and starvation to the operatives. But for all that the struggle goes on.'

A CLINCHER.

(From *The American Protectionist*.)

"Mr. Porter puts the point very forcibly when, in summarizing the results of his investigations at Bradford, he says: 'If I were asked what the keen Bradford manufacturer thought on economic questions, I should frankly reply that after an experience of a generation some of them are prepared to prove that tariff duties come more largely out of the producer than the consumer. Some of them demonstrated this quite conclusively to me and illustrated it with the French tariff.' What a complete answer this evidence that 'tariff duties come more largely out of the producer than the consumer' to the free trade allegation that the whole of the tariff is a tax upon the American consumer! Here we have the acknowledgment of the foreign producer that it is upon him, not upon the American consumer, that the burden falls. The duty cuts down his profits and his wages because it facilitates our production and builds up our strong competition. Take away the protecting duty, or even reduce it below the point of adequate protection, and it would be indeed 'a grand thing for Bradford' and for all other industrial competitors of the United States. Prices would be kept down only until our industries were crippled; and then the limit of American price and English profit would be the utmost that we could be compelled to pay."

FACTORY HANDS AT HOME AND ABROAD.

To the Editor of the *Tribune*.

"SIR,—I have been reading Mr. Porter's articles on the condition of the factory operatives in Europe, and as I have been a reader of *The Tribune* since I was a boy, in fact learned my Republicanism from it, I am beginning to feel somewhat disgusted with this cry of pauper labor that we hear so much about, and I think that if Mr. Porter would visit this village I could show him a great difference between the native and English mill hands, and that to the credit of the English—in intelligence and morality, and physically the superiors of the native operatives in and around Philadelphia. And there is good reason for this. The Yorkshiremen tell me that the English take care of their children; that they do not go to work too early; and when they do go to work they are only half-timers, and that they must go to school. Now what a sad contrast is that with what we have here? In this village there is a corporation presided over by a prominent citizen of New York, who ran on the Republican ticket last November for Congress, in the person of William L. Strong.

"This company works small children from 6:45 a.m., until 8 p.m., with forty-five minutes at noon. Some of these

children have a mile to go after 8 p.m. to their homes. Now if Mr. Porter should go through this village he would see children from ten years up eating their supper at 8:30 p.m., after a day's work of twelve and a half hours. Now what kind of men and women will these children make, especially the girls? Let Mr. Porter come and see these little pinched faces and tell us what he thinks of American operatives, and also of the American stockholders like Mr. William L. Strong of your city and would-be Congressman. I have worked in a factory since I was ten years old, and that is my only excuse for writing this. I am thoroughly disgusted with the cry of pauper labor of Europe.

"JAMES MCGAHEY."

"Darby, Delaware County, Penn., Feb. 3, 1883."

[Concerning the statements made in the above letter, Mr Strong said to a *Tribune* reporter the other day:—"Early last fall we found that we could not produce our goods fast enough to meet our orders. At first we thought of employing a force to run the mills at night, but finding that we could not get enough competent operatives, we concluded to run extra hours providing our employes would consent. The matter was put to a vote and all but ten or twelve were in favor of the plan. The hours of labor are from 6:45 to 11:55 a.m., 12:45 to 5:45 p.m., and from 6:45 to 8:45 in the evening. This plan will be continued until May or June, when the ten hours system will be resumed. There are fifty-eight girls and boys in the mills between the ages of thirteen and sixteen. They receive for the twelve hours work 72 cents, against 25 cents which is paid for the same work in the worsted mills of England. The 139 girls between the ages of sixteen and twenty-two years of age receive 99.6 cents for twelve hours work, against 69.6 cents in England. The twenty-four men and boys from seventeen to twenty-two years of age are paid \$1.464, against 99.6 cents which English workmen receive for the same labor. These are the wages paid to 221 out of the 248 employes. We have received no complaints about working extra hours. All seem well satisfied. Our mills have a good reputation among working people, and since the mills in Philadelphia were shut down we have had very many more applicants for situations than we know what to do with. As a class our operatives are contented and well-to-do people."]

WORKING PEOPLE IN BONNIE DUNDEE.

To the Editor of *The Tribune*.

"SIR,—Mr. Porter visited some of the meanest places in our town, inhabited by the lower class of drunken Irish, and in his letter to *The Tribune* reports these as specimens of our workingpeople's homes. He might as well have said that the dens about the Five Points and Mulberry-st. are the kind of homes the storekeepers and mechanics of New York dwell in. If Mr. Porter had called at the United States Consulate he could have been directed where to see the homes of the working classes in Bonnie Dundee, and so far as I can learn he visited none of our large jute works. He evidently came with eyes only open to see the worst aspect of our cities, or, in Protectionist phraseology, the pauper labor of Britain. I have been in workers' houses in America, and know something of our own. I think our sober and industrious workers, all things considered, are as comfortable as their brethren in the States.

"Dundee, Scotland, Feb. 22, 1883."

"J. L. C."

SOLID FACTS AGAINST THEORIES.

(From the *Kansas City Journal*.)

The *New York Tribune* struck a master stroke of business when it engaged Robert P. Porter, to personally investigate and write up for the columns of that great journal the wages question in England and Scotland. His

letters are a mass of solid facts which, if read, must carry conviction to every unprejudiced mind that the free trade policy of Great Britain, were it adopted at this time by the United States, would soon prove disastrous to our labor interests, and where there is now content and plenty there would soon be disturbance and poverty.

MONOPOLIES NOT FOSTERED BY THE TARIFF.

(From *The Council Bluffs Nonpareil*.)

The chief arguments advanced against protective tariff legislation consist in the assertions that such a tariff creates monopolies and does not advance the welfare of the workingman. It is asserted with great vehemence that tariff legislation is the primary cause of the inequality in fortune which exists in the United States, and that the professed friendship for the American laborer is a mere sham. Now we maintain as a patent fact that the workingman of the United States is a being of a higher scale than his European brother. He is a sovereign and a ruler while the latter is a subject and a hopeless slave to daily toil. Mr. Porter, who is now sojourning in England to examine the condition of the workingmen in that country, reports that the average price paid in woollen manufacturing is only \$4 per week, and that the workers live in a state of squalor and misery which is unparalleled in the United States even among the colored people. Therefore we can safely take it for granted that under our tariff system our laboring men are much better off than on the European continent, and especially in England. We can also safely assume that the tariff is not responsible for the inequality of wealth which exists in all countries.

FREE TRADE A ROBBERY OF THE WEAK.

(From *The Industrial Review*.)

The bulk of American productions necessarily must be consumed at home. If free trade prevailed, and the agricultural population throughout the United States could obtain those manufactured products, clothing, etc., at the so-called cheap free trade prices, what would they do with their cereal products? The manufacturing population could not purchase them, since they are, or would be, deprived of their market for their manufactured products by the supposed free trade. In other words, the farmer could not sell to the mechanic, the mechanic could not sell to the farmer, simply because the farmer would be in that case supplied by the British mechanic, and the American mechanic would be deprived of his customer. Equivalency of exchange must exist, as between producer and consumer, as much as there must be a pound-weight to balance a pound of products on a scale. True commerce is an exchange of equivalents. Any other exchange is destructive of commerce. The exchange of the free trade system is simply the taking of advantage upon the part of the stronger, and taking to itself the profits represented by the difference in cost. It is a robbery of the weak, because of their helplessness. These considerations may, perhaps, not be of special interest to our general readers; but we hope they will endeavor to digest them at their leisure, as they underlie the entire question. We hope Professor Sumner will revise his premises, in order that he may be in harmony with facts and with truth, and that the conclusions he arrives at may bear the stamp of common sense and be indorsed by the verdict of everyday experience.

TIMELY FACTS.

(From *The Philadelphia American*.)

Mr. Robert P. Porter's letters from manufacturing centres in England and Scotland come very opportunely to the present discussion. Mr. Porter's abilities as a statist are recognized universally, and his investigations set at rest the question of

the relation of American to British wages. He finds that in Glasgow, for instance, skilled labor is paid about seven and a half dollars a week, and unskilled about two and a half dollars. A comparison of this with the American rates shows under what disadvantages the American manufacturer would encounter the unrestricted competition of the foreign producer. He could hold his own only by reducing wages to the British level. Nor are American workmen slow in perceiving the moral. The *National Labor Tribune* of Pittsburgh remarks: "On the whole, so far as the Glasgow schedule gives us insight, we should vastly prefer to do without 'revenue reform' quite a while longer."

PROTECTION STILL NEEDED.

(From the *Boston Traveller*.)

In his letter to the *New York Tribune*, written from Leeds, Mr. Robert P. Porter throws a still stronger light upon the industrial conditions which, under free trade, have sprung up in the great woollen manufacturing district of England. Leeds, from a town of 53,162 inhabitants in 1801, has grown, in 1881, to a city of 309,126 inhabitants, a fact which, specially considered, would seem to be strong testimony to the prosperous influence exerted by her growth as a manufacturing centre. But what the American manufacturer and operative are alike concerned to know is not merely how many factories there are nor how many people are crowded into them, in the commercial capital of Yorkshire, but how are they carried on, and what are the conditions of the existence of their operatives, their wages, their hours of labor, and all other facts that go to make up their social environment. Mr. Porter is a most interesting witness on these points. His figures do not seem to warrant the conclusion which we sometimes hear expressed with a good deal of dogmatism, that the woollen industries of this country are no longer "infant industries," and stand in no further need of protection. The distance between British and American woollen manufacturers is immense. Mr. Porter closes his very instructive letter with the reflections that "cheapness in railroading and cheapness in manufacturing means the exhaustion or the starvation of the laborers. It can be obtained in no other way. Free trade may bring cheapness. It will not prevent the degradation of labor."

PAUPER LABOR NO MYTH.

(From the *Des Moines Journal*.)

