

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/  
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été 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	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ROYAL OIL CO., TORONTO  
and  
MONTREAL

CYLINDER  
DYNAMO  
ENGINE

OILS

# AN ADIAN MANUFACTURER

AND INDUSTRIAL WORLD  
DEVOTED TO THE MANUFACTURING INTEREST OF THE

Vol. 33.

TORONTO, JULY 17, 1896.

2.

## Canada Chemical Manufacturing Co.

Manufacturers of

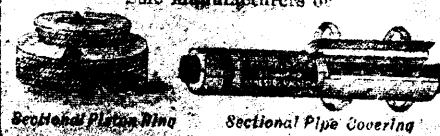
Sulphuric, Nitric, and Muriatic Acids—Commercial and Chemically Pure. Mixed Acids for Explosives. Liquid Ammonia, Glauber Salts, Copperas, Muric Acid, Tin Crystals, Acetic Acid, Nitrate Iron, Bisulphite Soda, Acid Phosphate for Baking Powders and General Chemicals, Fertilizers, etc.

LONDON  
ONT.

**ANILINE LIZARINES**  
DOMINION DYEWOOD & CHEMICAL CO.  
TORONTO  
SOLE AGENTS FOR CANADA TORONTO

## HAMILTON ENGINE PACKING CO.

Sole Manufacturers of



**CLAPPSON'S IMPROVED RING AND COIL PACKINGS**  
ALSO CLAPPSON'S  
**STANDARD ASBESTOS, MAGNESIA, SECTIONAL PIPE AND BOILER COVERINGS**

Asbestos Cement, Packing Paper, and Sheet. Special Covering for Hot Air and Hot Water Pipes—cheaper and better than hair felt.

Rainbow and other sheet packings. Eclipse and Smith's Adjustable Gaskets, etc.  
35 ALANSON STREET, HAMILTON, ONT.

# HAVE YOU TRIED FLEXIFORT? THE BEST BACKING -- YET --

No Stretch. Polished, Hardened and Tempered Steel Wire. Requires no Re-drawing on. Never Grows Hard. Impervious to Oil. Out-wears Leather. Samples and Prices on application.

**THE J. C. McLAREN BELTING COMPANY**  
Factory, Montreal      22 FRONT EAST, TORONTO

CHARLES F. CHASE, Pres.      EDW. F. RANDOLPH, Treas.  
ESTABLISHED 1849.

## THE BRADSTREET MERCANTILE AGENCY

THE BRADSTREET COMPANY - Proprietors  
NEW YORK

Offices in the principal cities of the United States, Canada, the European Continent, Australia, and in London, England.

The Bradstreet Company is the oldest and financially the strongest organization of its kind—working in one interest and under one management—with a large capital and with more capital invested in the business and to pay more money every year for the education and dissemination of information than any other institution in the world. Toronto Office

36 Front St. E., and 27 Wellington St. E.  
THOS. D. IRVING, Superintendent

**THE GUTTA PERCHA COMPANY**  
INCORPORATED IN ENGLAND  
SOLE AGENTS FOR CANADA  
TORONTO

WALKERVILLE Malleable Iron Co., (Limited)

Manufacturers of

**REFINED AIR FURNACE Malleable Castings**

ALSO LIGHT GREY IRON CASTINGS

WALKERVILLE, ONTARIO

**RIDOUT & MAYBEE**  
J. G. RIDOUT (Lawyer)      J. EDW. MAYBEE  
Barrister, Solicitor, Etc.      Mech. Eng.

SOLICITORS OF PATENTS  
PAMPHLET ON PATENTS SENT FREE  
100 Bay Street, Toronto

Patents

Validity and Scope of Patents Investigated. Canada Life Building, 40 St. Mary St., Toronto.

**Tetlow's English ... CARD CLOTHING**  
**Fancy, Worsted, and Mohair Yarns**

MILL SUPPLIES  
 LARGEST STOCK IN CANADA

Wools, Camel Hair, Noils, Peruvian Cotton  
**ROBT. S. FRASER,** 3 St. Helen Street  
 MONTREAL

**McARTHUR,**  
**CORNEILLE & CO.**

**Manufacturers**  
**Importers**

310-316 St. Paul Street

147-151 Commissioners Street

**MONTREAL**

ON HAND AT CLOSEST PRICES

PURE OLIVE OIL

WINTER PRESSED LARD OIL

EXTRA FINE SPINDLE OIL

And a full Assortment of Other  
 Lubricating Oils.

GREASES, MILL SOAPS, ETC.

ALSO

CHEMICALS, DYE STUFFS

DYE WOODS, EXTRACTS, ETC.

SOLE AGENTS IN CANADA FOR

St. Denis Dyestuff & Chemical Co., Paris  
 A. Palquier, President.

Amber Color, Anilin Extract, Cachou de  
 Loral, Etc.

British Alizarine Co., London  
 East and Dry Alizarine.

Stamford Manufacturing Co., New York  
 Dyewoods and Extracts.

Cognet & Co., Paris

Glue, Gelatines,  
 Etc.

Watson, Walker & Quickfall, Leeds  
 Indigo Extracts.

Millerton, Tannin Extract Co.

Hemlock Extract.

Maintain Large Stocks, fully assorted, and  
 will always be pleased to furnish  
 quotations and samples.

## Fire Pails

Should be used for fire  
 purposes only.

Our INDURATED FIBRE-  
 WARE FIRE PAILS, with  
 Round Bottoms, can only  
 be hung or placed in  
 racks, and are always  
 available in cases of  
 emergency.

The **E. B. EDDY CO., Ltd.**

HULL MONTREAL TORONTO

## Leitch & Turnbull

Canada Elevator Works,  
 Queen and Peter Streets, Hamilton, Ont.

Patent Safety Hydraulic Hand and  
**POWER ELEVATORS**  
 Telephone Connection.

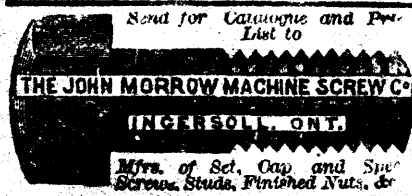
Largest Manufacturers  
 of STEEL and BRASS  
 STAMPS in Canada

**PRITCHARD  
 & ANDREWS**

OTTAWA, ONT.

Rubber Stamps  
 Stencils, Seals, Etc.

SEND FOR PRICES



For IRON FENCING,  
 BANK and OFFICE RAIL-  
 INGS and All Kinds of  
 IRONWORK

Address...

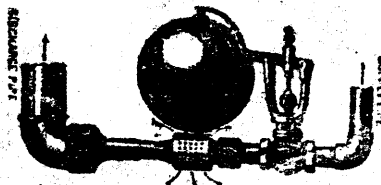
Toronto Fence & Ornamental Iron Works  
 73 Adelaide Street West, Toronto.

## THE BRAENDER

**JET PUMP, WATER ELEVATOR  
 AND CELLAR DRAINER**

Patented  
 May 8, 1881.

This automatic device for removing water from Cellars, Excavations, Trenches, Wheel pits, or any depression where water accumulates, either from Springs, Surface Water, Leakages, or Tide Water, is so constructed as to be not only reliable at all times, but will, with a very small amount of water under moderate pressure, remove a large body of water and discharge it to a higher level. It will prevent the accumulation of water, and its construction is strong, durable, uncorrosive, and is so simple, that it will last for years without attention. *Send for Catalogue and Price Lists.*



**GARTH & CO.,** 536 to 542 Craig Street, MONTREAL.  
 AGENTS AND MANUFACTURERS



**CROSBY STEAM GAGE  
 AND VALVE CO.**

Sole Proprietors and Manufacturers of  
 Crosby Non-Safety Valves, for all kinds of Boilers, Water Relief Valves including  
 the Lind-Walton, which is fully approved by the Associated Factory Mutual  
 Insurance Companies; Crosby Steam Engine Indicators, with Sar-  
 gent's Electrical Attachment; Crosby Improved Steam  
 Gages, Recording Gages and Patent Gage Testers.  
*Original Single Bell Chime Whistles.*

BRANDER PATENT PUMP VALVES

CLARE'S LINEN FIRE HOSE AND ADJUSTABLE COUPLINGS

All Kinds of Pressure and Vacuum Gages used in the Various Arts

Gold Medal Paris Exposition, 1889

Ten Highest Awards Columbian Exposition, 1893

Main Office and Works... **BOSTON, MASS., U.S.A.**  
 Branch Offices at New York, Chicago, and London, Eng.

DO YOU WANT **A Canoe or Row-Boat?**

WE HAVE THEM in all sizes, and at prices which should INDUCE YOU TO BUY

**The Canadian Canoe Co., Ltd.**

BOX 107, ... PETERBORO, ONT.

Send stamp for catalogue and mention this paper.

**FIREPROOF ROOFING**  
 STEEL IRON  
 WRITE FOR CATALOGUE  
 PEDLAR METAL ROOFING CO. OSHAWA ONT.

**The Pulsometer**  
**STEAM PUMP**

OFTEN IMITATED BUT NEVER EQUALLED . . .

•••  
 The handiest simplest and most efficient steam pump for general Mining, Quarrying and Contractors' purposes.

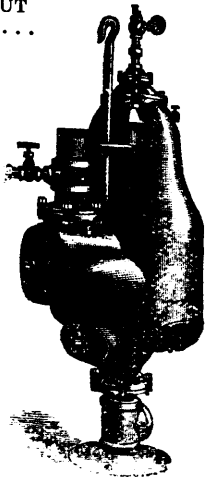
•••  
 Muddy or Catty Liquids Handled without wear.

•••  
 Descriptive Catalogue with prices, furnished on application.

•••  
**PULSOMETER**  
 Steam Pump Co.  
 New York, U.S.A.

**A. R. Williams Machinery Co.**

Toronto and Montreal,  
 Selling Agent for Canada.



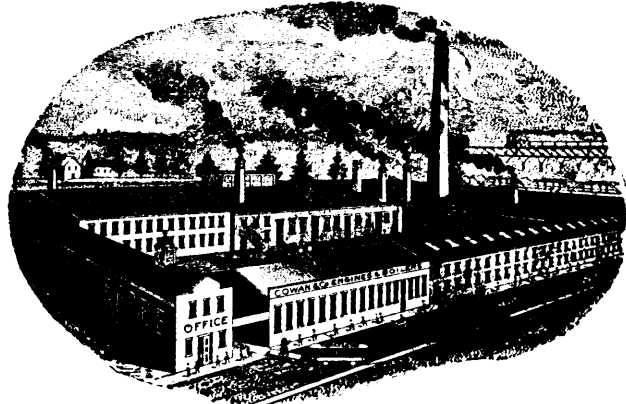
**COWAN & CO., GALT, ONTARIO**  
 Manufacturers of  
**Woodworking Machinery**

•••  
 Corliss and

Slide Valve

ENGINES.

BOILERS.



•••  
**MOFFAT'S**

Patent

Heaters.

Saw Mills.

•••  
 Old Wood Tools, Engines and Boilers, taken as part pay on new. We have on hand a number of . . .

**Rebuilt Wood Tools** which we offer at low prices and most favorable terms. .

**Engines and Boilers** **WRITE FOR** Terms, Prices and Catalogue.



HAMILTON, CAN.

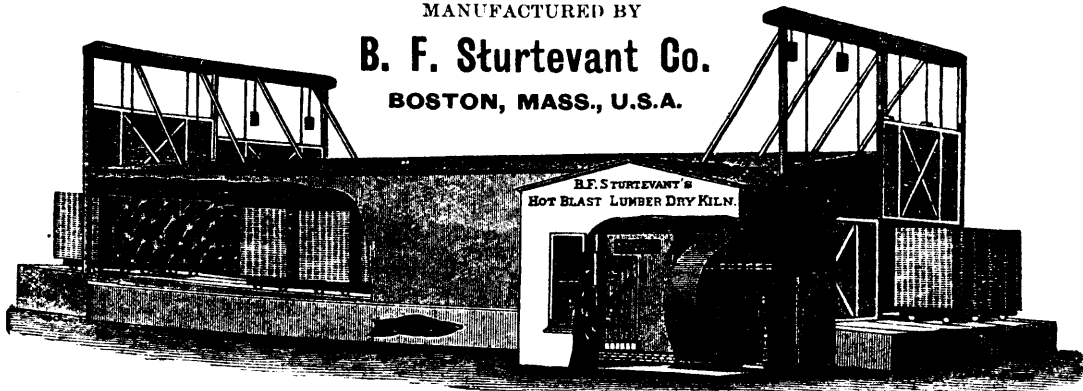
Catalogue on Application.

**The Sturtevant Progressive Lumber Dry Kiln**

Complete .  
 Plans . . .  
 Furnished .  
 With . . .  
 Each . . .  
 Apparatus.

MANUFACTURED BY

**B. F. Sturtevant Co.**  
 BOSTON, MASS., U.S.A.



Absolutely Safe . . .

AS A

**FIRE RISK**

**QUICK DRYING**  
 Economical in use of steam.

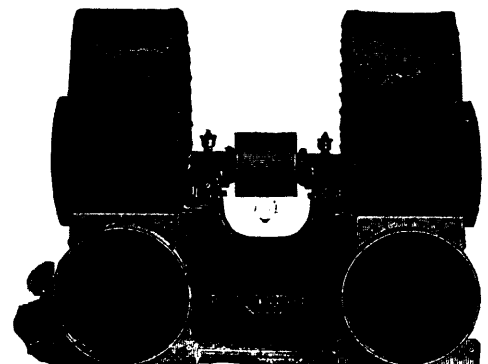
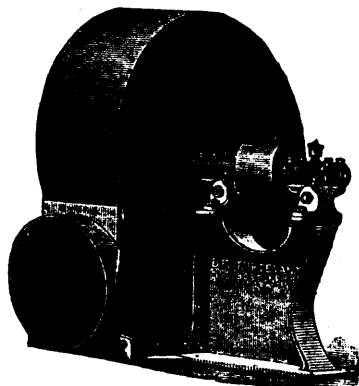
**THE STURTEVANT**  
**Steel Plate Exhaust Fans**

For Removing Refuse from Wood-working Machinery

SEND FOR CATALOGUES

**A. R. WILLIAMS MACHINERY CO.**

GENERAL CANADIAN AGENTS  
 TORONTO, BRANTFORD, MONTREAL



DOUBLE EXHAUSTER

Above  
all

**COMPETITORS**

Coal is money, why not save it by using the

**T.J.C. INJECTOR**

the most economical boiler feeder in the world.

**20 Per cent.**

saved in coal over any other make. Absolutely automatic. Easily attached. Applicable to all kinds of boilers.

**NOT EXPENSIVE**

Will outwear any other make and is simple in construction. It is easy to operate, and is the most powerful feeder in the world.

**The T. J. C. Injector**

is the best because you cannot possibly go wrong with it. With high or low steam the result is equally satisfactory.

It combines the utmost simplicity with perfect efficiency, and any boy can operate it.

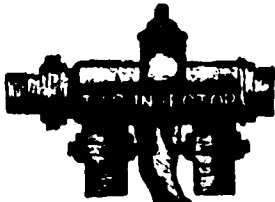
**PRICE LIST :**

No.	Price	Horse Power.
7	\$7 00	4 to 8
10	7 50	8 to 16
15	10 50	16 to 40
20	10 50	40 to 72
25	22 50	72 to 120
35	30 00	120 to 220
45	45 00	220 to 300

**HAMILTON BRASS MFG CO.**

LIMITED

HAMILTON, - ONT.



**BENT RIM WOOD SPLIT PULLEYS**

REID'S PATENT

*The Strongest, Lightest and Best Belt Surface in the World*



No Glue, no Nails in Rim, like Segment Rim Pulleys, to be affected by Steam Dampness or Moist Temperature.

**Every Pulley Guaranteed**

**The Reid Bros. Mfg. Co., Ltd., TORONTO ONT.**

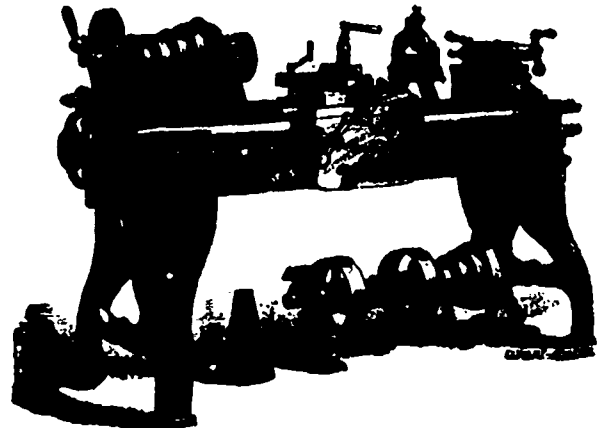
ESTABLISHED 1850

**Robert Gardner & Son**

Manufacturers of

**FINE TOOLS, LATHES, PLANERS**

Shafting, Hangers, Pulleys, etc.



Nazareth, Brennan and Dalhousie Streets, MONTREAL

REDDAWAY'S PATENT

W.A. FLEMING

An Advertiser may occupy this space at the rate of 75 cts. per issue.

# The Caldwell Standard Water Tube Boiler

THE BEST WATER TUBE BOILER IN THE MARKET.

**IRON FOUNDERS**

**BOILER MAKERS**

**MACHINISTS**

**ENGINEERS, Etc.**



General and Manufacturing Agents in Canada for the famous Worthington Pumps, Hydraulic Machinery, Water Meters, Water Works' Supplies and Condensers.

Worthington Pumps are unequalled for Efficiency and Economy.

## JOHN McDOUGALL

CALEDONIAN IRON WORKS, Office, Cor. William and Seigneurs Sts., Montreal

ANDREW ALLAN  
*President*

J. O. GRAVEL  
*Secretary-Treasurer*

F. SOHOLES  
*Man. Director*

J. J. MCGILL  
*General Manager*

# Canadian Rubber Company

(TORONTO)

OF MONTREAL

(WINNIPEG)

Capital, - - - - - \$2,000,000.00

.....MANUFACTURE ALL KINDS OF.....

## RUBBER HOSE

Made with our Patent Process Seamless Tube

Rubber Valves, Packings, Gaskets, Etc.

Superior Quality RUBBER BELTING the following Grades

"Extra Star"

"Extra Heavy Star"

"Fine Para"

"C. R. Co. Stitched"

"Foreyth Patent" Seamless

## First Quality RUBBER BOOTS and SHOES

Western Branch: Cor. Front & Yonge Sts., Toronto

J. H. WALKER, Manager

**ALBERT MANUFACTURING CO.**

Manufacturers of the well-known "HAMMER BRAND"

**Calcined  
PLASTER**

AND...

**Patent Rock Wall Plaster**

**HILLSBOROUGH, N.B., - CANADA**

**Law Bros. & Co.**

**Founders and Machinists**

**OTTAWA, - ONTARIO**



**HYDRANTS, VALVES,  
WATERWORKS SUPPLIES  
SPECIALS.**

Also CASTINGS of every description.



**THE STANDARD DRAIN PIPE COMPANY, ST. JOHN'S, P.Q.**

Manufacturers of Salt Glazed Vitrified Sewer Pipes, Double  
Strength Railway Culvert Pipes, Inverts, Vents, and  
all kinds of Fire Clay Goods.

The Standard Drain Pipe Co of St. John's, P.Q., Ltd. *W. C. THOMPSON,  
President.*

REGISTERED ... BRAND

**The Samson Brand** IS A HIGH  
GRADE OF

**Portland Cement.**

UNIFORM FINELY GROUND RELIABLE  
Quality equal to the best English and German Brands.  
Manufactured by the

**Owen Sound Portland Cement Co., Ltd.**  
**SHALLOW LAKE, - ONTARIO.**

**Over 39,000 BARRELS Sold**

During 1895, and not a single complaint as to quality.

For Prices and further information address the Manager at Works,  
Shallow Lake, Ont., or

**JOHN LUOAS, 377 Spadina Ave., Toronto, Ont.**  
Correspondence Solicited.

**JOHN FORMAN**

DEALER IN

**Electrical Supplies**

**650 CRAIG STREET, MONTREAL**

**Correspondence Solicited Low Prices on everything in the Electrical Line**

Agent, **EDISON & SWAN UNITED ELECTRIC LIGHT CO.,** of London, Eng.

**LARGEST MAKERS OF INCANDESCENT LAMPS, Etc.**

Agent for **THOMPSON Electric Co.'s Advanced Types of ARC LAMPS**

**FOR DIRECT CURRENT INCANDESCENT CIRCUITS,  
STREET RAILWAY AND POWER CIRCUITS,  
CONSTANT CURRENT AND ARC CIRCUITS,  
ALTERNATING CURRENT CIRCUITS**

**NEW CONSTANT CURRENT AUTOMATIC DYNAMO FOR SERIES ARC LIGHTING  
INCANDESCENT DYNAMOS AND MOTORS**

FOR.....  
**RAILWAY AND CONTRACTORS'**  
**SUPPLIES.**

..SEND TO..

**G. & J. BROWN MFG. CO.**

(LTD.)

BELLEVILLE, - ONT.

BRIDGE BUILDERS, ENGINEERS,  
 BOILER MAKERS, MACHINISTS AND FOUNDRYMEN.

..Manufacturers of....

Frogs Diamond Crowings, Switches, Hand Cars, Lorries, Velocipede Cars, Jim Crows, Track Drills, Semaphores, Rail Cars, Double and Single Drum Hoists, Etc.

**NOTICE.**

Manufacturers and Capitalists Patent Acts of 1872, and Amendments, Section 28.

NOTICE is hereby given to all persons desirous of practicing the invention in the manufacture of Aluminum and Alloys thereof, for which certain letters patent of the Dominion of Canada were granted on June 7th, 1889, to Chas. Martin Hall, assignor to the Pittsburg Reduction Co., to wit, Nos. 31,512, 31,513, 31,514, 31,515, 31,516, 31,517; and also the invention in aluminum alloys and manufacture thereof, for which certain letters patent of the Dominion of Canada were granted on July 30th, 1892, to John W. Langley, assignor to the Pittsburg Reduction Company, to wit, No. 39,402, that the undersigned is prepared to grant licenses upon reasonable terms under each and all of same letters patent, and otherwise place the patent inventions in possession of the public in accordance with the provisions of the above recited acts.

Communications to the undersigned may be addressed to 701 Ferguson Building, Pittsburg, Pa., U.S.A.

(Signed) **The Pittsburg Reduction Co.**  
 ASSIGNEE.

**- JAMES W. PYKE -**

....MERCHANT IN....

**IRON AND STEEL**

BOILER PLATES  
 AND TUBES

WROUGHT IRON  
 STEAM AND GAS PIPE  
 COTTON WASTE  
 STEEL FORGINGS

35 ST. FRANCOIS XAVIER ST.  
 MONTREAL.

**DARLING BROS.**

Manufacturers of

**ELECTRIC, STEAM, HYDRAULIC and HAND-POWER ELEVATORS**

and

**Safety DUMB WAITERS**

NEW DESIGNS  
 PERFECT WORKMANSHIP  
 BEST MATERIAL

SEND FOR ILLUSTRATED CATALOGUE

**"RELIANCE WORKS," MONTREAL**



The World-Renowned

**PENBERTHY**

**Automatic Injectors ARE THE RECOGNIZED STANDARD**

Because of honesty in material and workmanship, secured by the employment of the best skilled labor, and the use of the best metal in castings. **No Scrap Metal Used in Penberthy Injectors**

**Penberthy Injector Co.,** 132 Seventh Street  
 Detroit Mich.  
 Branch Factory, Windsor, Canada.

**EAGLE FOUNDRY** | Established 1820.

**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.

**SAFETY ELEVATORS AND HOISTS FOR WAREHOUSES, ETC.**

HEINE SAFETY STEAM BOILERS.

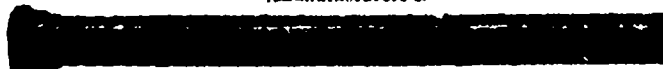
BLAKE "CHALLENGE" STONE BREAKER

**The Attention** OF WOOLEN MANUFACTURERS IS CALLED TO  
**THE TORRANCE PATENT SELF-ACTING BALLING MACHINE**

and positive Creel feed for Wool cards. The latest, best and only feed on the market that will make yarn positively even. These machines are built by **The Torrance Mfg. Co.,** Harrison, (East Newark), N.J., U.S.A., for the States, and by **The St. Hyacinthe Mfg. Co.,** St. Hyacinthe, Que., Canada for the Canadian market.

**DRUMMOND-McCALL**  
**PIPE FOUNDRY CO. (Ltd.)**

Manufacturers of



"Specials," Hydrants, Valves, Etc.

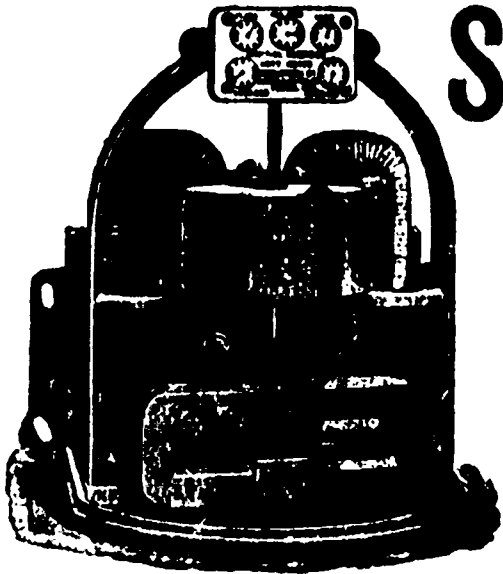
OFFICES:

New York  
 Life . . . .  
 Building,  
 Montreal

WORKS:

Lachine,  
 Quebec..

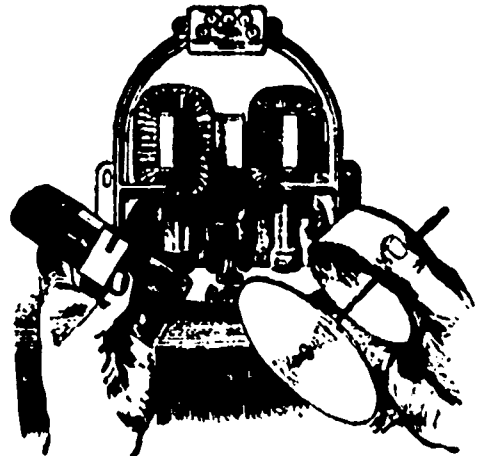




# SCHEEFER METERS

Accurate from 4 C.P.  
Lamp to full load.

No Commutator  
No Brushes  
No Contact Points



MANUFACTURED by THE DIAMOND ELECTRIC CO., PEORIA, ILL.

WE ARE SOLE AGENTS FOR CANADA

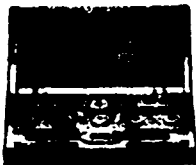
We are now manufacturing all our TRANSFORMERS

We guarantee Efficiency, Regulation and Insulation

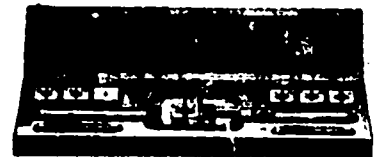
Incandescent Lamps from 5 C.P. to 500 C.P., 3 to 4 Watts per C.P.