The *New York Tribune* is printing a series of letters from England on the industrial condition of that country, written by Mr. R. P. Porter. It is a pity that everybody in America, and especially the workingmen, could not read these letters. They answer with inexorable facts the sophistries of the ranters hired by English interests to advocate free trade in this country. We are told sometimes by the enemies of the American protective system that the well-worn phrase "the pauper labor of Europe" is nothing but a piece of empty and meaningless claptrap. Mr. Porter tells us, however, that it has a very real meaning, and expresses an absolutely pitiable state of affairs.

WASTE IN FUEL.

The *Mechanical Engineer* says that it is curious that in business, of whatever kind, the average manufacturer cares the least for what costs the most, that is his steam. If he uses \$1,000 worth of lumber and \$2,000 worth of steam to work it up into goods, he will cut and carve in every direction to save waste, but he will throw money into his boiler with a shovel, and no man can convince him that he is boring holes in his own pockets. We say no man can convince him, and in this expression we allude to the average manufacturer, in wood or otherwise. Every engineer knows that he can go through any

considerable town where steam is used and see money thrown away like water. He also knows that if he went into the counting room and said to its proprietor that he could stop the waste for \$25, that is, he would save \$500 a year in fuel for a fee of \$25, that he would be hardly noticed. Any one who doubts this has only to take an indicator under his arm and go through a town with it. Let him take the first big brewery he comes to, or any place where fuel is bought and paid for at market prices, and interview its proprietor on the subject of testing his engine. He will find that he is looked upon in about the same light as a confidence man. Some manufacturers will not treat an engineer with ordinary courtesy when he proposes to apply the indicator! Others appear to think that an engineer will make power tests, and calculations involving two or three days' time, for about \$5.

We were witnesses, not long since, to this proposition: An engine builder said to a manufacturer that he would put an engine into his shop right alongside of the old one. He would connect with the shafting and run the shop at his own expense for thirty days. If at the end of that time he did not shew a certain economy mentioned, he would remove his engine and charge nothing. For all this he would give bonds. The reader imagines, doubtless, that this proposal was accepted promptly. It was not; it was declined promptly, and to this day the manufacturer is losing something like \$3,500 a year on cost of coal alone. Such instances as these are by no means uncommon, and can be paralleled in the experience of most professional engineers; but as the loss, in the first instance, comes upon the manufacturers themselves, we do not think there will be any popular uprising to correct it.

As we said in our first paragraph, the cost of steam is the last item considered by manufacturers, and in its cost we include the engineer as an expensive one. The idea prevails to a great extent that the machine shop builds the engine and agrees that it shall produce a horse power for any number of pounds of coal they choose to mention, after that it runs itself. That is to say that if it is started and proved to run economically, it will forever after. Any man can take care of it, and it is rather a courtesy to pay him living wages than otherwise. How false such assumptions are every engineer knows, but the average manufacturer does not, and cannot be induced to recognize them. Perhaps in time he will; when one generation passes away and another takes its place. The last should be wiser than its predecessor, and the constant iteration of this matter will have its effect. Engineers will have true places as skilled members of an important business. Steam power will be found cheap through care, instead of costly through abuse, and our sons may reap the benefit of their father's services.

THE LUMBER TRADE.

(From *The Winnipeg Commercial*.)

The vast quantities of logs and timber that are being taken out during the present season in the Lake of the Woods and Lake Winnipeg districts, and which will be manufactured into lumber in the spring, points to a supply of the home product far in excess of what has yet been known. Enterprising capitalists, many of them at the same time practical men, have gone into the business of supplying lumber from our own forests in earnest. There seems to be little danger this year of the dearth of building material in this line which occurred last season. There may perhaps be somewhat of a scarcity for a while early in the season, but so soon as the mills get fairly running the supply will be equal to all demands. Besides the local product there will also in all probability be a considerable supply from outside.

This must, according to the usual course of events, result in a more reasonable rate being charged for lumber. The city has already made a contract for a million and half feet at a

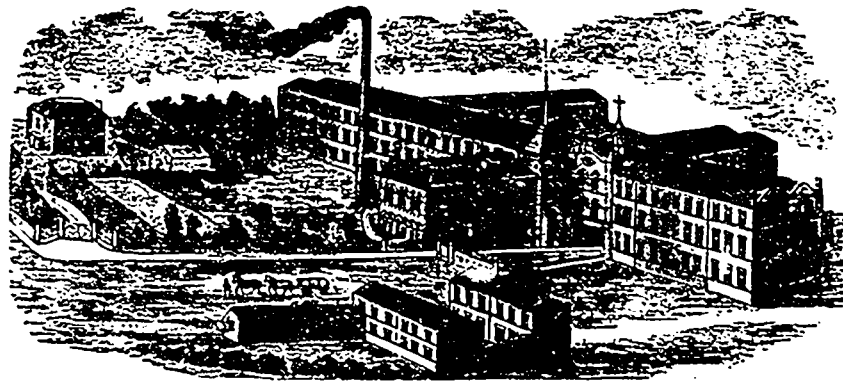
a price considerably below that of last year. Private parties cannot but reap a corresponding benefit. Even at a figure below that of last year the manufacturers will have a good margin of profit left. Of course the demand from the rising towns outside and from the farmers in the country will be largely in excess of any previous year, but the supply in sight is correspondingly increased.

The whole country will reap a benefit by the large supply. Last year the great drawback to building operations in many cases was the inadequate supply, but it does not seem as if this would occur again. In the United States there has also been a slight drop in prices. At a recent meeting of the lumbermen's Exchange in St. Paul, reductions were made in all descriptions of timber and lumber, so that if it does happen that we have to fall back upon the yards across the line for some of our supplies that could be provided at a figure under that of last year. So that on the whole the prospect of cheaper lumber this year is good all around.

The *Northwestern Miller* (Minneapolis), says:—"The finest hard Fife wheat we have ever seen is that raised by Mr. W. J. Abernathy, agricultural editor of the *Pioneer Press*, who procured the seed from the north fork of the Saskatchewan river, in the northwest territory of British Columbia (?) five years ago. The sample chosen by Mr. Abernathy for experiment was selected from a large number obtained in various parts of the extreme Canadian Northwest, and for the first three years the product was cultivated by hand, and every weed and stalk of soft wheat was pulled up and thrown away before cutting. The result is that Mr. Abernathy has now a considerable quantity of absolutely pure hard Fife wheat, weighing sixty-two pounds to the bushel, which he is offering for sale. We trust that the stock of seed now on hand may be widely distributed and that those who purchase it will take as much pains to keep it pure as its originator has done.



Boilers of either Iron or Steel,
IRON MASTS,
 CASTINGS of Every Description.



SAMUEL LAW & SONS,

CLECKHEATON, ENGLAND.

CARD CLOTHING AND WIRE MANUFACTURERS

PATENTEES AND SOLE MAKERS OF

ROLLED DOUBLE CONVEX WIRE,

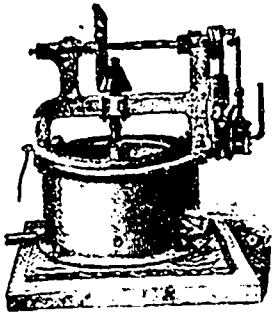
Especially adapted for Fine Spinning.

RUBBER and NANKEEN CLOTHING for Cotton Cards, VULCANIZED RUBBER for Worsted Cards, with tempered steel, or tinned wire.

G. M. CUMMINGS, 178 Devonshire Street, Boston, Mass., Agent for UNITED STATES AND CANADA

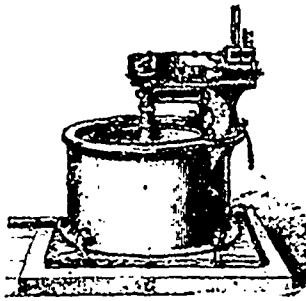
IMPROVED CENTRIFUGAL HYDRO-EXTRACTORS.

MACHINE A



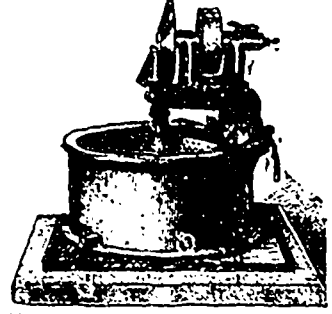
For Silk Dyers, with vertical engine on the side and cone pulley friction.

MACHINE B



For Wool and Cotton Dyers, with direct acting steam engine.

MACHINE C



Runs by Belt and Friction Cone Suitable for water-power.

THREE SIZES OF EACH KIND BUILT BY

W. P. UHLINGER, Nos. 38 to 48 East Canal-st., PHILADELPHIA, Pa.

East of Front-st., between Laurel and Richmond-sts.

SEND FOR CIRCULAR AND REFERENCES.

LEITCH & TURNBULL'S

PATENT SAFETY HAND AND POWER

ELEVATORS.

CORNER REBECCA & HUGHSON STREETS,

HAMILTON, - - - ONT.

JARVIS PATENT FURNACE FOR SETTING STEAM BOILERS.



Economy of Fuel, with increased capacity of steam power. The same principle as the SIEMENS' PROCESS OF MAKING STEEL, utilizes the waste gases with hot air on top of the fire. Will burn all kinds of Waste Fuel without a blast, including screenings, wet peat, wet hops, sawdust, logwood chips, slack coal, &c.

Over 1,500 boilers set this way in the United States and Canada.

Send for Circular.

JAS. R. ANNETT, Agent,

110 KING STREET (P. O. Box 33), MONTREAL, QUE.

Please mention this paper.

W. & F. P. CURRIE & CO. 100 GREY NUN STREET, MONTREAL

Manufacturers of

SOFA, CHAIR & BED SPRINGS.

A large Stock always on hand

Importers of

DRAIN PIPES, VENT LININGS,

FLUE COVERS, FIRE BRICKS,

FIRE CLAY, PORTLAND CEMENT,

ROMAN CEMENT, WATER LIME,

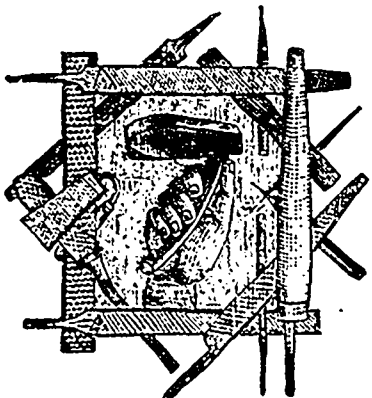
PLASTER OF PARIS, &c.

Hay Forks,
Patent Waggon Arms
or Thimble Skeins,
Patent Pumps.

GENERAL LIGHT CASTINGS

WORTMAN & WARD,
Cor. York & William,
LONDON, ONT.

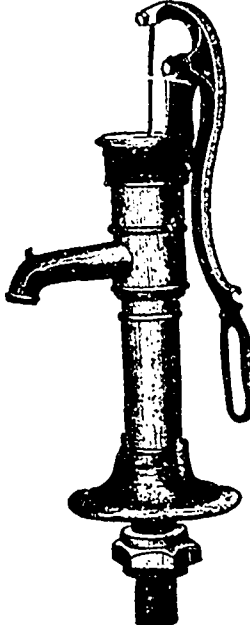
FILES!
Sherbrooke File Works.
Established 1875.
J. H. CHAPMAN & CO.



All HAND-CUT FILES made from the Best Sheffield Cast Steel.
Warranted equal to the Best Imported Brands
Send for Price Lists and Discounts.
FILES RE-CUT

SHERBROOKE, - QUE.

VULCAN IRON WORKS,
OTTAWA.
ENGINE & MILL
MACHINERY
Of Every Description
MANUFACTURED -
GENERAL REPAIRS DONE.
THOS. STEWART
ALEX. FLECK. **STEWART & FLECK JR.**



R. McDOUGALL & CO.
MANUFACTURERS OF
Cresting Pumps & Windmills,
And all kinds of Small Castings.
EXCELSIOR IRON WORKS, - GALT, ONT.
Mention THE MANUFACTURER in ordering.

PORTLAND
Forge and Ships' Iron
KNEE MANUFACTORY.
J. A. & W. A. CHESLEY,
CORNER OF
Harrison St. & Straight Shore Road,
PORTLAND, ST. JOHN, N.B.
—MANUFACTURERS OF—
Shafting, Locomotive Frames,
Ships' Iron Knees, Piston & Connecting Rods,
Windlass Necks, Truck, Engine & Car Axles,
Windlass Breaks, Davits, Truss Bows,
And all kinds of Hammered Shapes.
Diploma awarded at New Brunswick Exhibition of 1880 for assortment of HEAVY FORGINGS, consisting of Locomotive Frames, Locomotive Engine Axles, Shafting, Ships' Iron Knees, &c., with Special Commendation for Excellence of Workmanship. Also—Special Diploma for Hammered Ships' Knees.

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 STREET,
MONTREAL.

ROBERT SMITH & CO.
ENGRAVERS ON WOOD.
LITHOGRAPHERS BY STEAM POWER
COPPER PLATE ENGRAVERS
DRAUGHTSMEN.
DIE SINKERS, EMBOSSERS
& HERALDIC ENGRAVERS.
36 WELLINGTON STREET E
TORONTO.

INTERNATIONAL
PATENT AGENCY
FOR THE NEGOTIATION AND SALE
OF PATENTS, ETC.
132 ST. JAMES STREET,
MONTREAL

Patents sold and disposed of. Capital procured for developing inventions of merit, and Companies formed for working the same. Special attention given to the introduction and sale of manufactured patented articles.
H. STUBBENDORFF & CO.

THE
MOST POPULAR
—OF ALL—
Sewing Machines
—IS THE—
LIGHT-RUNNING
New Home.

Rapidly taking the place of
all other Machines where-
ever introduced.

200,000 Sold Yearly

Has more points of excellence
than all other Machines
combined.

Liberal Inducements to Dealers

NEW HOME
Sewing Machine Company
30 UNION SQUARE, N.Y.

PLATT BROTHERS & CO.,

(LIMITED.)

MACHINISTS,

HARTFORD WORKS, OLDHAM, LANCASHIRE,

Beg to call the attention of Worsted Spinners and Manufacturers to their Improved Machinery for

Carding, Combing, Preparing, Spinning and Weaving Worsted
ON THE FRENCH SYSTEM.

PLATT BROTHERS & CO., Limited, are also makers of the following Machinery :

New Patent Cleaning Machines for Cotton.
Crighton's Patent Opening Machines for Cotton.
Hard Waste Breaking-up Machinery.
Patent Burring Machines for Wool.
Machinery for Preparing, Spinning, and Doubling Cotton, Wool, Worsted and Silk.
Ring Spinning and Doubling Machines.
Combing Machines for Cotton—Heilmann's or Whipple's Patent.
Patent Brick-making Machinery.

Combing Machines for Wool, Worsted, etc.—Little and Eastwood's Patent.
Machinery for Carding and Spinning Silk Waste.
Power Looms for all Descriptions of Plain and Fancy Cloths in Cotton and Wool.
Sizing, Dressing, Warping, Beaming, Winding, and Reeling Machinery.
Cloth-folding and Measuring Machines.
Hydraulic and Can Bundling Presses for Yarn and Cloth.

Also, Makers of Patent Macarthy Cotton Gins, Hand or Power, for long or short stapled Cottons.

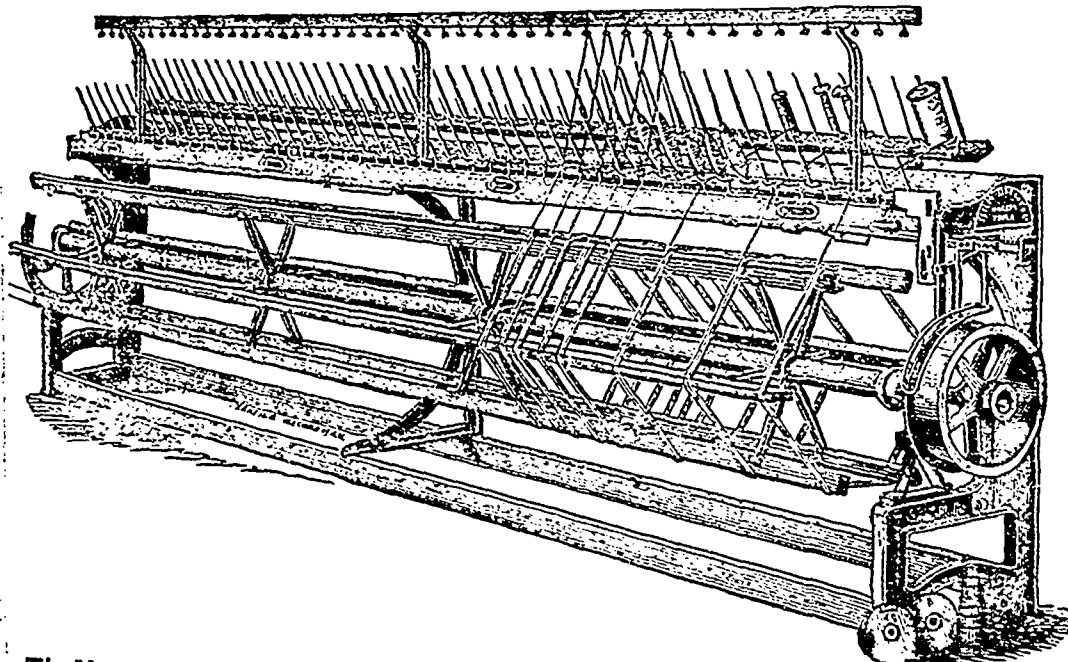
For further information and prices apply to

SAMUEL WOOD, Agent, 34 LETITIA ST., PHILADELPHIA.

Agent for Thompson & Co.'s English Card Clothing.

LINDSAY, HYDE & CO.,

Machinists, Pattern Makers, Etc.,



Makers of Cotton, Woollen and Worsted Reels, with improved counting motion for the accurate reeling of any size of skeins, or any given number of turns or yards. Reels for Carpet Yarns, reeling and twisting at the same time two or more ply yarns. Balmoral Reels, &c. Utley's patent stop motion for two or more ply yarns, preventing making single yarns when doubling and twisting or Spooling two or more ply yarns. Utley's patent stop motion applied to Twisters. Spoolers (either plain or) with Utley's patent stop motion. Ball-winders for Noble's Comb Warp Balling Machines for Mills and Dye Houses. Self-acting Mules (Cotton, Woollen or Worsted), Twisters, Stubbers, Intermediate and roving frames, lengthened out and repaired in the most improved manner. Machinery of all kinds (Home or Foreign), set up in working order, removed, repaired, reset on the most reasonable terms. Practical and experienced workmen sent to all parts of the country. Keep in stock Twist Rims, Change Wheels, Cut Wheels of various kinds, Rubber ends for Condensers, Long Collars for roving frames, &c., and general findings for Cotton, Woollen and Worsted (Home and Foreign) Machinery

Findings for Platt Bros. & Co.s (Lim.) Machinery, Oldham, Eng., always on hand.

Hangers, Shafting, Pulleys, Etc., Supplied. Gear Cutting of every description.

No. 531 EAST YORK STREET, PHILADELPHIA.

—:TO:—
USERS OF GLUE.

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

JAMES HAY & CO.
 WOODSTOCK, ONT.

H. F. IDDIOLS,
 MANUFACTURER OF
Fire & Burglar-Proof
SAFES,
 Vault Doors,
 Wire Window Guards,
 Iron Shutters,
 Iron Railings, &c.

Express, Cash and Jewel Boxes made to order. Locks made and repaired, and Keys fitted. Gunsmithing executed in the best manner and with despatch.

Also—Successor to J. B. Smithers, Electric and Mechanical Bell Hanger. Speaking Tubes fitted up at short notice.

All Job Work in the above lines promptly attended to.

9 WATERLOO STREET,
SAINT JOHN, - - N.B.

MORRISON
BROS.,

“Soho Machine Works,”
TORONTO.

Esplanade, near Union Station,

DEALERS IN

Iron and Wood Tools,

Mill Machinery,

Foundry Supplies,

Planing Mill Supplies,

&c., &c., &c.