The PACKARD ELECTRIC CO., LTD. ST. CATHARINES, ONTARIO.

AGENT FOR MONTREAL. R. E. T. PRINGLE, IMPERIAL BUILDING.

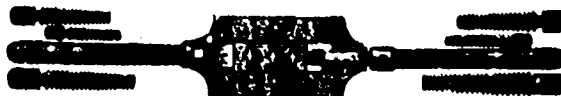


Bicycle Plates in all the most  
desirable sizes and threads.  
Taps and Dies of Every Variety



## BUTTERFIELD & CO.

ROCK ISLAND, P.Q.



## DODGE PATENT SPLIT FRICTION CLUTCH PULLEYS AND CUT-OFF COUPLINGS

—SIMPLE— —EFFECTIVE— —DURABLE—

For connecting and disconnecting lines of SHAFTING, WATER WHEELS, STEAM ENGINES, or other machinery,  
WITHOUT SLACKING SPEED of MOTIVE POWER, Starting or stopping machinery  
without SHOCK or JAR. Sole Manufacturers.

## DODGE WOOD SPLIT PULLEY COMPANY

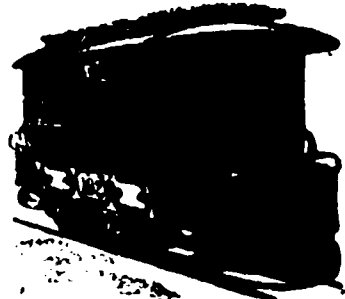
Office . . . 68 KING STREET WEST, TORONTO

# PATTERSON & CORBIN Fine Electric Cars

.. OUR SPECIALTY ..

ST. CATHARINES, - ONTARIO

HORSE and TRAIL CARS OF EVERY DESCRIPTION



## THE IMPERIAL OIL COMPANY, LTD.

HIGHEST AWARDS AT THE WORLD'S FAIR, CHICAGO, UPON

Lubricating, W. W. Illuminating Oils, Paraffine Wax, etc.

WE MANUFACTURE ALL GRADES OF OILS, GREASES, SOAP STOCKS, CANDLES, WOOL STOCKS, LEATHER AND TANNERS' OILS, FUEL GAS, MACHINERY, CYLINDER OILS, Etc.,

And Solicit opportunity to compete against any Oil on the Market.

Write for Prices and Samples.

THE IMPERIAL OIL COMPANY, (Ltd.), Head Office, - PETROLEA, CAN.

BRANCHES.

HALIFAX, N.S. HAMILTON, ONT. QUEBEC, QUE. LONDON, ONT. TORONTO, ONT. WINNIPEG, MAN. ST. JOHN, N.B.  
GUELPH, ONT. MONTREAL, QUE. CHATHAM, ONT. PETERBORO, ONT. VANCOUVER, B.C. MONCTON, N.B.  
STRATFORD, ONT. KINGSTON, ONT. WINDSOR, ONT.

### THE CANADIAN MANUFACTURERS' ASSOCIATION

ALBERT E. KEMP, President.

J. J. CASSIDY, Secretary.

GEORGE BOOTH, Treasurer.

Secretary's Office, McKinnon Building

Cor. Jordan and Melinda Streets, Toronto

Tel. 1274.

#### THE OBJECTS OF THIS ASSOCIATION ARE:

secure by all legitimate means the aid of both Public Opinion and Governmental Policy in favor of the development of home industry and the promotion of Canadian manufacturing enterprises.

To enable those in all branches of manufacturing enterprises to act in concert, as a united body, whenever action in behalf of any particular industry, or of the whole body, is necessary.

To maintain Canada for Canadians.

Any person directly interested in any Canadian manufacturing industry is eligible for membership.

Manufacturers desiring to hold meetings for the promotion of their business are invited to avail themselves of the Board Room of the Association for the purpose, which is offered to them free of charge.

J. J. CASSIDY, Secretary

## DOMINION BRIDGE CO.

(LIMITED).

MONTREAL AND LACHINE LOCKS, P.Q.

Steel Bridges for Railways and Highways,  
Steel Piers and Trestles, Steel  
Water Towers and Tanks, Steel  
Roofs, Girders, Beams, Columns,  
for Buildings.

A large Stock of...

ROLLED STEEL BEAMS, JOISTS, GIRDERS  
CHANNELS, ANGLES, TIES, Z BARS  
AND PLATES ALWAYS ON HAND

IN LENGTHS TO THIRTY-FIVE FEET

Tables, giving Sizes and Strength of Rolled Beams  
on application.

Post Office Address, - - MONTREAL.

J. H. MCGREGOR, Agent, Canada Life Building  
TORONTO, ONT.

# NORTHEY MFG. CO. LTD.

TORONTO, - ONTARIO  
Steam and Power

FOR  
ALL  
DUTIES

# Pumps

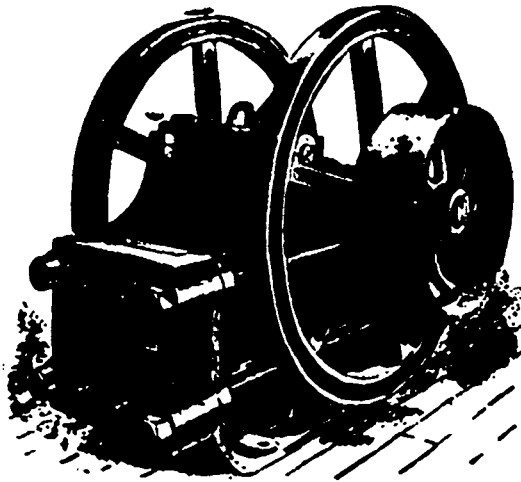
& HYDRAULIC  
MACHINERY

DODGE'S

GIANT

ROCK

CRUSHER



FOR

MINES

QUARRIES AND

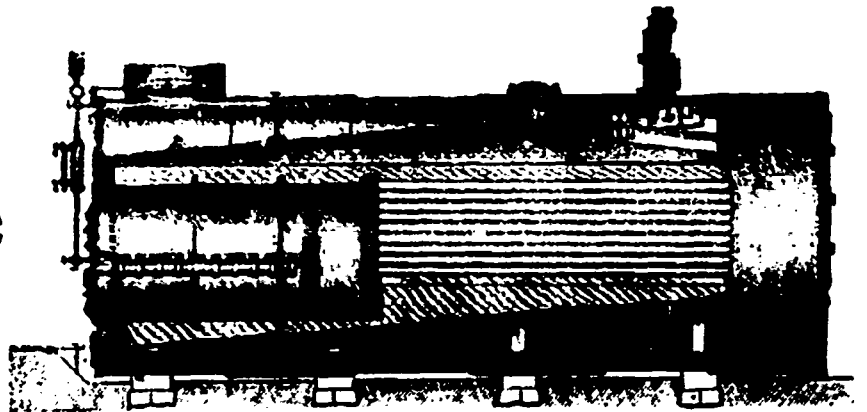
CONTRACTORS

Manufactured  
by ...

Ingersoll-Sergeant Drill Dept., MONTREAL.

THE.....

# Monarch Economic Boiler ...

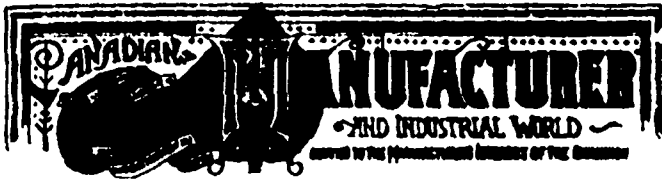


IS PORTABLE— Has an outer casing and requires no brickwork.  
Leaves our shop mounted on skids, ready for use.

... SAVES FUEL— Some tests show a saving of 30 per cent. over common brick-set boiler. We guarantee at least ten per cent.

ROBB ENGINEERING CO., Ltd., - AMHERST, N.S.

WILLIAM McKAY, Seaforth, Ont., Traveller



ESTABLISHED IN 1886.

PUBLISHED ON THE FIRST AND THIRD FRIDAYS OF EACH MONTH

J. J. CASSIDY, . . . . . Editor.

SUBSCRIPTION . . . \$1.00 per year.

ADVERTISING RATES SENT ON APPLICATION.

**The Canadian Manufacturer Publishing Company, Ltd.**

McKinnon Building, Cor. Melinda and Jordan Sts., Toronto.

J. J. CASSIDY, . . . President and Treasurer.

J. G. GARDNER, . . . Manager and Secretary.

OFFICERS OF

**THE CANADIAN MANUFACTURERS' ASSOCIATION**

President, . . . . .	ALBERT K. KEMP.
First Vice-President, . . . . .	D. W. KANE.
Second Vice-President, . . . . .	J. F. ELLIS.
Treasurer, . . . . .	GEORGE BOOTH.
Chairman Executive Committee, . . . . .	R. W. ELLIOT.
Chairman Tariff Committee, . . . . .	W. K. McNAUGHT.
Secretary, . . . . .	J. J. CASSIDY.

SECRETARY'S OFFICE: McKinnon Building, Cor. Melinda & Jordan Sts., Toronto.

**CANADIAN INDUSTRIAL LEAGUE.**

President, . . . . .	JAMES KENDRY.
Secretary, . . . . .	J. J. CASSIDY.

**WOOLLEN MANUFACTURERS' ASSOCIATION**

President, . . . . .	H. HOWLAND, M.P.
Vice-President, . . . . .	JAS. KENDRY.
Secretary, . . . . .	J. J. CASSIDY.

**HAT AND COAT MANUFACTURERS' ASSOCIATION**

President, . . . . .	JOHN PERMAN.
Vice-President, . . . . .	J. HEWTON.
Secretary, . . . . .	J. J. CASSIDY.

**CARPET MANUFACTURERS' ASSOCIATION**

President, . . . . .	JAMES P. MUNNAY.
Vice-President, . . . . .	ROBERT DODDS.
Secretary, . . . . .	J. J. CASSIDY.

**CLOVE MANUFACTURERS' ASSOCIATION**

President, . . . . .	W. H. STOREY.
First Vice-President, . . . . .	JOHN MACLANE.
Second Vice-President, . . . . .	A. R. CLARKE.
Secretary, . . . . .	J. J. CASSIDY.

REPRESENTATIVES TO

**TORONTO INDUSTRIAL EXHIBITION ASSOCIATION**

R. W. ELLIOT.	GEORGE BOOTH.
W. K. McNAUGHT.	SAMUEL MAY.
J. J. CASSIDY.	

**CANADA'S GREAT FAIR.**

This Great Fair and Industrial Exhibition will open August 31st and continue until September 12th. Under the splendid management of Mr. Hill this annual fair has grown up to be the greatest and most attractive Exhibition on this continent. We are assured that it will this year outshine all of its predecessors. An excellent programme of special attractions is being provided, and cheap fares have been secured on all railways in Canada, and special excursions will be run from many of the States. We have every reason to hope that the display

of Canadian manufactures will excel those of any previous year. For particulars, address Mr. H. J. Hill, Manager, Toronto.

**WATCHING AND WAITING.**

The result of the late General Election has given to the Reform party a fair working majority in the new House of Commons. The Hon. Wilfred Laurier has been appointed Premier, and has formed a Government which must be judged by its future policy and administration. The late verdict of the electorate was of such an erratic character, and the results in many constituencies were so unexpected, that it is impossible to decide upon what issues the campaign was mainly fought, or upon what policy the will of the people has been declared. In many Ridings the Manitoba School Question was almost the only determining factor; in other Ridings, almost similarly circumstanced, this question had little influence on the result. In some Ridings the main discussion was over often-refuted calumnies and slanders; in others exaggerated statements as to our enormous debt and annual expenditure were brought into play. In very few cases did the Trade Policy of the Dominion command that attention or exercise that influence which its practical importance demanded. In the Province of Quebec, where the Reform party secured its important gains, the personal popularity of Mr. Laurier, and the very natural desire on the part of French Canadians to place their compatriot in the position of Premier of the Dominion, completely submerged all other influences and considerations.

If manufacturers were to judge of the probable fiscal policy of the new Government by some of the pre-election utterances of Mr. Laurier and prominent leaders and organs of the Reform party they might well entertain grave apprehensions as to the future, as in too many instances there was evinced a spirit of bitter hostility towards the manufacturing industries of the country. Fortunately the license of the hustings must be tempered by Government responsibility. Actions speak louder than words. When the attitude and action of Mr. Laurier in the House of Commons on the question of bounties to the silver, lead and beet sugar industries of the Dominion and the policy of the Mowat Government with reference to the iron, pulpwood, railway and other industries of Ontario are fairly considered, it must be admitted that Mr. Laurier and Mr. Mowat have shown that they are not insensible to the advantages, but, on the contrary, are fully alive to the expediency and necessity of developing and assisting any industry which promises to conduce to the general prosperity. Now that the election excitement has subsided, it is gratifying to note the much more conciliatory disposition exhibited by The Globe and the Reform press generally, towards our manufacturing industries, and the almost unanimous expression of their desire that these industries shall receive such fair and honorable consideration as they may require. It is abundantly evident that the prevailing sentiment of the business community is strongly opposed to any sudden or violent alterations in our commercial policy. Still, there is so much uncertainty with respect to the fiscal policy of the Government, that manufacturers, while watching and waiting for future developments, feel compelled to exercise great caution in every branch of their industries.

A TARIFF COMMISSION.