MANUFACTURERS OF

Iron Tools,

Wood Working

Machinery,

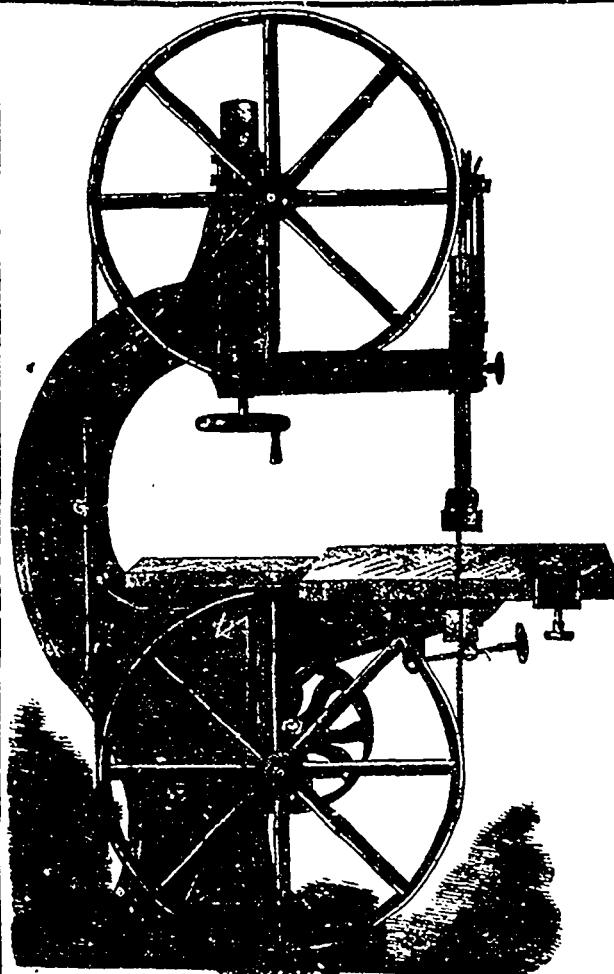
Saw Mill Machinery,

Mill Work, &

Architectural Iron Work.

SEND FOR LISTS.

Mention this Advertisement when writing.



Machinery in Stock.

- 16 Iron Lathes, various sizes, new and second hand.
 - 5 Iron Planers, do.
 - 10 Iron Drills, do.
 - 1 Iron Shears.
 - 1 Hydraulic Shears.
 - 2 Milling Machines.
 - 1 Gear Cutter.
 - 2 Band Saws.
 - 8 Scroll Saws.
 - 5 Shapers.
 - 4 Planers and Matchers.
 - 4 Surface Planers.
 - 1 Dimension Planer.
 - 2 Daniel's Planers.
 - 2 Buzz Planers.
 - 7 Moulding Machines.
 - 3 Tenoning Machines.
 - 8 Mortising Machines.
 - 10 Saw Tables.
 - 4 Wood Lathes.
 - 4 Dowel Machines.
 - 2 Sand Papering Machines.
- Etc., Etc., Etc.

SEND FOR LIST.

Give particulars and price of any Machinery you have for sale

J. McLAUGHLIN'S SONS,

GROWERS,

Merchants and Exporters of Assorted and Sized

American Teasels,

SKANEATELES, N. Y.

We respectfully call the attention of woollen manufacturers to an important addition we have made to our method of preparing Teasels for use. We have succeeded in perfecting a machine which automatically performs the work of grading Teasels into *perfect exact diameters*, making, instead of the *six* sizes of the old way of assorting, *thirty six* perfect grades, beginning with the smallest, which is 61-64 of an inch in diameter, and is numbered 61, and so on in consecutive order, each number or grade increasing 1-64 of an inch in diameter, to number 96, which is 96-64 or 1 1-2 inches in thickness and is the thickest grade.

We have had our attention repeatedly called to this subject, and it has been suggested by practical manufacturers, that having teasels agreeing as to thickness, while saving labor in placing upon the "gig," will require less experience in the "gigging" to avoid *streaked cloths*, and assure more uniform work generally.

The "gig" makers have, to some extent, obviated this difficulty, by making the "gig" cylinder "vibrate," which prevents teasels of uneven thickness striking the cloth every turn of the cylinder at the same point; but this has only been a makeshift, as zig-zag streaks are often traced upon the surface of faced goods finished upon a vibrating cylinder gig.

As teasels were assorted, viz: 1 to 1 1-2 inches, 1 1-4 to 1 3-4 inches, 1 1-2 to 2 inches, 1 3-4 to 2 1-4 inches, 2 to 2 1-2 inches, 2 1-2 to 3 inches, sized as to *length only*, streaks in goods more or less could not be prevented.

In the above classification teasels will be found of the *same diameter* in each of the six sizes, although differing in length. Such assorting is very faulty, as the *diameter* of the teasel should regulate its grade, and this is what our invention does. In some of the best regulated mills skilled labor is employed in selecting from such a diversity of sizes, those that will answer for the work to be performed, *accuracy* being out of the question, and more or less imperfections in the finishing are sure to follow even with the best of help and with the greatest care.

The saving made by using gauged teasels, both from rejected teasels on account of some being uncommonly thick or thin, and in the labor of selecting these suitable to set, is fully equal to their first cost, and an equal gain is made in the perfection of cloths, thus saving twice the cost of the teasels, besides having the satisfaction of making perfect goods, and no claims for damages or tender cloths.

Our teasels are neatly clipped, and the quality well graded, carefully hand packed with stems only 3 inches long. We shall sell them strictly gauged an exact diameter at the very lowest price in the market for the quality with 2 1-2 cents per pound additional to pay for extra labor in gauging them, and we trust you will appreciate our efforts in your behalf.

The great demand made upon us for our teasels sorted per an exact diameter, having rendered it necessary to meet a much larger demand than we could have reasonably anticipated, we have just completed an extension of our works, and secured an abundant water power to drive our sorting machinery, which doubles our capacity for business.

Parties desiring to order from us may therefore depend on having their orders executed with the same care as heretofore, and within reasonable time.

Reference to all the leading Canadian users.

CORRESPONDENCE SOLICITED.

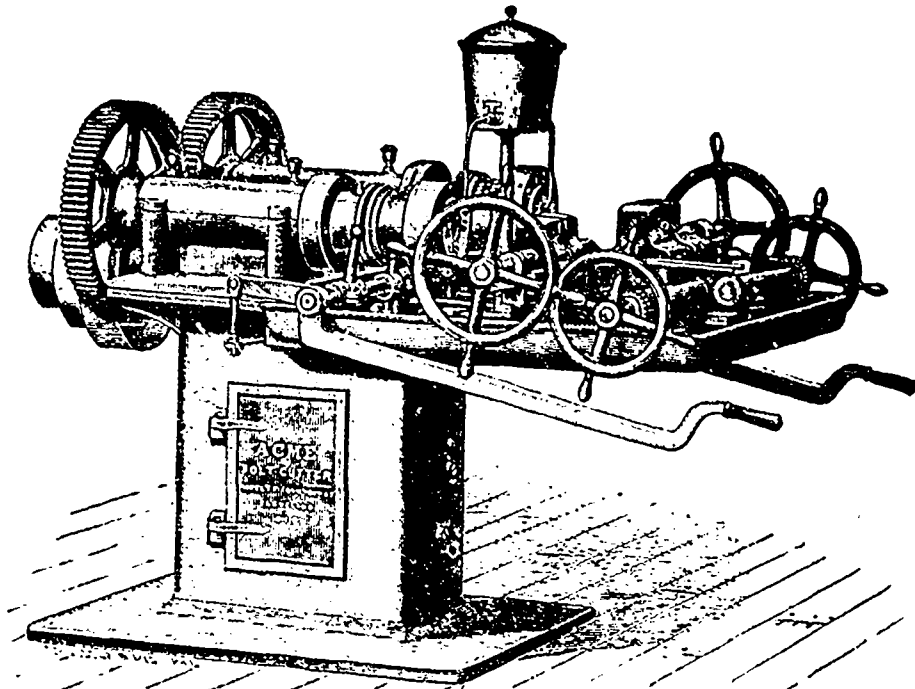
Post Office Address,.....Skaneateles Falls, N.Y

Telegraph Address,Skaneateles, N.Y

TELEPHONE CONNECTIONS.

BOLT CUTTERS.

ACME NUT TAPPERS.



ACME BOLT CUTTER HEADS.

"THE ACME" SINGLE & DOUBLE BOLT CUTTERS,

— From $\frac{3}{8}$ inch to $1\frac{1}{2}$ inch. —

Agents in Canada, The Machinery Supply Association, Machinery Dealers,
CORNER OF CRAIG AND BLEURY STREETS, MONTREAL.

NEW BRUNSWICK
COTTON MILLS,
SAINT JOHN, N.B.

WM. PARKS & SON,
Cotton Spinners, Bleachers and Dyers,

Have been awarded "PRIZE MEDALS" for 1882—

At the TORONTO INDUSTRIAL EXHIBITION—
Four Silver Medals and Three Bronze.

At the MONTREAL EXHIBITION—
Silver Medal for "Best Exhibit."

At the KINGSTON PROVINCIAL EXHIBITION—
Silver Medal for Best Exhibit, and First Prize,

For their celebrated Beam Warps, Cotton Yarns, Carpet Warps,
Ball Knitting Cotton, Manufacturers' Knitting Cottons and Apron
Checks.

The smoothness and even finish of the goods, and brilliancy of colour,
resulting from the use of the "St. John" Waters cannot be excelled.

AGENTS:

Wm. Hewett,
11 Colborne Street,
TORONTO.

Alex. Spence,
Lemoine Street,
MONTREAL.

HAMILTON
COTTON COMPANY

MANUFACTURERS OF

COTTONADES, DENIMS,
TICKINGS,

BEAM WARPS of every variety.

HOSIERY YARNS of every description.

BALL KNITTING YARNS,
BUNDLE YARNS,

and
CARPET WARP.

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

Agents in Montreal,—

F. McELDERY & CO.,

Agents for Beam Warps,—

WINANS & CO., TORONTO.

JOSEPH JOHNSTON,
 Manufacturer of and dealer in
Sawn & Planed Lumber,
 SHINGLES, LATH,
 And all kinds of
DIMENSION TIMBER
Bridge Timber & Deck Plank a Specialty.
RICHMOND ROAD, NEPEAN,
 Shead's Mills P.O. OTTAWA, Canada

Woollen & Cotton Picker
PROPR'S WOOLLEN AND COTTON MILLS :-
Having put up a Woollen and Cotton Picker on the Corner of Mary and Cannon-sts., Hamilton, am prepared to do all Custom Work that may be entrusted to me in a first-class manner, (samples of work always shown,) or will buy your Cuttings and give the Highest Price in Canada.
 Yours respectfully,
JOHN QUARRIER.

THOS. L. KAY,
 MACHINIST
PATTERN & MODEL MAKER.
 —MANUFACTURER OF—
HAMILTON PRESSING MACHINE.
 All kinds of General Jobbing and Repairing.
158 KING ST. WEST, - HAMILTON.

W. B. SCARTH. R. COCHRAN.
SCARTH, COCHRAN & CO.
 MEMBERS OF THE
Toronto Stock Exchange,
 Buy and sell Canadian and American Stocks on margin or for cash.
 Also Hudson Bay Stock and American Mining Stocks.
32 and 34 Toronto Street, TORONTO.

Lamp Goods.
YOUNG & BROTHER
 Manufacturers of
Coal Oil, Chandeliers, Brackets, &c
 And Wholesale Dealers in
GENERAL LAMP GOODS.
SALESROOMS: FACTORY:
 John-street North. 135, 137 King West
HAMILTON, Ont.

ONTARIO
Electrotype Foundry
 The Only Complete Foundry in Canada.
 ESTABLISHED 1870.
 Merchants and Manufacturers wishing Business Cuts will find it to their advantage to give us a trial.
SMITH & VAUGHAN,
 26 & 28 COLBORNE STREET, TORONTO

D. MORRICE & Co.,
 CANADIAN MANUFACTURERS,
MONTREAL & TORONTO.
HUCHELAGA
 Brown Cottons,
 Canton Flannels,
 Yarns and Bags.
VALLEYFIELD
 Bleached Shirtings,
 Wigans and Shoe Drills.
STORMONT
 Colored Cotton Yarns,
 Ducks, Tickings, Checks, &c.
 Knitted Goods,
 Tweeds, Flannels, &c., &c.
 The Wholesale Trade Only Supplied.



TOLTON BROS.,
 MANUFACTURERS OF
 Creels, Reels, Warping Mills
 and Sizing Machines,
 Winding Machines for Knitters,
 Spooling Machines,
 Rolling Machines for Carpets,
 Folding Machines for Cloth or Carpet,
 Hand Winding Machines.
 Estimates furnished. Repairing done.
 For particulars send for Catalogue.
GUELPH, - ONT.

D. McLACHLAN & SONS,
ST. JOHN, N.B.,
 Manufacturers of all kinds of
BOILERS!
 And Ships' Tanks.

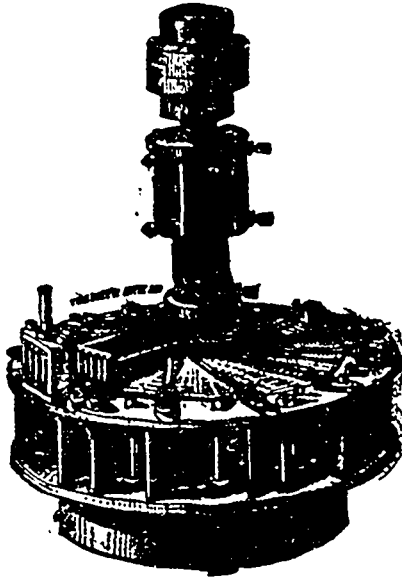
The Canadian Bank of Commerce.
 HEAD OFFICE, - - TORONTO
 Paid up Capital, - - - - - \$6,000,000.
 Rest, - - - - - 1,650,000.
DIRECTORS.
 HON. WM. McMASTER, *President.*
 WM. ELLIOTT, Esq., *Vice-President.*
 Noah Barnhart, Esq., James Michie, Esq.
 Hon. Adam Hope. T. Sutherland Taylor, Esq.
 George Taylor, Esq., Jno. J. Arntou, Esq.
 W. N. ANDERSON, General Manager.
 J. C. KEMP, Asst. General Manager.
 ROBT. GILL, Inspector.
 H A NICHOLSON, Asst. Inspector.
New York—J. H. Goadby and B. E. Walker, Ag'ts
Chicago—A. L. DEWAR, Agent.
BRANCHES.
 Ayr, Guelph, St. Catharines,
 Barrie, Hamilton, Sarnia,
 Belleville, London, Seaforth,
 Berlin, Lucan, Simcoe,
 Brantford, Montreal, Stratford,
 Chatham, Norwich, Strathroy,
 Collingwood, Orangeville, Thorold,
 Dundas, Paris, Toronto,
 Dunnville, Peterboro, Walkerton,
 Durham, Port Hope, Windsor,
 Galt, Goderich, Woodstock,
 Commercial credits issued for use in Europe, the East and West Indies, China, Japan, and South America.
 Sterling and American Exchange Bought and sold.
 Collections made on the most favorable terms.
 Interest allowed on deposits.
BANKERS.
 New York—The American Exchange National Bank.
 London, England—The Bank of Scotland.

BOOTH & SON,
 Coppersmiths and Metal
 Spinners.
TORONTO - - - - - ONT.
 Distillers', Brewers', Confectioners', House-furnishers' and Plumbers'
COPPER and BRASS WORK
 In Stock or Made to Order.

JAMES PETT,
 MANUFACTURER OF
 Colored Sheepskin Mats,
 Hearth Rugs, and
 Drum Heads.
HAMILTON, ONT.
 Office and Factory - WELLINGTON ST. NORTH,
 Below Barton Street

FILES.
THE GRAHAM FILE WORKS,
 ESTABLISHED 1874.
 THOMAS GRAHAM, Proprietor.
HAND CUT FILES
 Made from the best Refined English Cast Steel, Warranted, Equal to the Best Imported Brands.
 Orders Solicited from Importers and Large Dealers.
OFFICE & FACTORY, 150 FRONT STREET EAST, - TORONTO
 (Late of 35 Sherbourne Street.)
 Pipes Re-cut. Send for Price Lists and Discounts.

15,000 IN USE.



**JOSEPH HALL
MANUFACTURING CO.,**
(ESTABLISHED 1851.)
OSHAWA, ONT.

Manufacture the celebrated
**James Leffel's Double Turbine
Water Wheel,**

All sizes of Stationary and Portable En-
gines and Boilers, Shafting, Pulleys,
Hangers, Gearing, Latest Improved
English and American Gangs.

The Stearns' Circular Saw Mills with Frac-
tional Head Blocks an King of Dogs—this
Mill is acknowledged in the United States and
Canada to be superior to all others—also a very
complete Circular Saw Mill with Iron Frame
and cheaper Head Blocks for Small Mill. Saw
Mill, Flour Mill, Paper Mill and Water Works
Machinery a Specialty.

For further particulars address

Joseph Hall Manufacturing Co.,
OSHAWA, ONTARIO.

ONTARIO

File Works.

G. E. HEMING,

(SUCCESSOR TO S. BEECH & CO.)

Files Re-cut and Warranted
Equal to New.

WORKS AND OFFICE:

Corner Cannon and Mary Streets,
HAMILTON, ONT.

C. W. BROWN,

Manufacturer of all kinds of

Machine Screws!

Metal Punching done to Order.

530 CRAIG STREET,

MONTREAL.

James Leslie

Manufacturer of

CARD CLOTHING,

LOOM REEDS, &c.,

Dealer in

COTTON & WOOLLEN

MILL SUPPLIES.,

OFFICE AND FACTORY:

Junction of Craig and St. Antoine Sts.,

WEST END MONTREAL.

P. O. Box 996.

A. & T. J. DARLING & Co.,

—WHOLESALE—

HARDWARE

SPECIALTIES,

CUTLERY & "BLACK DIAMOND"
FILES, "DARLING AXES,"

"BABBIT METAL."

TORONTO.

THE

DARTMOUTH

ROPE WORK CO.,

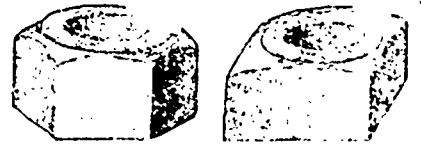
Manufacturers of all descriptions of

CORDAGE

AND OAKUM,

HALIFAX,

NOVA SCOTIA.



ONTARIO NUT WORKS

PARIS, On t

Brown & Co.,

Manufacturers of all sizes of

HOT PRESSED NUTS,

Square and Hexagon.

CANADA LAND-PLASTER CO.

PARIS; - - Ont.

GILL, ALLAN & CO.

REMINGTON

TYPE-WRITER.



WYCKOFF,

SEAMANS &

BENEDICT.

NEW YORK.

Sole Exp. for Canada

The only Machine which will success-
fully supersede Pen Writing. Used by Mer-
chants and Professional men, and in Rail-
way, Insurance and other offices, etc., etc.
Send for Catalogue and Testimonials.

J. O'FLAHERTY,

32 Lemoine Street, Montreal,

P.O. Box 1324.

Canadian Agent

LEATHER BELTING.

Two first prizes and only Medal at Do-
minion Exhibitions.

LACE LEATHER.

Three first prizes and only Medal at Do-
minion Exhibitions.

Factory---**DANVILLE, QUE.**

Others have their specialty—we have none.
With the best possible appliances, we are de-
termined to make

ALL OUR BELTING

The Best in the market, including our Drive
Belts—both Double and Ribbed—which are
not, and cannot be, excelled.

Orders promptly filled.

Full satisfaction guaranteed.

J. L. GOODHUE & SON.

JOHN WILSON, GLASGOW. JAS. R. WILSON, MONTREAL.