Considerable discussion is being carried on relative to the appointment by the new Liberal Government at Ottawa, of a commission of experts, to investigate and report on the effects of the operation of the present tariff upon the general prosperity of the country, and to make such suggestions and recommendations with respect to the revision of the tariff, as in their judgment they may consider advisable.

Much good may result from such an investigation and report, if the duty is entrusted to capable and honorable gentlemen, whose duties and judgment are unfettered by any instructions tending to lead to a decision in favor of any party theory or policy. We believe that from among our leading bankers, merchants and manufacturers a selection could be made of men of large business experience and financial ability, who would cheerfully devote their time to this duty, and would treat the subject on strictly business principles, considering every point in the interest of the country at large. The report of a commission composed of men of strong party proclivities, or holding extreme views with regard to free trade or protection would be of no value whatever. What the country requires is a tariff based on such equitable and generally accepted principles as would convey to capitalists and others some assurance of permanence and stability. The absence of any fixed and well understood principles upon which our former tariffs should have been based has proved a serious impediment or obstacle in the way of all new enterprises. In the United States it has long been recognized that very few of the members either in the House of Representatives or in the Senate are sufficiently conversant with business operations as to be able to form an intelligent or independent judgment on the various items of the tariff, the discussions on which are mainly conducted by professional politicians whose only qualification is that of long speeches. A very general feeling prevails among the leading commercial men and press of that country, that it would be well if a change in the constitution could be effected, under which the regulation of the tariff should be entrusted to a commission of experts, whose decisions should remain in force for ten years, any amendments proposed to require a two-thirds vote of both houses of Congress. A very casual reference to the debates in our own House of Commons shows how very few of its members are qualified for an intelligent discussion of a subject which only practical business experience could enable them to handle.

One of the duties of the proposed Commission would be to hold meetings at which parties proposing to establish new industries or to extend existing ones could submit their propositions for aid or encouragement, and to decide to what extent, if any, these propositions should be entertained.

We can only repeat that we believe that the decision and recommendations of a well selected commission may be productive of much benefit, and would exercise a large influence on the opinions and actions of Parliament, and upon public opinion generally.

DEPRECIATION OF FARM PROPERTY

It is greatly to be regretted that in order to create disaffection towards Government, the politicians of Canada have found it expedient to create among its people a feeling of dissatisfac-

tion with their present condition and of despondency as to the future. A fair and candid comparison of our position with that of other countries including the United States, shows that Canada has suffered less than in any of them from the depreciation of the value of farm products.

According to the returns of the Bureau of Industries for Ontario, the decline in the value of farms and farm buildings in this Province, between the years 1880 and 1890 was 1.83 per cent. According to the census of the United States the decline during these years, was, in Maine, 3.7 per cent.; in New Hampshire, 12.7 per cent.; in Vermont, 26.5 per cent.; in Massachusetts, 12.8 per cent.; in Rhode Island, 15.5 per cent.; in Connecticut, 21.5 per cent.; in New York, 8.3 per cent.; in New Jersey, 16.6 per cent.; Pennsylvania, 5.5 per cent.; in Ohio, 6.8 per cent. In every one of these States the depreciation has been much greater than in Canada.

The United States census for 1895 shows a deplorable falling off in the value of farm products, including live stock. The following is taken from the columns of the New York Journal of Commerce:—"The statistics of farm animals published by the Department of Agriculture tell a melancholy story. The aggregate value of farm animals increased for many years until it reached a climax in 1884, and then declined somewhat, rising again till in 1893 it was a little higher than in 1884. At the present time, the value is \$755,580,597 less than it was in 1893." This is a disastrous decline for three years. All animals except milch cows participated in the decline.

Nor has the decline in values been confined to animals, but has extended to all farm products. The New York Produce Exchange Reporter supplies the following figures:

	1891.	1895.
Wheat, value.....	3513,472,711	2237,338,396
Corn ".....	836,439,238	567,509,106
Oats ".....	232,312,267	163,655,068
	1,582,224,206	969,103,172
Decrease .....		613,121,034
Add decrease in value. Hay, potatoes and buckwheat..		207,452,282
" " Farm animals.....		755,580,597
		\$1,576,133,913

If Canadian farmers, who feel disheartened over the present position, would carefully consider the above figures, they should feel satisfied that if matters are unsatisfactory here, they have been immensely worse in the United States. If the seventy million people market there has done so little to maintain prices for their own farmers, how is it to be expected that such a market will prove of any value to Canadian farmers?

FREE TRADE PLATITUDES.

It would prove an endless task to quote and refute the many silly platitudes by which the advocates of Free Trade in Canada attempt to establish their pet theory, and dispute the practical advantages resulting from Protection. Three of these may at present be referred to:—(1) That Free Trade promotes, while Protection retards the growth of foreign trade; (2) That Protection imposes on the consumers of a protected country the payment upon home-produced merchandise of an additional price equal to the customs duty levied upon similar articles imported from a competing country; (3) That Canadians, being endowed with brain, brawn and muscle equal to, if not superior to those of any people in the world,

are, therefore, qualified to compete in manufacturing or any other pursuit with any country and without any protection.

With respect to the first proposition, constant reference is made to the fact that Free Trade England is the Queen of Commerce, especially foreign commerce, and it is argued that she has attained to and maintains this position through the adoption and continuance of its Free Trade policy. While admitting the pre-eminence of England in this respect, and while as sincerely desirous as any free trader can be that the mother country may long retain its supremacy, the Manufacturer believes that this supremacy can only be preserved by a reversal or, at any rate, by a considerable modification of its present trade policy. It is not sufficient for the vindication of Free Trade to show that England still enjoys the largest foreign commerce of any country in the world, but it is necessary to show that this commerce is increasing in as rapid proportion as is the foreign trade of competing countries where the policy of protection is in operation. In illustration of this point the following comparisons are taken from page CIV. of the Commerce and Navigation of the United States for 1892:—

ANNUAL AVERAGES.

General Imports.	United Kingdom. Dollars.	Germany. Dollars.	France. Dollars.	United States. Dollars.	Spain. Dollars.
Ten years, 1871-1880.	1,807,296,285	1,115,361,116	926,572,966	234,949,861	97,716,572
1881-1890.	1,920,269,568	1,131,369,628	1,048,537,361	701,862,129	153,513,647
Increase.....	112,973,283	15,988,512	121,964,395	157,912,268	55,797,075
Per cent. of increase	6.26	1.18	11.91	29.03	37.06

General Exports.	United Kingdom. Dollars.	Germany. Dollars.	France. Dollars.	United States. Dollars.	Spain. Dollars.
Ten years, 1871-1880.	1,352,023,236	891,124,913	861,149,443	618,067,216	97,861,366
1881-1890.	1,411,237,067	1,063,234,956	868,137,375	763,963,132	144,973,053
Increase.....	59,213,831	172,110,043	7,987,932	145,895,916	47,111,687
Per cent. of increase	6.82	21.75	.92	23.60	48.55

General Imports and Exports.	United Kingdom. Dollars.	Germany. Dollars.	France. Dollars.	United States. Dollars.	Spain. Dollars.
Ten years, 1871-1880.	3,154,216,521	2,006,486,029	1,787,722,406	1,162,017,077	195,577,938
1881-1890.	3,331,506,635	2,194,604,584	1,916,674,736	1,465,825,261	298,986,700
Increase.....	177,290,114	188,118,555	128,952,330	303,808,184	103,408,762
Per cent. of increase	6.30	10.29	6.66	26.15	52.90

\* Average of nine years, 1872-1880 inclusive.

It is seen that the average increased per centage in the United Kingdom and France was about the same; as compared with Germany the aggregate average yearly increase was about the same, but the per centage of increase in the United Kingdom was only 6.50, as compared with 10.29 in Germany; in the case of the United States the aggregate increase was about 50 per cent. greater than in the United Kingdom, and the percentage of increase was over four times larger in the former than in the latter; in the case of Spain the percentage of increase was eight times greater than that of Great Britain. The population of the United Kingdom in 1880-81 was 34,788,000; in 1890-91, 37,795,000; the increase being 8.64 per cent., as compared with 6.50 per cent. increase in foreign commerce, showing that the latter did not increase in as large proportion as the former. Does this afford any convincing evidence of the virtue of its Free Trade policy? As against this small and unsatisfactory increase in the ten years' foreign commerce of the United Kingdom there is the weighty effect of the alarming depreciation in the annual value of its grain, animal and other farm products caused by its Free Trade policy. Strongly imbued with Free Trade doctrines as the great majority of the people of England have been, stubborn facts are rapidly undermining this faith, and

in many and quite unexpected quarters, agitation has sprung up in favor of a thorough investigation of the present position under which England admits to its markets, duty free, the merchandise of countries which are every year placing greater duties and restrictions on the imports of English goods. Hence, has arisen the increasing popularity of the sentiment of Imperial unity and preferential trade with all British Colonies.

Coming home to the foreign commerce of Canada, it will be found that the theory of the free traders is thoroughly refuted. So far from the policy of protection having proved an impediment to this branch of our trade, it has proved a mighty stimulus. The Trade and Navigation Returns show that the average annual value of the exports and imports of the Dominion during the five protection years 1889-90 to 1894-95, over that of the five years of revenue tariff, 1874-75 to 1878-79, increased 33.85 per cent.; and this in the face of the enormous expansion in home manufactures. Every new or extending industry creates a demand for foreign goods, and adds to the quantity and value of our exports.

A kindred fallacy to that with respect to foreign commerce is the theory that high duties are destructive to the revenue from customs. Here again the Trade and Navigation tables completely refute this contention. The average annual revenue from customs duties during the five years of revenue tariff, 1874-75 to 1878-79, was a little over \$13,300,000; during the five years of protective tariff ending 1894-95, the average was nearly \$20,500,000.

With respect to the second proposition that protection necessarily imposes high prices on consumers. The Trade and Navigation Returns, for the year ending June 30, 1895, show that the Dominion imported during that year of manufactured goods:—

From	Value.
Great Britain.....	\$27,912,523
United States.....	22,488,401

In metals of all kinds and manufactures therefrom, general hardware, oils, manufactures of wood, miscellaneous articles other than fancy dry goods, gutta percha, rubber and leather goods, books and stationery, drugs, dyes and chemicals, we imported much more largely from protective United States than from free trade Great Britain. In many of these classes nearly the whole of our imports came from Great Britain only a few years ago. Taking price and quality together it is evident that in the above articles Canadian buyers obtained better value in the protectionist country than they could in the free trade one. What then becomes of the contention that protection means dear goods? The following statements with reference to the iron trade of the United States and Great Britain illustrate what protection may accomplish, both as to expansion of trade and prices of products. The statements are taken from The Manufacturer, published in Philadelphia.

Last week, in the columns of this journal, we showed how the United States, a few years ago far behind Great Britain as a producer of pig-iron, has now overtaken that country, and become the foremost among the nations manufacturing that article. The figures which represent the forward movement of this country as a producer of steel are equally remarkable. England had a long lead at the beginning of the race, but by 1855 the production of Bessemer ingots was proportioned between the two countries as follows:—

## PRODUCTION OF BESSEMER INGOTS.

1886.	Tons.
Great Britain.....	1,304,127
United States.....	1,519,430

Within ten years the figures had changed thus:—

## PRODUCTION OF BESSEMER INGOTS.

1896.	Tons.
Great Britain.....	1,535,225
United States.....	4,007,128

In the production of the open-hearth steel ingots the change has not been so great, but still the headway gained by this country has been noteworthy. Thus:—

## PRODUCTION OF OPEN-HEARTH STEEL INGOTS.

1886.	Tons.
Great Britain.....	583,918
United States.....	133,376

1896.	Tons.
Great Britain.....	1,724,737
United States.....	1,137,182

This is the result of the protective tariff which gives to us an opportunity to try to supply our own wants from our own resources.

These figures show what protection has done towards expansion of the iron and steel industries of the United States. The following shows what can be accomplished by home skill after a few years of experience, in the way of reducing cost. In 1867 steel rails cost in the United States \$166.00 per ton; in 1872, \$112.00; in 1880, \$67.50; in 1895, \$22.00 to \$24.00. The duty on steel rails is \$13.44 per ton. Will any one pretend that the United States railway companies are compelled by this protection duty to pay more for steel rails than they would be able to procure foreign rails for, even if free of duty? United States steel rails are now so cheap that they are frequently imported into Canada in preference to English rails. Very many instances could be given of same purport. Under a like policy, the iron industry in Canada would expand in same proportion as in the United States.

The above statements conclusively disprove the assertion that protection is an injustice to the consumer. Its aim and object is to provide the greatest possible diversity of employment for which the country affords a fair field of enterprise, by securing for capital and labor the home market. Its immediate effect may be to make goods a little dearer for a short time than under free trade; this disadvantage being counter-balanced by the indirect advantages accruing to the country through the diversification and expansion of its industries, the ultimate and early result will be that through the accumulation of capital, experience and skill, all kinds of goods for which the resources of the country are adapted will be produced of as good quality and at as low prices as in any country in the world.

With respect to the third proposition, that Canadian brain, brawn and muscle are equal to competition with any country, and therefore require no protection. This is simply clap-trap. Add the expression, "all other conditions being equal," and the Manufacturer will assent. In addition to these qualifications, there are required for success in all branches of commerce and manufacturing, capital, experience, skill and established connections. To claim that a young country like Canada, even with its great natural resources and vigorous and intelligent population, should be able to compete in manufacturing, etc., with old countries which for ages past have been

accumulating capital, experience and skill, is as sheer nonsense as to contend that a regiment of raw recruits, however hardy, brave and intelligent, should be able to compete on an open field with a regiment of highly disciplined veterans. Give to Canadians the same training and equipment as to their competitors, and then and not till then can they be expected to compete successfully. Training and equipment either of men or nations require time and expenditure, and being necessary, both the time and the expense must be granted. Protection to home industries is what education is for the young men and girls. In either case there may be a little temporary national or family sacrifice, but in both cases the ends to be attained are so eminently desirable that only selfishness or penuriousness would grudge the expenditure required.