THOMAS ROBERTSON & CO., MONTREAL & GLASGOW.

ESTABLISHED 1855.

IRON, TIN PLATE AND GENERAL METAL MERCHANTS.

SOLE AGENTS FOR

"Gartsherrie" and "Eglinton" Pig Iron,
"Lonsdale" Hematite Pig Iron,
"Dalzell" Celebrated Steel Boiler Plate,
"Luken's" Charcoal Boiler Plate,
Fox, Head & Co.'s " Tank and Boiler Plate.

MANUFACTURERS OF

Wilson's Celebrated Lap-Welded Boiler Tubes,

Made from Iron or Steel. Also

WROUGHT IRON TUBING

For Gas, Steam and Water.

CONTRACTORS FOR

Cast Iron Pipes

For Gas and Water Works

Supplies for Engineers, Railways, Boiler Makers, Steam Fitters and Plumbers.

AMERICAN HEAVY Oak Tanned Leather Belting

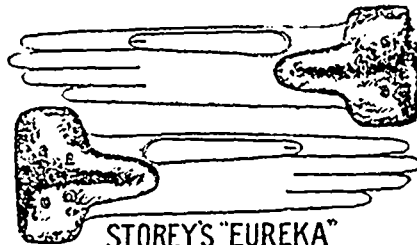
RUBBER BELTING,
RUBBER HOSE,
RUBBER PACKING,
LINEN HOSE, and
COTTON HOSE

A full and complete stock always on hand.
Write for prices and discounts.

T. McILROY, Junr.,

Warehouse—10 & 12 King St. East, Toronto.

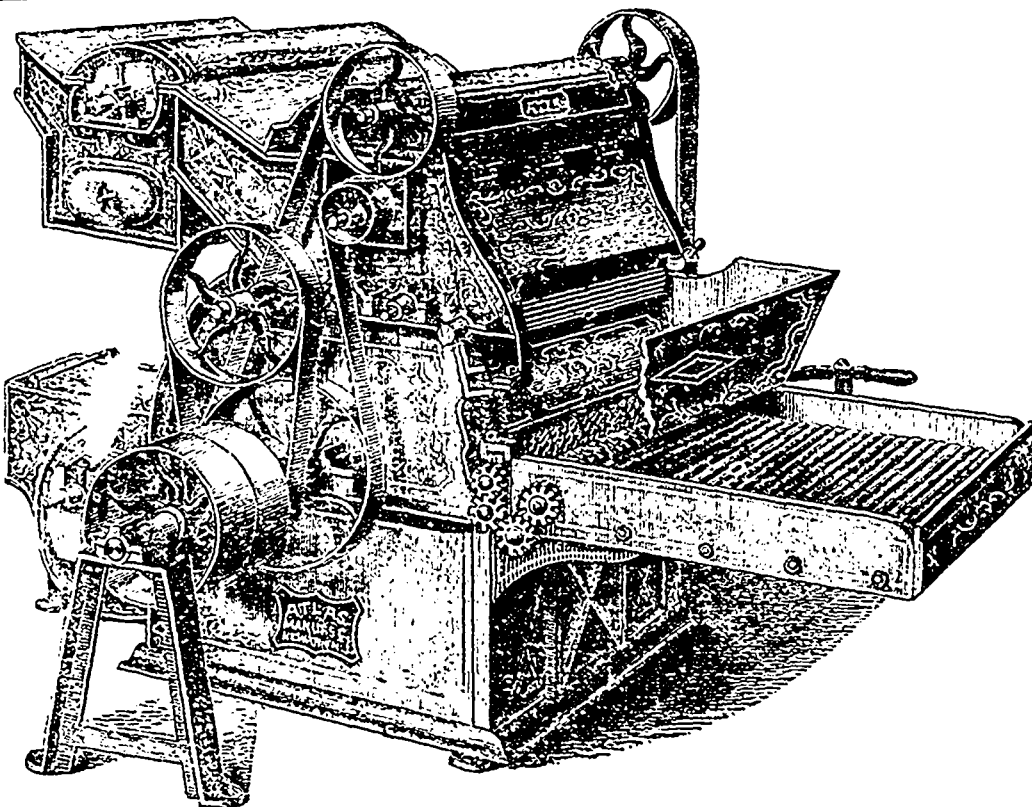
P. O. Box 556.



STOREY'S "EUREKA"
SPRING GLOVE FASTENER, PAT.

W. H. STOREY & SON, Glove Manufacturers, ACTON, ONT

The quality of our Goods is unsurpassed.



PARKHURST'S PATENT DOUBLE CYLINDER BURRING PICKER,

For Picking, Burring and Dusting all grades of Wool. Recent Improvements, including a beater attached to the spout for the purpose of most thoroughly mixing and cleaning the Wool without injury to the staple, make it superior to any other machine now in use.

Manufactured only by

GOLDIE & McCULLOUGH, AGENTS,
GALT ONT.

THE ATLAS MANUFACTURING CO
NEWARK, N.J.

Double and Single BURRING MACHINES

for First and Second
Breakers, superior to any
others made in the
UNITED STATES.

Patent Steel Ring
Feed Rollers,
Waste Cards,
Cylinders, &c.

Industrial and Trade DIRECTORY.

Asbestos.

FENWICK & SCLATER, Montreal.—Asbestos packing, paints, and roofing.—Send for lists. Files, &c.

Agricultural Implements.

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

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

Bobbins and Spools.

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

Bridge Builders.

TORONTO BRIDGE CO., Toronto.—Builders of Steel and Iron, Railway and Highway Bridges.

Chemicals.

JOHN McARTHUR & SON, Montreal.—Offer at closest figures chemicals required by soap-boilers, oil refiners, paper-makers, and by manufacturers of woollens, cottons, leather, &c.

Coal and Wood.

P. BURNS Offices cor. Front and Bathurst Sts., Yonge St Wharf 51 King St. East, 532 Queen St. West Toronto.—Wholesale dealer in Coal and Wood. Telephone communication between all offices.

Cotton Brokers.

M. WRIGHT, next Exchange Bank, Hamilton, Ont.—Sole agent in Canada for Ordway & McGuire, cotton factors, Nashville, Tenn.

Cotton Mills.

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

Dye Stuffs.

WULFF & CO., sole agents for Canada for Wm. Pickhardt & Kuttroff (B. Anilin and Soda Fabrik Sp. P.), New York. Full supply of Anilin dyes, &c.

EMIL THOURET & CO., Montreal.—Agents for K. Oehler, Offenbach O. M., Germany.

JOHN McARTHUR & SON, Montreal.—Supply of best quality at closest prices. Every description of coloring materials required by manufacturers of woollens, cottons, silks, paper, leather, &c. Are sole agents in Canada for the celebrated aniline dyes of A. Porrier, Paris.

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

Edge Tools.

R. T. WILSON, Dundas, Ont.—Manufacturer of axes, picks, mattocks, grub hoes and railway contractors' supplies.

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

Emery Wheels.

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

Engines and Boilers.

G. C. MORRISON, Hamilton.—Engines, boilers, steam hammers, etc.

J. H. KILLEY & CO., Hamilton, Ont.—Manufacturer of economical, variable, cut-off, high pressure, and condensing engines. Improved boilers, portable engine for thrashing, saw-mill, hydraulic and hoisting machinery.

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

THOS. WILSON, Dundas, Ont.—Manufacturer of stationary and portable steam engines, boilers and machinery of every description—cotton mill calendars, hosiery steam presses and propeller wheels, all sizes.

Files.

PHENIX FILE CO.—Hand-made files and rasps. No machines in our factory.—Fenwick & Sclater, Agents, Montreal. Anchor Brand. FILE & SPRING CO., Cote St. Paul, Montreal.—All kinds of files and springs. Files recut. Sole manufacturers of Spauldings' patent concave spring.

G. OUTRAM & SON, Dominion File Works, Montreal.—Manufacturers of every description of files and rasps.

Fire Hose.

FENWICK & SCLATER, Montreal.—Canvas hose, plain and rubber lined, for fire departments and factories.—Write us before purchasing elsewhere.

Furniture.

JACOB ZINGSHEIM, Hamilton, Ont.—Manufacturer of Parlour and Bedroom Sets, Center Tables, &c.

Gas Engines.

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

Glove Manufacturers.

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

Harness and Trunks.

S. & H. BORBRIDGE, Ottawa.—The largest saddle, harness, and trunk manufactory combined in Canada. Wholesale and retail. Offer the trade and the public generally the largest assortment of goods in their line in the Dominion at lowest prices.

Hoist and Elevator Manufacturers.

LEITCH & TURNBULL, Central Iron Works, cor. Rebecca and Hughson Streets, Hamilton, Ont.—Patent safety hand and power elevators.

Hubs, Spokes and Bent Goods.

F. W. HORE & SON, Hamilton, Ont.—Manufacturers of hubs, spokes, rims, shafts, poles, sleigh and cutter stuff, etc.

Iron Works.

CANADA SCREW CO., Dundas.—Manufacturers of iron and brass screws, bolts and rivets.

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

DOMINION BOLT CO., 139 Front St. East, Toronto.—Manufacturers of every description of bolts, hot pressed nuts, railway spikes, bridge, boiler and iron rivets.

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

HAMILTON BRIDGE & TOOL CO., Hamilton.—Iron railway and highway bridges and iron working machinery.

McKECHNIE & BERTRAM, Dundas.—Machine tools and wood working machinery.

MONTREAL MALLEABLE IRON WORKS, St. George Street, Montreal.—Manufacturers of malleable iron, steam, and gas fittings.

PILLOW, HERSEY & CO., Montreal.—Manufacturers of cut nails, horse shoes, railway and pressed spikes, tacks, brads, &c.

THE OSHAWA MALLEABLE IRON CO., Oshawa, Ont.—Manufacturers of malleable iron castings; also patent screw wrenches.

SMITH'S FALLS MALLEABLE IRON WORKS, Smith's Falls, Ont.—Manufacturers to order of agricultural, carriage, and other malleable iron castings.