The position of the opponents of the National Policy must be weak indeed, when they are compelled to resort to gross misstatements and fallacious conclusions which established facts completely disprove and refute.

## THE NATIONAL POLICY AND THE EXODUS.

The census returns were made to do some strange duty during the last election campaign. Special items separated from their context were made the basis of very deceptive conclusions. Many hours of speechifying and many columns of newspapers were occupied in dilating upon a fact that no one disputes, viz:—That in many of the long settled and rich agricultural counties in the province of Ontario, there had been an actual decrease in rural population, and not only this, but that the increase in the population of the whole Dominion had been smaller than the natural increase. From these two facts it was argued that during the ten years, 1881 to 1891, there had been a considerable exodus of Canada's population. On this slender proposition, the conclusion was drawn, that inasmuch as the National Policy was in operation during these ten years, therefore it was the cause of the alleged exodus. Queer conclusion, that because two facts are coincident, therefore the one must be the cause of the other, while it may really be that the alleged cause actually mitigated the result which a variety of other causes produced; and this is just what a fair consideration of the census would have established. From the isolated item showing a slight decrease in rural population, it might be inferred that there had been an abandonment or neglect of many farms. Reference to another point established by the census shows the true position of the agricultural industry, and the actual cause of this decrease in rural population; and as the political hacks who have been misleading the people on this subject must have been quite cognizant of this point, it was discreditable on their part to withhold and conceal it. The census returns show that during the ten years, 1881 to 1891, there was an actual increase of 6,638,062 acres in improved lands throughout the Dominion, the increase being 30.31 per cent. This is quite a favorable exhibit. On the other hand, there was a decrease of 7,206 in the number of farmers and farmer's sons in 1891, as compared with 1881, the decrease being 1.09 per cent. The statistics show that in 1881 there was a farmer or farmer's son for every thirty-three acres of improved land, while in 1891 the proportion was only one for every forty-four acres. Here is found the true reason for the decrease in rural population. It was not that there had been

any diminution in the agricultural products of the country, but because from the rapid extension of the use of agricultural implements, and the conversion of grain farms into dairy and cattle feeding farms, full twenty-five per cent. less laborers were required for the 100 acres than were required in 1881.

Fortunately, the city and town population increased during these ten years by 477,976 souls, or 28.77 per cent., and this through the extension of manufacturing industries produced by the National Policy. The laborers withdrawn from the farm found employment in the cities. Is it not then evident that instead of having been the cause of the alleged exodus, this National Policy proved the means of preventing such an exodus as must necessarily have occurred but for the employment furnished by manufacturing establishments and the other industries promoted by them? Undoubtedly it prevented rather than caused any decrease in population.

### PROFITS OF MANUFACTURING.

It was amusing but rather humiliating to witness the gross ignorance displayed on this subject during the platform and press discussion through the late election contest. Much reckless and stupid denunciation of the National Policy was based on the ridiculous assumption that the balance between the cost of wages paid and material used and the value of the products of manufacturing establishments, as given in the census returns, represents the amount of profit derived by the manufacturer. It is unfortunate that the discussion of commercial and financial questions is so largely confined to political windbags who have no acquaintance with business or business methods. No man of any business experience could fall into the mistake of using such an argument. They know that there are many very important items of expense in manufacturing, in addition to wages and cost of materials used.

A similar misconception seems to have prevailed to some extent in the United States, and is thus dealt with by Mr. Carroll D. Wright, Commissioner of labor in charge, in his bulletin dated Washington, February 20, 1894, addressed to the Department of the Interior:—

"The difference between the apparent cost and the value of the manufactured product can not be taken as indicating the profit or earnings of capital, because many items of expense enter into the mercantile portion of the business, which branch is not within the scope of the census enquiry.

"The data furnished in the reports relating to the depreciation of manufacturing plants are not sufficient to form a basis for correct computation, and therefore are omitted from these tables."

In the United States census for 1890, a statement of "miscellaneous expenses" was taken, which was not done in the census for 1880, nor is such a statement included in either Canadian census for 1881 or 1891. In the United States this item of "miscellaneous expenses" includes rent for tenancy, taxes (including internal revenue), insurance, ordinary repairs of buildings and machinery, amount paid contractors, interest paid on cash used in the business, and all sundries not elsewhere reported. In 1890, this item amounted to \$630,944,058, or about 6.73 per cent. on the total value of the products. The value of the buildings, not including land, and

the machinery, tools, and implements was \$2,462,987,817. A fair average allowance for depreciation and renewals is about 10 per cent. per annum.

In 1890 the value of the products of all the manufacturing establishments in U. S. was.	\$9,370,107,624
" amount of wages paid.....	\$2,282,823,205
" value of material used ....	5,158,868,353
Balance.....	\$1,928,416,066

According to the superficial view of free trade agitators, this balance represents the profit of the manufacturers, and would be that 20.58 per cent. of the value of the products consists of profit.

But when from this balance is deducted "miscellaneous expenses," 6.73 per cent.....	\$630,944,058
depreciation and renewals, 10 per cent.....	246,298,785
The balance is reduced to.....	\$1,051,173,163

And the apparent profit is reduced from 20.58 to 11.22 per cent.

From this there remains to be deducted transportation from factory to warehouse, warehouse and office and traveller's expenses, brokerages and commissions, discounts on sales, bad debts, etc.

In Canada, the value of the products of all manufacturing establishments in 1890, was.....	\$467,183,356
The cost of wages paid.....	\$100,656,502
The value of raw material.....	256,060,145
Balance.....	\$110,466,709

Making 23.65 per cent. of the value of the products as apparent profit.

This result does not vary very materially from that ascertained in United States.

The average capacity of factories in Canada is about one-tenth of the average in the States. The percentage which miscellaneous expenses and depreciation of plant bear to annual value of product must necessarily be very much higher here than there.

It is to be hoped that the discussion of manufacturers' interest and their profits will in future be more generally intrusted to intelligent critics who have a practical knowledge of the subject.

### ANOTHER ENGLISH FREE TRADE JOURNAL IN DOUBT.

The British Trade Journal, July 1st, in commenting on a work entitled, "Made in Germany," by Ernest Edwin Williams, thus writes:—Although as free traders we may scoff at many of the conclusions arrived at by Mr. Williams' note should be taken of the fact that this is but one of several volumes of a similar kind which the last few years have published. It is not quite clear why Mr. Williams should have selected Germany only as an illustration of the success with which protective countries can compete in neutral markets, including the home market, with free trade England. Other instances could have been cited in the case of Belgium, France and the United States. The author is not, however, very far from the mark in regarding the Kaiser's dominion as the most active and energetic of our industrial and commercial competitors. It does not require very much argument or very many statistics to convince the English manufacturer and the agriculturist that our system of free imports, exposing them as it does to the world's competition in the home market, is ex-



remely irksome. The manufacturer would like to use free raw material and to be sure of a secure market at home with better prices, in order that he might take a leaf from the book of his German competitor, and reduce prices in neutral markets abroad. While not endorsing all the conclusions and statistics which the author brings forward, we do not think the truth of his general proposition can be denied, even by the most hide-bound free traders; and this, briefly stated, is, that the industries and commerce of Germany are now increasing at a greater rate than the manufactures of this country; or, in other words, that protective countries are making as much industrial and commercial progress under protection as this country made twenty or thirty years ago under free trade."

Evidently, the heaven of protection is at work in free trade England.

#### TRADE WITH AUSTRALIA.

The MANUFACTURER has received a long and interesting letter from Mr. I. S. Larke, Commercial Agent of the Government of Canada, dated Sydney, N.S.W., June 9th.

Mr. Larke complains that some of the letters which he receives are so indefinite and lacking as to details of information necessary towards securing business, that he has been unable in some cases to accomplish what might otherwise have been successful results. He further complains that in some cases letters and catalogues and other matter have been sent insufficiently prepaid, and although the letters have been forwarded subject to double postage, other matters advised as having been mailed, have not been received.

Mr. Larke sends the following hints for correspondents:—

He cannot act as Australian agent for the purchase or sale of any merchandise. His duties are to help any Canadian firm desiring to trade with Australasian colonies, by obtaining such information respecting markets there as he may be able to secure by bringing goods before Australian houses, by recommending suitable parties as agents, and responsible parties to whom to sell, and seeing that these parties act honestly and faithfully.

In writing, write as though your goods were unknown there. State what use or uses they are adapted for, what are their special merits, of what size or capacity. Quote price in Sydney via Vancouver, also price delivered in New York and, if possible, in London; give quantity or number of articles in each package, with cubic measurement and the weight of package. This enables the freight from New York or London to be calculated in Australia. Freight rates via Vancouver, low as the C. P. R. and Canadian steamers are quoting, are a good deal higher than via sailing vessel from New York. Hence, when Canadian goods are quoted with the high rate of freight against U. S. goods by the cheaper rate, the former would probably be out of the market when price, by the cheaper route would be found to be right. The probability is that in the end the Vancouver route will get the trade, as its regularity and speed are being appreciated, but it will not do to quote by that route alone.

If possible, send samples of all articles you wish to introduce. Mr. Larke recently received a model letter, accompanied with an intelligible catalogue, price list and samples. Although the goods were little used there, the first house to whom they were presented sent a sample order, and if the

goods prove to be as represented, they will handle them, and several commission houses wish to secure an agency.

Prices and information sent to Mr. Larke will be held in confidence and only used as the necessity arises. If better prices can be obtained than those quoted, better prices will be asked.

The following caution is given:

Before selling or consigning to any firm in Australia, consult Mr. Larke. On his arrival in Sydney he found a consignment of a Canadian manufacturer's goods in the hands of one of the most arrant rascals there. They were sent to an auction room, sold for what they would bring, and none of the proceeds will ever come to the shipper. A firm may be capable and of the highest reputation, but may not prove a desirable agent. Mr. Larke tells of a large consignment entrusted to a very wealthy firm in Sydney, accustomed to big transactions. The goods were promptly offered to the wholesale trade. None knew the goods or would buy at a reasonable figure. They were held for some time, expenses being incurred and were finally sold at a serious loss. If a small quantity had been sent through Mr. Larke, he would have selected a suitable person to work off the goods among retail merchants until their merits were understood. He is sure that a profitable trade could have been secured for this class of merchandise.

#### THE BEET SUGAR INDUSTRY.

In the seasons of 1889, 1890 and 1891, a series of extensive experiments in the cultivation of sugar beets in this province was prosecuted under the auspices of, and mainly through money furnished by, the minister of agriculture for the province. The results were eminently satisfactory and successful, as may be seen from the annual reports of the department for these years, which contain statements of the analysis of the roots made at the laboratory of the Ontario College Farm at Guelph; full details as to the methods of cultivating followed by the farmers in many of our counties; their opinions as to yield and profitableness of this crop, and their willingness to undertake its cultivation on a sufficiently extensive scale to provide an ample supply for large beet-sugar factories.

Mr. Carl Trostorff, the consulting engineer for the Langen-Hundhausen machine factory in Grevenbroich, Rhenish Prussia, (which furnished two full sets of machinery for beet sugar factories for Mr. Claus Spreckells in California, one set for Messrs. Oxnard in Nebraska, and part of the machinery for the factory at Lehi in Utah), spent a large portion of the seasons of 1890 and 1891 in this province, with the view of ascertaining the adaptability of the soil and climate for sugar beet cultivation, and of judging as to the prospects of establishing the industry here. Mr. Trostorff visited a number of districts where the experiments in cultivation were being carried on; he personally inspected a great many of the crops, and interviewed the farmers as to the price at which they would be willing to contract for cultivation on a sufficiently extensive scale. The result of his investigation was that both as to yield per acre and quality of the roots, many sections of this province excelled the best beet lands of Europe, and that farmers were anxious to undertake this crop cultivation at the price per ton which he submitted to them, and to any extent which the capacity of proposed fac-

torics might demand. Unfortunately foreign sugar was put on the free list, and with large export bounties paid in France, Germany, Austria and Russia, a Canadian beet-sugar factory could not be profitably worked, hence the project was deferred until some change in the sugar policy of the Dominion should warrant capitalists to engage in the industry.

The above firm, now entitled Maschinenfabrik, Grevenbroich, Rhein Provinz, has kept in view the prospect of establishing the industry here, and having learned of the sugar policy adopted by Parliament in May, 1895, have renewed their correspondence and enquiries on the subject. In August 1895, two representatives of the firm, Mr. Wilhelm Kathol, consulting engineer, and Mr. Ernest Otten, foreign agent, visited Ontario. The latter gentleman was for some time superintendent of the large beet sugar factory in Chico, California, and is thoroughly acquainted with all the details of sugar beet cultivation and beet sugar manufacture. They called upon Mr. Rob. H. Lawder, Whithy, who took them to inspect several plots of sugar beets which were being cultivated in that neighborhood. Although the crops were not fully matured they were sufficiently far advanced to enable them to decide that in appearance of foliage, size and shape of roots, and texture of the flesh, and promise as to yield and saccharine richness, they excelled any average crop in Europe. They were delighted with the condition and soil of the farms, and all uncertainty as to the adaptability of such lands for sugar beet cultivation was removed. After satisfying themselves on this point, they made numerous enquiries as to cost of buildings, price of coal, coke, lime and labor, and drew up an estimate of the probable earnings and expenditures of a beet sugar factory having a capacity for working 500 long tons of sugar beets in every twenty-four hours. The initial cost of a large factory and the expenses of operating it bear so much smaller per centage to the earnings than in the case of a smaller factory, that they were very decided in their opinion that any beet sugar factory to be built should be of at least the above capacity, and so constructed as to dimensions of buildings and such parts of the machinery of which there is only one, as to admit of economical enlargement to 1,000 tons daily capacity. It is proposed that the factory should be constructed to be operated on the "Bock" system, under which all the sugar produced is white granulated. At the time of their visit the customs duty on imports of raw sugar was one-half cent per lb., and the bounty on home made sugar manufactured from Canadian beets was one cent per lb., but was only granted for sugar made from the beet crops of 1895 and 1896, so would not be available for the benefit of any new factory. After close calculation they arrived at the conclusion that even at the low present price of sugar, the fiscal legislation was sufficiently liberal to induce foreign capitalists to engage in the industry here, if they could be in any way assured of the continuance of this policy for five years, during which all the initial risks and difficulties to be encountered in perfecting an almost wholly scientific process of cultivation and manufacture would be overcome. They felt confident that at the end of five years the skill in cultivating and manufacturing would be so much improved that Canadian beet sugar factories would be enabled to produce as good sugar and at as low a cost as at any of the largest and most successful factories in Europe. With this impression they left for Germany, and have submitted all the informa-

tion and figures to capitalists there. The firm advises that so soon as the legislation necessary to success has been passed the foreign capital required will be provided at once. The firm has sent specifications and estimates of the cost of the machinery of a 500 ton factory, with an estimate of the additional cost of the machinery for enlargement to 1,000 tons daily capacity. About one-third of this machinery, engines, boilers, and other non-technical parts are marked in the specification as work which should be made in Canada to better advantage than if imported. An idea of the magnitude of the machinery required may be formed from its weight aggregating over 900 short tons. The proposed paid up capital for each 500 ton factory is \$500,000.

During the season of 1895, several experiments in sugar-beet cultivation were made in different sections of the province, principally in the neighborhood of Leamington, in the County of Essex, and on the Ontario College Farm in Guelph. Average sample of the roots were analyzed by Mr. Shuttleworth, Professor of Chemistry there; for details of which reference can be made to his report in the Annual Report of the Department of Agriculture for 1895. The following is a summary thereof:—

	Solids Average	Sugar Average	Purity Average.
Seventeen samples from Leamington..	15.51	14.13	91.11
Thirteen samples grown on Guelph farm	17.00	15.40	90.60

The satisfactoriness of the above results may be seen at once from the following comparison:—"Sugar Beet," Philadelphia, November, 1895, gives the following as the averages in Belgium and Holland, which, it says, covers enough cases to be almost general, and the comparison applies to all the factories of both Kingdoms:—

	Sugar.	Purity.
Belgium.....	12.01	84.60
Holland. ....	13.68	87.40

The above shows that both as to percentage and co-efficient of purity, the Canadian beets are much superior to those of Holland, and these again to those of Belgium.

A peculiarity about the analysis of the Leamington beets was that the roots were exceptionally large to possess such rich saccharine qualities. They averaged four-and-half pounds each. Mr. Shuttleworth was so astonished at the results that, to make sure of being correct, he analyzed them over again, and with the same result.

Copies of the Annual Reports containing the analysis for 1895 were forwarded to the Maschinenfabrik, Grevenbroich and to Sugar Beet, Philadelphia. The former comments as follows:—

"The analysis of the sugar beets, of which you enclose a return, are indeed wonderful, and if carefully taken and reliable, as we have no doubt, they prove beyond peradventure the adaptability of the soil in your district for the successful cultivation of the sugar beet."

Sugar Beet, July, 1896, says, in acknowledging receipt of the Annual Report of the Ontario Agricultural College and Experimental Farm for 1895:—We have received at the same time as this report a letter from R. H. Lawder, in which a synopsis is given of the work accomplished at the Experimental Farm:—The average yield per acre at Guelph Farm is 15.65 tons from beets averaging about one pound, six ounces. Although the season of 1895 was very unfavorable, owing to the heavy frost in May which necessitated re-sowing during latter part of the month, the result as to percentage and purity of

sugar was eminently satisfactory, 15.33 and 90.60. Seventeen of the samples analyzed were from the neighborhood of Leamington from seed imported from France. The average weight of the beets was four pounds, six ounces, the average percentage of sugar 14.13, and purity 91.11. Sugar Beet says: "We regret that we are unable to give our readers an explanation of why such unusual results were obtained, the case must be considered exceptional. There is certainly a great future for the beet-sugar industry in Canada; capital, however, is wanting."

Enough has now been done to show conclusively that the soil and climate of Ontario are admirably adapted to the cultivation of sugar beets, sufficient information has been gathered from farmers in various sections to leave no doubt of their willingness to undertake cultivation on an extensive scale so soon as factories are prepared to contract for the payment of \$4.00 per long ton for beets of average quality of former experiments. The capital required for erecting and operating factories is promised from Europe so soon as the desired legislation in furtherance of the industry has been passed. Apprehension may be felt as to the effect of the abandonment of the beet-sugar factories in the Province of Quebec. This has been known in Germany, but as the moving parties there are fully acquainted with the superior conditions in Ontario, it has not led to the withdrawal of their offers of capital, or diminished the confidence entertained in the success of the industry in this province. It was known and referred to by Sugar Beet in the same issue while predicted from experiments in Ontario a great future for the industry here. What is the nature of the legislation considered by German capitalists as necessary to the investment of capital and success of the enterprise?

They desire that beet sugar machinery should be placed on the free list in the tariff, same as for mining machinery. They desire that a bounty shall be assured for five years on every cwt. of sugar made in Canada from Canadian beets, and are willing that this bounty should be reduced annually until extinguished, which they feel confident can be done in five years. They know that a bounty has been granted for five years on iron, why not on beet sugar? As there is a customs duty on imported raw sugars, which may be retained or abolished, increased or reduced, it is suggested that the legislation should fix the bounty for five years, as if there were no duty on foreign sugar, but from the bounty payable in each year, should be deducted an amount per cent. equal to the then existing duty on foreign raw sugar. The proposition would thus stand:

Season....	1897	1898	1899	1900	1901
Bounty per 100 lbs....	\$1.50	\$1.37½	\$1.25	\$1.12½	\$1.00
Less present duty on raw sugar.....	50	50	50	50	50
Net bounty.....	\$1.00	.87½	.75	.62½	.50

If the duty on foreign raw sugars should be advanced to 1½ cent. per 100 lb. there would not be any bounty required.

WHY BOUNTY IS NECESSARY.

Although all the conditions as to soil and climate are favorable, the best methods for cultivating sugar beets are so different from those used in ordinary turnip, mangel and other root crops that it will be some years before the approved methods are generally adopted. For best results a careful selection of farms and farmers will be necessary, and information gathered as to the description of seed best adapted

to different soils. For some years, it may be expected that few farmers will feel disposed to undertake this crop on a sufficiently extensive scale to justify them in purchasing the many special descriptions of implements which are essential to economical and successful cultivation of the crop. Even under the ablest superintendence, it is not to be expected that the extraction and manufacture of the sugar in the factory will be as satisfactorily performed as in factories in Europe of forty or fifty years standing and operation. It is, however, confidently maintained by the experts who have investigated all the conditions, that after five years' experience, Canada will be able to compete on equal terms, with any beet sugar factories in the world.

It is intended that there will be large cattle sheds in connection with the factories, the cattle to consume most of the pulp which is left after the sugar is extracted. This pulp is about 40 per cent. of the weight of the beets, and has been found to be very valuable fodder, and with a little hay, straw and oats, the pulp from a 500 ton factory would feed between 6,000 and 7,000 cattle.

One of the special merits of beet-sugar cultivation is that the acreage diverted from other crops does not lead to any diminution of these crops, but rather adds to previous production. In all the districts in Germany and France, where sugar beet cultivation has been extensively introduced, it has been found that the reduced acreage in other crops produces more grain and feeds more cattle than under the former larger acreage. This is owing to the deeper ploughing, and thorough cleaning of the fields sown to sugar beets and afterwards to other crops.

BRITISH COLONIES AND THE HOME MARKET.

The British Trade Journal, contains a long article under the above caption from which we clip the following extracts:—

After considerable argumentation and a discussion of the subject from every point of view, the difficulties have sifted themselves down to various degrees of protection in the Colonies and free imports at home. The Empire cannot be confederated commercially except by a tariff against the rest of the world, and the question now is: What are the Colonies prepared to do in the matter, and what are the people of this country ready to do on their part? Unless sacrifices, which may be very nominal, are made on both sides, Imperial commercial federation must be put upon one side, and and future Congresses must be restricted to the discussion of greater uniformity in the laws relating to shipping, bills of lading, bankruptcies, and weights and measures. It is upon this part of the subject that more light is needed. Are the people of the Colonies prepared to differentiate in their tariff in favor of British manufactures against similar goods from foreign countries, and are the people of this country ready to differentiate by a duty, however small, in favour of the Colonies and Dependencies and against the rest of the world? The Governments of the Colonies should move in the matter if the Chambers are really in earnest. No one has yet formulated a federation plan which will obviate the necessity of duties here and in the Colonies, and we agree with Mr. Chamberlain that the Colonies should now let us know what they are prepared to do. They should, in the first place, pass bills imposing lower duties upon British than upon foreign goods. They should enforce such duties. This would bring the question of the German and Belgian treaties to the front, and it would force the hands of the home Government. If the Colonies wish the people of this country to use their produce in preference to that from foreign countries, they must

show in a practical way their readiness to give advantageous terms to British manufacturers. Much as we value our colonial trade, we cannot do anything to hamper our relations with foreign customers until we know that the Colonies will open their markets on more favorable terms to us. The present position is most unsatisfactory. The United Kingdom supplied fifty per cent. of Australian imports in 1883, and in 1893 only forty-one per cent. For the same period the imports of Canada from the United Kingdom dropped from forty-one per cent. of the whole to thirty-three per cent. During these ten years, 1888 to 1893, the trade of the Colonies with England certainly increased, but as their trade with other countries increased much faster, the trade of England with its own Colonies virtually became a retrogression, when compared with the much greater progress of other countries. Failure to increase with the general ratio of increase is to recede. Our colonial possessions should be the best markets in the world for us; our exports to them should grow at a far greater ratio than those to foreign countries, and we look to the Colonies to assist us in such a consummation by practical action of the kind we have indicated. It is futile on Mr. Chamberlain's part to expect entire free trade within the Empire. The Colonies cannot for the sake of their revenue do away with their tariff. The most they can do is to show that blood, as the German Emperor has recently discovered, is thicker than water, and that they are prepared to treat the Mother Country in a spirit of generosity. Then they can rest assured that the claims of the colonists for more favorable treatment in this country will come with a force which no Government here will be able to resist.

The whole question of tariffs must be fought out in this country from an Imperial instead of a national point of view, and it can be done, we believe, in favor of our Colonies without jeopardizing our cheap raw materials and food stuffs. Quite apart from the question of protection, for which many of our manufacturers are clamoring, we believe that there is approaching a time when the Customs' policy of the United Kingdom will require revision in order to provide increased revenue. The expenditure of this country now amounts to more than one hundred millions per annum, and indications are not wanting that it will continue to grow. The problem is, therefore, forcing itself upon our statesmen how the revenue is to be increased in future. As free-traders we naturally object to duties for protection, but it is admitted by all free-traders that tariffs for revenue purposes are justifiable. We cannot constantly augment the death duties, the income tax, the excise, the house and land tax, and the stamp duties. We shall be compelled to readjust our tariff, and then will be the time to differentiate in favor of our Colonies. In future no duties should be increased without a recognition of this principle. Hence the outlook for Imperial commercial federation is improving from year to year, and the colonists, who wish to see the vast amounts which we now send to foreign countries for food stuffs and raw materials, diverted to their own banking accounts may well take heart.

#### EDITORIAL NOTES.

Every manufacture encouraged in our own country makes a home market, and saves so much money to the country that must otherwise be exported.—Dr. Benjamin Franklin

The Manufacturer's Association has received a circular from the Secretary of the London (England) Chamber of Commerce, stating that the Chamber had decided to assist in the organization of a British Section for performing such work as may be necessary for representation at the Exhibition, 1897. The London Chamber hopes that the Canadian Manufacturer's Association will co-operate, as it is desirable that Colonial products should be exhibited, and that such Colonial Exhibits should be representative and successful. We ask the attention of our manufacturers to this invitation.

We think our northern neighbors will realize within the next year or two that, in returning their free trade party to power, they have made the same tremendous mistake which we did in 1892. But it behooves our manufacturers to take advantage of their economic and political error, none the less. That is something the foreign manufacturers have not been at all slow to do in our own case, and we should have learned the lesson by this time.—Textile Manufacturers' Review

The lack of close affiliation between the Government and the commercial interests of the United States does not allow a re-adjustment of our laws to changing financial and commercial conditions as frequently occurs in foreign countries; and it would therefore be well if our tariff could be taken entirely out of politics and entrusted to the care of a permanent commission with authority to increase and decrease rates of duty to meet the requirements of the public treasury and changes in commercial and financial conditions.—American Miller.

When a demand shall be created for the products of the farm, the shop and the factory, then there will be an increase in the purchasing power of the consuming masses of the people. That is what will bring about the more rapid circulation of money that is necessary to the thrift of commerce and trade, and then the building up of new enterprises will be demanded. The first thing to be done is to provide something for the idle to do, the next to get better pay for what they have to sell, and these two objects secured, all the rest that is desirable will be sure to follow.—Kansas City, Mo., Journal.