ST. THOMAS RIVET WORKS (Brent & Sherman).—Manufacturers of boiler, tank, and cooper rivets, plate nails, wrought spikes, cotter pins, spring keys, &c.

B. W. RICHARDS, Brockville, Ont.—Manufacturer of selected Norway iron and Lake Superior copper rivets and burs, kettle cast, &c.

COLBORNE FOUNDRY AND STEAM MILLS (J. C. Scripture & Bro.), Colborne, Ont.—Manufacturers of mill gearing and agricultural implements, and stoves of all kinds.

VICTORIA FOUNDRY (N. S. Blasdell) Co. Ottawa.—Engine and mill machinery of every description manufactured. General repairs done.

HARE & CO., Oshawa.—Manufacturers of plows, land rollers, cutting boxes, and all kinds of small castings.

T. PEPPER & CO., Guelph, Ont.—Manufacturers of the celebrated Anchor brand and duplex carriage and wagon axle. Our duplex axles are to be had at all the principal hardware stores in the Dominion.

GARTSHORE CAR WHEEL MANUFACTURING CO.—Works, corner Front and Cherry Streets, Toronto.—Manufacturers of car, tender, and locomotive wheels, wheels for street railways, construction cars, &c., also chilled castings of every description manufactured from the best brands of charcoal iron.

J. MATHESON & CO., New Glasgow, N.S.—Manufacturers of engines, boilers, mill and mining machinery, iron masts, etc.

Inspirators and Ejectors.

THE HANCOCK INSPIRATOR CO., Montreal.—Manufacturers of inspirators, ejectors, and general jet apparatus.

Knife Works.

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

Knitting Mills.

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

OSHAWA KNITTING WORKS, Oshawa.—Manufacturers of cotton and wool hosiery, Cardigan and ladies' jackets, scarfs, gaiters, carriage rugs, mens' and children's jersey shirts, &c.

Leather Belting.

DOMINION BELT AND HOSE CO., Toronto.—Oak tanned belting, lace leather, etc.

Machine Brushes.

ULLEY'S BRUSH WORKS, 74 Bleury St. Montreal.—Machine brushes for cotton factories, flour mills, &c. Machine brushes of every description a specialty.

Machinists.

SHEPARD & HOYER (late with J. Doty, 26 and 28 Colborne Street (in rear of the Ontario Electrotype Foundry), Toronto.—Machinists and Engineers. All kinds of machinery made and repaired. Jobbing promptly attended to.

Manufacturers' Agents.

McKENZIE & NOLAN, Montreal, Manufacturers' Agents, Customs Brokers. Samples of manufactured goods intended for sale in this market and correspondence solicited.

Manufacturers' Supplies.

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

Marble and Stone.

ARNPRIOR MARBLE WORKS (P. Somerville), Office and York near the C.P. Railway Station, Arnprior, Ont.—Wholesale dealer in Arnprior marble "Howe" granite and Renfrew granite.

Oils.

JOHN McARTHUR & SON, Montreal.—Afford best value in pure olive and lard oils, also in all other leading lines of vegetable, animal, and mineral oils for factory use. Invite special attention to their celebrated crown diamond "engine" and "machinery" oils.

Paints.

A. RAMSAY & SON, St. Lawrence White Lead and Color Works, Office, 10 Inspector Street; Factory, Inspector, corner College Street, Montreal.—Specialties—Ramsay's patent white, twice the body of lead, mixed paints, ear colors, white lead all qualities. Plate glass imported to order, and in stock all sizes.

Paper Box Manufacturers.

ALBERT GIBB, 122 King William Street, Hamilton, Ont.—Manufacturer of all kinds of paper boxes.

R. BELL & Co., 96 and 98 Foundling Street, Montreal—Manufacturers of every description of paper boxes, paper bags, tea caddies, egg cases, &c.—Orders solicited.

Paper Manufacturers.

LINCOLN PAPER MILLS CO., Merriton Ont.—Manufacturers of every variety of paper paper bags and flour sacks.

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

Patent Agents.

H. STUBBENDORFF & CO., 132 St. James Street, Montreal.—Patents sold and disposed of. Special attention given to the introduction and sale of manufactured articles.

Patterns and Patents.

JOHN HENDRY, corner of James and Rebecca Streets, Hamilton, Ont.—Pattern and model maker, solicitor of patents.

Pot and Pearl Barley Mills.

JOHN QUARRIER, Corner Mary and Cannon Streets, Hamilton, Ont.

Saw Manufacturers.

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

SHURLY & DIETRICH, Galt, Ont.—Manufacturers of circular and cross-cut saws, plastering trowels, etc.

Scales.

C. WILSON & SON, 45 Esplanade Street East, Toronto.—Manufacturers of the Improved Wilson Scales. Designers to the Government. Received 29 first prizes, medal and Governor-General's grand diploma.

Scythe Snaths.

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

Silk Mills.

CORRIVEAU SILK MILLS CO., Montreal.—First manufacturers in Canada of black and colored dress silks, ribbons, handkerchiefs, &c.

Stereotypers, Engravers, &c.

F. DIVER & CO., Toronto.—Electrotypers and stereotypers. Designers and engravers on wood.

Stoves.

LARTER BROS., Toronto.—Furnaces, ranges, stoves, marble and marbled mantles. A large assortment of fireplace grate always on hand. Agents for McClary Manufacturing Company, London.

Wire Works.

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

MAJOR & GIBB, 646 Craig St., Montreal.—Manufacturers and importers of wire cloth and wire goods and dealers in railway and mill supplies.

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

Wooden Goods.

C. T. BRANDON & CO., Toronto.—Have special facilities and machinery for the manufacture of all kinds of wooden articles. Correspondence solicited.

R. McLAREN, Jr., 63 College St., Montreal.—Manufacturer of Sharpe's patent safety oil cabinets; also, refrigerators, children's carts' waggons, sleighs and general woodenware.

Woollen Manufacturers.

J. ROUTH & CO., Cobourg.—Woollen Manufacturers.

JOHN WARDLAW, Galt, Ont.—Manufacturer of Scotch fingering, wheeling and knitting yarns.

Wools and Cotton Warps.

WINANS CO., Toronto.—Dealers in wools and cotton warps.

Special Notice.

Societe Postale Francaise DE L'ATLANTIQUE.

BRAZILIAN DIRECT MAIL SERVICE.

WINTER ARRANGEMENTS.

The magnificent new Steamships of this Line are appointed to sail from Halifax, N.S. (on arrival of the mails), on the 14th of each month for St. Thomas, Porto Rico, W.I., and all ports in Brazil and River Plate. Splendid passenger accommodation.

BELGIUM AND FRENCH DIRECT MAIL SERVICE.

The magnificent new steamships of this Line are appointed to sail monthly between Antwerp (Belgium), Havre (France), and Canada direct. Close connection with Rotterdam, Amsterdam and Bremen; unrivalled passenger accommodation. Special facilities granted to Emigrants from Europe. Through tickets issued from any part of Europe to Canada and United States. Through bills of lading granted.

For rates of freight and passage, apply to Kennedy & Hunter, Antwerp; A. Poudavigne, Havre; or to,

WM. DARLEY BENTLEY, Agent General,

317 St. Paul Street, Montreal, And at West India Wharf, Halifax, N.S.

JOHN WARDLAW,

Galt, Ont.

MANUFACTURER OF Fingering, Wheeling, Knitting, Tweed & Cloud Yarns. Woollen and Worsted Yarns a Specialty.

Knitters supplied. Any description of All Wool Yarns made to order.

INTERCOLONIAL RAILWAY.

THE GREAT

CANADIAN : ROUTE !

To and from the Ocean.

For Speed, Comfort and Safety

IS UNSURPASSED!

Pullman Palace Day and Sleeping Cars on all through Express trains. Good Dining Rooms at convenient distances.

NO CUSTOM HOUSE EXAMINATION:

Passengers from all points in Canada and Western States to Great Britain and the Continent should take this Route as hundreds of miles of Winter Navigation are thereby avoided.

IMPORTERS AND EXPORTERS

Will find it advantageous to use this route, as it is the quickest in point of time, and the rates are as low as by any other. Through freight is forwarded by FAST SPECIAL TRAINS: and the experience of the last two years has proved the Intercolonial route to be the quickest for European freight to and from all points in Canada and the Western States.

Through express trains run as follows:

GOING EAST.	GOING WEST.
Leave Toronto 7.12 a.m.	Leave Halifax 2.35 p.m.
" Montreal 10.00 p.m.	" St. John, N.B., 7.25 p.m.
" Quebec 8.10 a.m. next day.	Arrive Quebec 8.20 p.m. next day.
Arrive St. John, N.B., 7.30 a.m., day after.	" Montreal, 6.00 a.m. day after.
" Halifax 12.40 p.m., day after.	" Toronto 10.52 p.m., day after.

The Pullman cars which leave Montreal on Monday, Wednesday, and Friday run through to Halifax without change, and those which leave Montreal on Tuesday, Thursday and Saturday, run through to St. John, N.B. without change.

All information about the route, and also freight and passenger rates, will be given on application to

R. ARNOLD, Ticket Agent, Cor. King and Yonge Streets, 72 Yonge Street, and 20 York Street, Toronto.

R. B. MOODIE, Western Freight and Passenger Agent, 93 Rossia House Block York-st., Toronto.

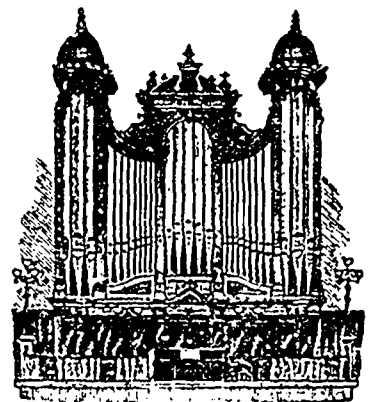
GEORGE TAYLOR, General Freight Agent, Moncton, N.B.

A. S. BUSBY, General Passenger and Ticket Agent, Moncton, N.B.

D. POTTINGER, Chief Superintendent, Moncton, N.B. Railway Office, Moncton, N.B., Nov. 28, 1882.

ESTABLISHED 1836.

S. R. WARREN & SON, CHURCH ORGAN BUILDERS TORONTO,

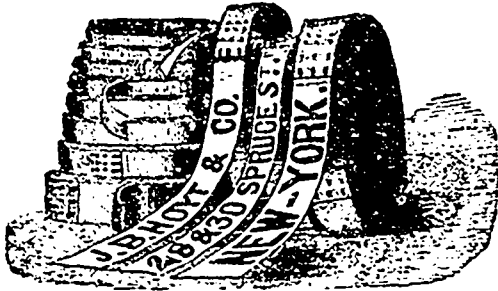


Still take the lead in the manufacture of FIRST-CLASS INSTRUMENTS, and have great pleasure in referring to the many large organs of their manufacture in all parts of the Dominion. Correspondence solicited. Specifications and all information gladly given on application at Factory & Warerooms, cor. Wellesley & Ontario Sts.

HOYT'S

BEST AMERICAN OAK TANNED

Leather Belting.



RICE LEWIS & SON,
TORONTO,

Agents.

H. W. BUTTERWORTH & SONS,

York & Cedar Streets, Philadelphia, Pa.

MANUFACTURERS OF

**DYEING, DRYING, AND
FINISHING MACHINERY**

For COTTON, WOOLLEN, and WORSTED GOODS.

DRYING MACHINES, with cylinders of tinned iron or copper, for PRINT WORKS, BLEACHERIES, &c.

DYEING, SIZING & DRYING MACHINES

For COTTON (CHAIN) WARPS.

TENTERING MACHINES,

With clamp chain for Lawns, Gingham, &c.

TENTERING MACHINES,

with Pin Chain for Woollen and Worsted Goods.

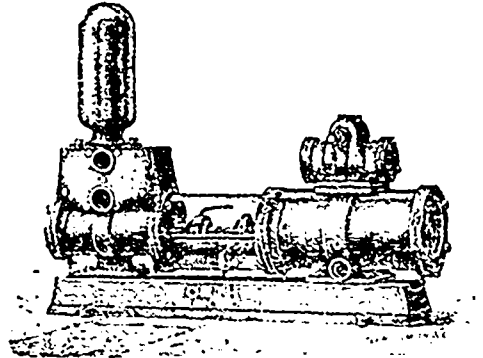
SINGEING, WASHING, CRABBING,

DYEING, DRYING & FINISHING

MACHINERY, for Worsted Dress Goods

PHOTOGRAPHS AND PRICES SENT ON APPLICATION.

NORTHEY'S STEAM PUMP WORKS,



**BOILER FEED PUMPS,
AIR & CIRCULATING PUMPS,
STEAM FIRE PUMPS,
WRECKING PUMPS,
MINING PUMPS,**
Pumps specially adapted for Oil Pipe Lines,
City Waterworks.

SEND FOR CIRCULAR.

Corner Front and Parliament Streets,
TORONTO, ONTARIO.

**THE CHATHAM
MANUFACTURING CO.**

(Limited.)

Capital. . . . \$100,000.

CHATHAM, ONTARIO, CANADA.

JOHN RICE, PRESIDENT.
WM. NORTHWOOD, Vice-PRES.
D. R. VANALLEN, MANAGER.

WM. BALL, ASSISTANT MANAGER.
GEO. E. IRELAND, Secy-Treas.
WM. MILNER, SUPT. WAGON WORKS.

Manufacturers of the Very Best

WHITE AND RED OAK,

WHITE AND BLACK ASH,

HICKORY, HARD & SOFT MAPLE

WHITEWOOD, BALM, BASSWOOD,

AND ALL KINDS OF HARDWOOD

LUMBER AND WHITE OAK SHIP PLANK

Also the Most Extensive Manufacturers of

Wagons, Carts & Sleighs, and Wagon Stock

In the Dominion of Canada.

Having ample capacity for turning out from 3,000 to 5,000 Wagons annually.

R. H. SMITH & CO.,



Sole Manufacturers in the Dominion of Canada of the "SIMONDS" SAW.
ST. CATHARINES, ONT.

All of our cross-cut saws are tempered by the "SIMONDS" PROCESS.

Hand Saws from the cheapest to the very best for sale by

HARDWARE DEALERS.

THE LARGEST SAW WORKS IN CANADA

CANADA MARBLEIZED SLATE WORKS,
HAMILTON, ONT.



MARBLE AND MARBLEIZED SLATE MANTELS.

J. M. DURWARD,
SUCCESSOR TO R. HANGER.

THE HANGCOCK INSPIRATOR.

The best Feeder known for Stationary, Marine,

or

Locomotive Boilers.



All sizes lift water 25 feet. No adjustment required for varying Steam Pressures.

THE INJECTOR PERFECTED

OVER 40,000 IN USE.

No adjustment required for the varying Steam Pressures.

Manufactured by

The Hancock Inspirator Co.,

5 Custom House Square, Montreal.

Manufacturers of Inspirators, Ejectors, and general Jet Apparatus.

THE GALT FOUNDRY

ENGINE and MACHINE WORKS,

FOR

Wood Working Machinery,

Engines, Boilers,

Shafting,

Hangers and Pulleys,

etc., etc.

ADDRESS—

COWAN & Co.,
Galt, Ont.



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

MANUFACTURERS OF

EMERY WHEELS

FOR

FOUNDRIES, MACHINE SHOPS, SAW MILLS, & PLANING MILLS.

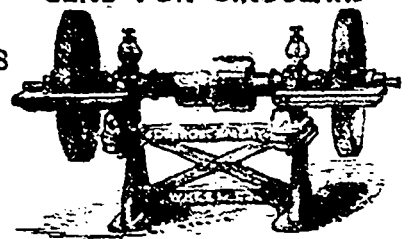
SEND FOR CIRCULAR.

Also

MANUFACTURERS

—OF—

EMERY WHEEL MACHINERY.



Illustrated Price List Sent on Application

BARB
Wire Fencing

FIRST PRIZE

Awarded us at Exhibition held in Montreal, September, 1882, and SILVER MEDAL for the machine used in the manufacture of same.

"THE MANITOBA"



Four-Point Barb Galvanized Steel Wire Fencing. Send for Circular and Price Lists.

THE CANADA WIRE CO.,

H. R. IVES, President & Manager.
Queen-st., MONTREAL.

DOMINION BOLT CO.,

Front and Sherbourne Sts., Toronto.

FIRST PRIZE DOMINION EXHIBITION, 1880.

CARRIAGE BOLTS:

"Best Best."—Made from square and round Norway iron, the latter by patented machinery, ensuring a like full square to that made from square iron.

"Best."—Made from Best Staffordshire iron, same finish as "Best Best," and annealed.

"Common"—Made from Best Staffordshire iron, with 1 lack heads, the burr only being edged.

Railway Track Bolts.

Quality not excelled by any, native or foreign.

Hot Pressed Nuts. Machine forged Nuts.—None better. In a few weeks there will be another machine in operation for small sizes of

Cold Pressed Nuts. Riveting Burrs, and very soon there will be in operation an improved machine for

Plough Bolts. Boiler Rivets. No better and no greater variety can now be had elsewhere of

Fancy Head Bolts for Carriage Builders and others, which always afford satisfaction to buyers.

Machine Bolts. Coach Screws.

Bridge Bolts. Tire Bolts and Rivets.

Sleigh Shoe Bolts. Elevator Bolts.

All of best quality and annealed, not second to any imported.

Stove Bolts. Stove Rods. Rivets.

F. Mumford & Sons

DARTMOUTH,

NOVA SCOTIA.

MANUFACTURERS OF

SHIPS' KNEES,

STEAM FORGING,

CAR AXLES.

MACHINE AND

BOILER WORKS.

ESTABLISHED 1820.
EAGLE FOUNDRY.

GEORGE BRUSH,

14 TO 34 KING AND QUEEN STREETS, MONTREAL,

Maker of

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

and Agent for

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

S. LENNARD & SONS

DUNDAS,

Manufacturers of Plain and

FANCY HOSIERY

To the Wholesale Trade
Only.

REPRESENTED BY

MR. S. DAVISON,

16 Colborne St., Toronto.

AND

MESSRS. R. HENDERSON & CO.,

146 McGill St., Montreal.

J. C. DIXON & BROS.

MANUFACTURERS OF

FINGERING,

KNITTING

and

CARPET

YARNS.

HAMILTON

ONT.

C. T. BRANDON & CO.,

MANUFACTURERS OF

WOODEN GOODS

Central Prison, Toronto.

Washboards,	Express Waggon,
The Domestic,	Step Ladders,
The Crown,	Saw Frames,
The Rattler,	Mops,
Union Churns.	Kitchen Ware,
Clothes Horses,	Turned Goods.

Send for our Illustrated Price List.

CONTRACT WORK A SPECIALTY.

WM. PICKHARDT & KUTTROFF,

(B. Anilin & Soda Fabrik Sp. P.)

NEW YORK.

Anilin Dyes,
Azo Dyes,
Eosin, Etc.

SOLE AGENTS FOR CANADA:

WULFF & CO.

32 St. Sulpice Street,

MONTREAL.

WINANS & CO.,

CHURCH STREET, TORONTO.

FOREIGN AND DOMESTIC **WOOL.**

WOOL for Medium Tweeds,
WOOL for Coarse Tweeds,
WOOL for Etoffes,
WOOL for Medium Flannels,
WOOL for Union Goods of all kinds
WOOL for White Blankets,
WOOL for Horse and Shanty Blankets,
WOOL for everything.

All selected personally by our Mr. BEN. WILSON, now in Europe for the winter.

The Cheapest Wools in Canada
Knitting Wools a Specialty.

Sole Agents Hamilton Cotton Company's First Prize (Silver Medal) Cotton Warps, no other make can compare with them. Every variety at lowest Mill prices. Perfect satisfaction guaranteed. Empty beams returnable at value.

All second-hand Woollen Machinery for sale in Canada, on our books.

Send or printed list, no charge.