There must be some explanation of the remarkable drift of the people away from the farms—an explanation quite different from that which dwells upon the unattractiveness of country life and the superior charm of the city. If we look to Great Britain the force which produces the movement is readily perceptible. British agriculture is rapidly being destroyed. A writer recently supplied these figures:—

While in 1874 there were 3,630,300 acres of land devoted to the growing of wheat in Great Britain and 188,71 acres in Ireland, in 1895 only 1,417,641 acres were thus cultivated in Great Britain and 36,529 acres in Ireland. During the same period the area of permanent pasture increased in Great Britain from 13,178,412 acres in 1874 to 16,610,563 acres in 1895. That is to say, the country is reverting to the wilderness condition, and its formerly garden-like farms are giving way to the primitive prairie.

If free wool will secure cheaper clothing to the people, by the same process of reasoning, cloth, duty free, and untaxed ready made clothing, will diminish the price still further, and give to the consumer the very consummation of low prices and cheap wearing apparel. If every consideration but the mere cheapness of the fabric be discarded, then no reason can be found why, with wool free, there should not come free cloth and free clothing. Things, however, are sometimes the dearest, when nominally they are the cheapest. The selling price of an article is not the only measure; the ability to buy, the coin with which to purchase is an important and essential element, and must not be dismissed from our consideration. If a man is without means and without employment, and there is none of the latter to be had, everything is dear to him. The price is of the smallest consequence, however cheap, if it is beyond his reach.—Hon. William McKinley.

The Canadians have experienced a national set-back. The Liberals have won, thanks to demagogism, discontent, race prejudice, sectionalism, and the mistake of the Government in trying to force the Manitobans to support different schools for Catholics and Protestants. It is said that the new Government will favor closer trade with the United States. Very well, if they wish to take off duties for our benefit as our Democrats took off duties for their benefit, we can make no objection, though the greater benefit will accrue to England, and smuggling of English goods through Canada into the United States will increase. But if they seek closer relations by reciprocity, we must give them notice now that the products of the two countries are so similar that reciprocity cannot benefit either. Here and there it might help in spots, but as a whole it would hurt our agriculture, and ruin their manufactures. If Canada wishes our market, she should unite with us. If she intends to maintain national existence she can do it only by protection. These are frank and friendly truths which our friends across the border are at liberty to accept or reject.—Home Market Bulletin.

The Marine Record, Cleveland, July 9th, gives the following statement of traffic on the Canadian Sault Canal during the present season up to July 1st:—

EAST BOUND	
Copper, net tons.....	5,457
Grain, other than wheat, bush.....	2,274,105
Building stone, net tons.....	1,140
Flour, barrels.....	432,246
Iron ore, net tons.....	1,023,757
Iron, pig, net tons.....	4,700
Lumber, M. ft.....	8,938
Wheat, bush.....	5,491,574
Unclassified freight, net tons.....	15,423
Passengers.....	1,483
WEST BOUND	
Coal, hard, net tons.....	44,669
Coal, soft, net tons.....	222,201
Manufactured iron, net tons.....	9
Salt, barrels.....	1,401
Unclassified freight, net tons.....	20,197
Passengers.....	1,700

This is a very gratifying return, and vindicates the wisdom of Government in providing an independent all through Canadian water route from Lake Superior to the ocean. The registered tonnage of all craft passing through both the American and Canadian Sault canals during June was, United States craft 1,899,380 tons, Canadian 998,187 tons; together 2,898,567 tons.

The returns from the Fall River mills are not cheering to stockholders, for a large number of mills have passed the usual dividend and all others have reduced the rate. Last year was a fairly prosperous year, but the gain was made in large part due to the profits accruing from the advance in raw material. Manufacturers are facing a market which is not promising, and it seems very probable that something must grow out of the talk about closing down and curtailing production. The remedy is a harsh one, but it would be effective. Side by side with the Fall River returns come the returns from the cotton mills of Japan as printed in the annual report of the Cotton Spinners' Association of Japan. The contrast between the two is very striking. According to this report the average profit per spindle for the first half of 1895 was \$2.97, and for the second half, \$3.77. The calculation is based on silver dollars.

What does Fall River think of this? There are 630,000 spindles in operation in Japan, and the number of mills now in course of construction will add 400,000 to this number. Robert P. Porter, United States Census Commissioner under President Harrison, is now traveling in Japan, and in a letter to the Philadelphia Press, in speaking of the cotton industry, says that according to official reports the wages of cotton spinners is less than ten cents per day of twelve hours for men and about five cents for women. The number of operatives has increased since 1890 from 7,930 to 35,058 in 1895. The importations from England and India of cotton yarns were 46,000,000 pounds less in 1895 than in 1888. And now we are told that Japan is preparing to make woolen goods.—Textile Manufacturers' Journal.

For five hundred years England had a protective policy. Under that policy she passed from the most backward country in Europe to the leading country in the world. Under that policy she gave mankind the factory system, parliamentary institutions, religious freedom, abolished slavery and established the highest wages in Europe. By the economic advantages thus acquired, she developed a superior productive capacity which enabled her to undersell on even terms all other manufacturers in the world. Having securely obtained this advantage, says Gunton's Magazine, she sought to increase the prosperity of her manufacturing classes by capturing foreign markets. To this end, having no fear of competition in manufactures, and desiring cheap food in order that her manufacturers might have lower-priced labor, on June 27, 1846, she adopted free trade, removing all import duties upon breadstuffs and raw materials, as well as manufactures. This was heralded abroad as the stroke of economic emancipation, and has been the basis of nearly all economic literature ever since. Free trade has been proclaimed as the true economic policy for all nations. In this country, the economic doctrinaires have persistently propagated the notion that our only hope for permanent prosperity is in imitating the English and adopting free trade. Thus far, we have refused to be converted, but now and then have wavered to the extent of making a partial experiment, and paying the penalty in swift disaster. On June 27th, England had half a century's experience under this free trade régime; and it is significant that at the end of a fifty years' experiment, which has not converted a single country, she is now taking steps to return as gracefully, but as effectively as possible, to a protective policy. This is what intelligent protectionists have predicted would necessarily be the final outcome. England's competitive superiority over continental producers has all along been due to the superiority of her machinery; and her ability to undersell American producers has been due to her lower wages. This seems to be an enigma to free traders. They have never been able to understand why England's power to undersell in the American markets was the result of an entirely different cause from her power to undersell continental producers.

The last thing written by Mrs. Harriet Beecher Stowe, only a few days before her death, was a loving acknowledgment to the public for fond remembrances and tokens and expressions of affectionate esteem, on her eighty-fifth birthday, which she sent to the Ladies' Home Journal. In the next issue of that magazine it will be published in fac simile.—The Ladies' Home Journal, Philadelphia.

THE CAUSES OF OUR FINANCIAL  
CRISES.

BY G. D. GRIFFIN.

*(Concluded from last number.)*

## THE BANKERS' DELUSION.

When the United States banks were failing by the hundreds many bankers and editors and others in Canada who ought to have known better were full of assurances that it was the solidity and soundness of the principle upon which our banks are founded that protected Canada from financial and industrial distress as great as that prevailing in the United States. But the principle upon which they conduct their business is practically the same as in each of the other financial crises, and it neither saved the business men nor the country, nor the thirty-two banks the Year Book reports have failed under this principle of banking. The leading weakness of which is its note issue department. The facts hereinbefore presented proves that they were entirely mistaken, and that while we are proud of the integrity of our bankers and of their conservative instincts, it is certain that it was other factors which, for the time being, protected us from a financial crisis.

First—The large increase in home manufactures, whereby the demand for imports was greatly decreased, and therewith a decrease in the necessity for as much gold from the banks to cover the amount in excess of our exports. The increase in manufacturing is indicated in the fact that while during the past thirteen years the population has increased twenty per cent., there has been no increase of imports. This fact proves that but for the large increase in home manufacturing there would have been a demand for about \$20,000,000 more imports annually, and without any increase of exports to pay for them. This supposition is confirmed by the fact shown in the Year Book that the increase in home manufacturing averaged \$80,000,000 a year, from 1881 to 1891, also that this increase in Canadian manufacturing has greatly increased the home consumption of both farm and other products, the natural result of the great increase in the earnings of the people.

Second—The next protecting factor in preventing a financial crisis is the \$159,000,000 increased deposits with the Government, and with the banks secured out of the vast expenditure of borrowed money hereinbefore reported. But for these two great factors the soundness of the principle upon which their banks are founded would have been soon submerged. A principle which the Toronto Mail described as a "rock," but which the manager of the Bank of Montreal at a stockholders' meeting last June described as having during part of the year been "skating on thin ice." And he could have added the "importers' fire" underneath is making it thinner every day.

## RUINOUS INTEREST DEPOSITS.

No bank should pay interest on deposits—to do so is a curse to the banks—it is a violation of the principle upon which they are founded. In doing so they also curse the country. Two of the products have been fraud, and immense over-importations, and all the financial disasters that have been produced thereby. For example.—To-day tens of millions are on deposit in the banks and with the Government, from farmers and others on interest who do not pay their debts to the merchants, manufacturers and others

who have given them credit. There is no difficulty in filling a book with instances thereof. I shall only furnish one example. A merchant in a village not far east of Toronto had a number of rich farmer customers who, as a rule, grumble the most about hard times, and from whom he could not collect. At last he assigned their accounts to the Toronto firm from whom he got his supplies. In one week every account was paid.

The dishonesty of such depositors, and there are more or less of them in every class of the people, who compel business men to close up or go to the banks and pay twice the rates of interest to the bank that the banks pay to the depositors of the money to whom they have given credit. Is it any wonder so many business men fail, that so many are eat out by the interest they virtually have to pay on their own money? That is not all, if there was no interest paid on deposits, and for nobody but the importers, a very large amount of these deposits would be used in improving farms and other property, and in helping farmers' sons to farms—in place of driving them to the towns and cities overstocked with those anxious to do work which the importers get done in the towns and cities of other countries, for these unrighteous deposits are sold to the importers and thus used. The bank returns prove that the importers use them to purchase goods that could be made in Canada. And a large amount of these excess imports are in the end sold to Canadians by the importers deprived of work, and thereby the importers are every year bankrupting their customers, and in the end find themselves bankrupted, and wonder why. And thus, as before related, all the \$118,000,000 deposited in eighteen years on interest in the banks has been lost to the business men and to Canada. And whereby the banks are now leached out of \$4,000,000 of interest annually. That is as much every fifteen-and-half years as the total paid up capital of the banks. And there is no difficulty in proving that there has been loss to the banks in place of gain in paying interest to depositors.

## THE IMPORTERS UNDERMINE THE BANKS.

The Bank of France has \$30,000,000 of capital. The London Economist of April 16th reports that the Bank of France has \$720,000,000 of notes in circulation, that is \$24 of its notes for every dollar of capital, which at three per cent. returns the bank seventy-two per cent. on their paid up capital.

The Canadian banks with over \$62,000,000 of paid up capital only average about one dollar of note circulation for every two dollars of capital. This at seven per cent. returns the bank three-and-half per cent. on their capital, as contrasted with the seventy-two per cent. secured by the Bank of France. The Canadian banks are by the Bank Act permitted to issue their notes to the full extent of their "unimpaired paid up capital." In accordance therewith they could issue twice the amount of currency they are able to keep in circulation.

The Bank of France has over \$20 of currency per head of the population in circulation. The Canadian banks are only able to keep out \$7 per head, which with the Government notes in circulation is about \$8, or in all only one-third as much per head as in France.

Baron Rothschild before a committee of the British House of Commons in 1819 said, "Make money cheap and you will have the commerce of the world, make it dear and you will lose it." The Bank of France at three

per cent. makes seventy-two per cent. on its capital. The Canadian banks at seven per cent. make three-and-half per cent. The Canadian banks are paying over \$4,000,000 interest to depositors, or more than double what they make by circulation of their notes, while the Bank of France lending at less than half the rates the Canadian banks charge can get all the deposits they require without interest.

Why is there such a wonderful difference between the banking business and bank circulation in France and Canada. The plain reason is that France annually exports more than it imports, and Canada imports more than it exports. The low rates of interest in France enables its manufacturers to so cheaply manufacture that the exports are annually in excess of the imports. And the balance of trade thereby annually in favor of France is continually in gold flowing into the vaults of the banks, while to pay for over-importations in Canada all the receipts for exports, and all the capital of the banks, and all the deposits they can borrow on interest is by the importers drained out of the banks, and poured into other countries to pay for work that could be done in Canada. Thus the Canadian importers not only undermine the banks, but the prosperity of the whole country.

## RATES OF INTEREST AND VALUE OF CURRENCY.

The difference between the rates of interest in Canada and France is a handsome profit to French manufacturers. In fact, as the Ontario official returns show the actual annual increase of wealth in the Province in the two five-year periods from 1882 to 1892 was not quite two per cent. annually, and that during a boom period. The data proves that through lower rates the French have in Canada a four per cent. protection over the Canadian manufacturer in the Canadian market through so much cheaper money. The Canadian bankers, for want of correct industrial and financial information, believe that the low volume of currency they furnish, as compared with France and other countries, is ample for the requirements of Canada. To understand how their judgment varies they in 1874 furnished nearly \$28,000,000 of currency, and did not think it too much. In 1879, with more population, they only furnished \$19,500,000. The inevitable result was business and industrial stagnation, \$29,000,000 of failures in that year, and national loss of from \$100,000,000 to \$200,000,000. And yet at this very time the banks kept proclaiming they had so much money they did not know what to do with it. Whereas, as a matter of fact, to pay for over-importations the importers presented the bank notes for redemption faster than the banks dare issue them. For thereby they had been drained of all their capital and deposits, and could only increase their issue in proportion as they secured more and more deposits. This is proved in the increase of deposits under the National Policy from nearly \$70,000,000 in 1878 to over \$94,000,000 in 1881, or \$19,000,000, whereby they were able in 1881 to issue \$28,500,000 of their notes. The data presented amply proves how completely the banks are at the mercy of the importers, and with the banks every true national interest. The census of 1891 shows 712 wholesale merchants, presumably all importers. These are latter day feudal lords, many of them are aspiring to be merchant princes, and who in their unfathomable ignorance of the true financial and industrial interests of the banks, of the farmers, the manufacturing and the

mining and shipping, and every other true national interest of Canada, rush on to attain to wealth. These 712 are the pre-eminent monopolists in Canada; but who one after another fall under the hoist of their latter day Car of Juggernaut, and find the doom of those who nationally, unrighteously hasten to get rich.

#### WHAT IS THE REMEDY?

The data furnished makes it clear that the importers have pushed us a long way on the down grade to another financial crisis, and that the rapid increase in failures, and what the Monetary Times describes as the limited "available assets" of the bank indicates how pressing is the necessity for prompt remedial measures.

First—One of the most efficient methods for full and prompt relief is that which several times has been adopted in both Britain and France which is to, by "order in council," make the bank notes legal tender. In France, shortly after the Crimean War, the importers drained the Bank of France of its gold. It attempted to keep up the supply by borrowing from Russia and Britain many millions. The bank could not borrow as fast as the importers drained it away. In that repeating the history of the United States Bank in the financial crisis of 1837-8. The bank was closed. In France the Government made the notes of the Bank of France legal tender. At once it was able to increase its issue to the manufacturers to the amount of \$8,000,000. It set all the stagnant wheels of industry in motion, and so fully recouped the bank in gold from the surplus exports, that in three years the bank notified the Government that they did not need the restriction any longer. And since then there has been an almost uninterrupted surplus of exports drawing gold to the bank. A demand for similar Government action in Canada was made in the crisis of 1876-7. It would have saved the banks twenty-five per cent. of their capital, and the country from \$100,000,000 to \$200,000,000 of loss. But the importers interested in bank stocks prompted by many editors and others quite ignorant in these matters to raise a howl of opposition to their own injury, and immense loss to the country and too many bankers, showed their lack of knowledge on the currency question by uniting to resist such a measure. The objection of the importers was that they could not import in excess of exports without paying a premium for gold which and high rates of interest they, and they alone create, and because it would, as in France, rapidly develop home manufacturing which so many of the importers look upon, and brand as a curse to Canada. What influence the importers and others equally blind, including too many bank managers and editors can now exert to prevent this method of securing temporary relief is an unsolved problem.

Second—As a practical measure of relief the banks could unite to notify the importers that they must, as much as possible, secure their supplies within the country. And that they will discount for such supplies at five per cent. But that for all imports they will charge twelve per cent. This would incite the importers to encourage Canadian producers to more activity, and they would be furnishing work to Canadians in place of to those of other lands to the great injury of Canada.

Third—Discount to the Canadian manufacturers at five per cent. This, as in France and repeatedly in Britain, would rapidly in-

crease home production, and increase the bank note circulation which does not average one-half what the banks are empowered to issue, but dare not because of the over-importations. Besides there would be a rapid increase of deposits not on interest. It is true the banks assert there is ample currency in circulation, while in France they have three times as much in circulation per family as in Canada. And while we need just as much per family here as there. By making the bank notes legal tender, and loaning them at five per cent. they would, on the amount of their capital to which their note circulation is limited, realize therefrom one million more than they now do at seven per cent.

Fourth—The banks could then safely notify the depositors who draw interest that the rate would be reduced to two-and-half per cent., which would make the ratio at what the banks now pay and lend the same, at five per cent. for discounts at the margin they now have. The depositors could not on the same basis ask more. These three factors: more notes in circulation, more deposits not on interest and less interest on deposits would put the banks in a much healthier condition than they now are. And therewith deliver them from the impending heavy losses from dubious debts which must naturally accrue in any financial crisis.

Fifth—All honest men should unite to insist upon the Government doing as they are beginning to do in Britain, that is prohibit all shoddy and fraudulent goods. It would save at least \$20,000,000 annually of bank "available assets." The securing of more home production in place of importing would save about \$20,000,000 more annually of such assets. The securing of more home production only means decrease in those we can produce, and in shoddy and fraudulent imports for the increase in earnings and in population would create a demand for other classes of goods which would keep up the volume of imports. This is clearly indicated in the fact as shown in the Year Book, that in 1891 we manufactured \$166,000,000 more goods than in 1881. The wages and raw material of Canadian production were about \$100,000,000. These increased earnings increased the demand for imports of classes not produced in Canada, so that for 1891, at the end of ten years, there was \$300,000 more imports than in 1882, and almost the same in 1894.

Sixth—There must be reduction in cost of Government per family. The principal increase has been in the cost of Municipal Government, especially so in Ontario. The average for the Dominion in 1868 was nearly \$14 per family, it is now about \$25. In Ontario it is about \$32 per family for Municipal Government alone. The increase cost of the Dominion Government from taxation since 1868 to 1894 has been \$9.80 per family. Thus in the Municipal and Dominion the increase has been about \$20 per family. In the Dominion, interest has been the principal, or about one-half the increase in the cost, and no doubt it is quite similar in the Municipal. The next total is now about \$60 per family to be met out of taxes.

It is quite possible that many members of Parliament, many bankers, business men and editors may not heed the teachings of the data now furnished, and take no heed to the warning of the Monetary Times. Their neglect will not avert the impending financial crisis. There is much work before the next parliament to prevent severe financial and industrial difficulties.

PARRISALE, May, 1896.

#### SUGAR BEETS THE MOST PROMISING CROP.

One of the most delightful sections of the world is the corner of San Bernardino county, Cal, west of the mountains, with the adjacent county of Orange lapped by the Pacific waters. It is a country of great fertility when irrigated, and much can be grown without irrigation. About halfway between San Bernardino and Los Angeles, a few miles from the main line of the Southern Pacific railway at Ontario, but connected with it by branch roads, is located one of the most remarkable towns and industries in the country. A few years ago this was a vast ranch, which had been conducted as a cattle and horse breeding establishment. With the decline in live stock however, the owner recognized the necessity of devoting his property to the production of some crop that could be utilized at a profit in the vicinity. Instead of going into citrus fruits or other specialties already established in that region but in which he feared overproduction, he looked into the beet sugar industry, raised beets for a number of years on various soils, determined their sugar content, and in due time was able to demonstrate that on this spot could be raised the largest yields per acre of beets richest in sugar. The outcome was the establishment by the Chino Valley Beet Sugar Company in which the Oxwards of Nebraska are the controlling spirits.

The factory really began operations in 1891, when less than 2,000 acres of beets were grown, and the average yield was only seven tons per acre, or a total product of 17,000 tons, for which the farmers were paid about \$51,000. The fame of the enterprise and the opportunity that was offered to industrious people to buy beet farms on easy terms, speedily attracted considerable population, until now the great factory is the center of a considerable village, surrounded by farms of from five to twenty acres or more in extent, each with their comfortable home and well-to-do family, where cattle roamed a few years ago. During the past season 5,000 acres in this township were devoted to beets, while the product from 2,500 acres more were hauled by rail about 75 miles from the Orange county district. The factory last year converted 83,000 tons of beets into sugar, for which the farmers were paid nearly \$362,000. Most of the beets are grown within two miles of the factory, the longest wagon haul being eight miles, and the shortest half a mile. Over twenty million pounds of refined sugar was actually made and sold, exclusive of a little raw sugar and all molasses, etc, or an average of 249 lbs of refined sugar obtained and sold from each ton of beets, or 2,747 lbs from each acre of beets.

The prices paid farmers have probably been somewhat higher during the past four years than they will be in future, unless the tariff, or bounty is restored to former figures. The five year contract which has just expired was based on \$3.50 per ton of beets containing 12 per cent of sugar, delivered at the factory, and 25c additional for each additional one per cent, and under it farmers have received an average approximating \$4.50 per ton. This year the contracts are based on \$3.25 per ton, with an addition of 25c for each percentage of sugar above 12, so that with an average sugar content of the past two years, the growers expect to net \$4 per ton this year. The sugar content is determined by analyses in the factory laboratory of samples from each load, the analyses being checked by a chemist representing the farm-

ers. To protect their interests, the growers are well organized and choose their own check master or chemist, also the weigher and tare man. The reduction in prices this year is thus only about 10 per cent, whereas almost every other farm product has declined in value much more than that. The farmers are well satisfied, and over 8,000 acres of land had been plowed for this year's crop up to March 20th and at that date nearly 3,000 of these acres had been planted. The land about the factory is peculiarly fitted for this industry, as seed can be planted very early on the uplands, and then in succession on the lower lands. Thus the factory can begin to work up the early crop in July, and in the absence of frost can run until the latest seeding is harvested in November. All pitting and storing of beets is thus saved—a most important consideration. Many planters will use fertilizers this year, and extensive tests of a large variety of fertilizing substances will be made.

The cost of producing beets is mainly labor, usually furnished by the planter and his family, who thus get paid in cash for their work. Including labor, it probably costs an average of \$25 to \$30 per acre to grow and deliver to the factory the 7,500 acres of beets raised last year. This leaves a better profit than almost any other crop. The manufacturers are also making a comfortable profit now, but, considering the immense labor and capital invested for several years without return, the profit to capital is no more than fair.—American Agriculturist.

Hamilton, Ont., will spend \$85,000 on sewage interception works.

#### AMERICAN CONSERVATISM AND BRITISH ENTERPRISE.

A strange complaint has recently been made against American manufacturers, says the Iron Age. A Japanese merchant who recently landed at San Francisco charges them with being more conservative than their English competitors. He alleges that much business which would ordinarily be given to the United States by his people now goes to Great Britain because the British manufacturers are more ready to adapt their goods to the requirements of their foreign customers than are our manufacturers. This statement having received wide circulation, American manufacturers are now getting much gratuitous advice from sapient writers relative to the manner in which foreign trade is being discouraged. It is taken for granted that what the Japanese merchant says is true, and it also appears to be taken for granted that the charge is a sweeping one, including all manufacturers in all lines.

This would indeed be quite a serious matter if it were of general application. No stronger proof could be adduced of industrial stagnation than unprejudiced testimony to the effect that our manufacturers as a class are so wedded to certain trade customs and methods that they will not change to secure more business. Such a reputation has long been borne by British manufacturers, frequently forming the theme of vigorous articles in their trade papers, whose editors have observed that other countries are making severe inroads upon the British export trade, but not until now have Americans been accused of the same fault. On the contrary, they have usually been charged with being too prone to change, too quick to drop an old

method and try something new, too much inclined to favor novelty instead of waiting for the substantial growth which follows the introduction of a good article or a good machine. This is, in fact, regarded as a national trait. When a capitalist builds a new factory, or an established concern adds to its facilities, a keen search is made for "the latest" in everything. The entire equipment must be "up to date." Machinery or mechanical devices which have stood the test of a quarter of a century are not given the preference, but the new ideas brought out the past year, or the past month, are eagerly seized. Whenever possible, the future is anticipated. And as machine tools or mechanical appliances must be thoroughly modern, so must all products of the factory conform to the latest ideas, the newest fashions, the prevailing whims.

It seems an absurdity to charge such a people with being more conservative than the British in catering to foreign trade. Only the past week a Chicago engineering agency received a request from South Africa for catalogues of American manufacturers of machinery supplies, the writer alleging that it was impossible to induce British manufacturers to furnish the kind of goods desired by the local machinists. Pipe fittings were specially instanced. In order to get a fitting for a pipe it is necessary to order of a British manufacturer half a dozen fittings for the size. Some of them will be found too large and others too small, but one out of the half dozen may fit. Standard sizes are not known, so that fittings are not interchangeable, as with us. The same difficulty is found with machinery, the peculiar ideas of British workmen interfering with its easy installation and subsequent satisfactory operation.

## ROBIN, SADLER & HAWORTH

Manufacturers of

### OAK TANNED LEATHER BELTING

TORONTO AND MONTREAL

Orders addressed to our Toronto or Montreal Factory will have prompt care.  
Goods will be forwarded same day as order is received.



Our hardware is proverbially adapted to suit our customers, wherever found. One of the largest lock manufacturers in the country remarked to the writer but a few weeks since that his samples would occupy a comparatively small space if it were not for the large business he did in getting out special patterns for his large customers. Each new pattern meant another sample, from which goods might be ordered by some other customer, but the chances were against it. The practice of getting up new patterns was expensive, but it was an incident of the business, and had to be continued. A British lock manufacturer if his own trade paper portray him correctly, would endeavor to convince a new customer that an old pattern was just what he wanted, and would let him go elsewhere rather than meet his wishes by getting out a special design or style.

Possibly some other line than machinery or hardware may have been the one that fell under the strictures of the Japanese merchant. The newspapers which disseminated the criticism gave no bill of particulars. Yet we are of the opinion that it would be quite difficult to find a line of trade in which we are so far advanced as to be exporting that would show us on an inferior plane to our British competitors. It does not comport with the general reputation of the two nations. The Japanese merchant would speedily be set right if he should open direct communication with American manufacturers.

[Perhaps it is this sort of conservatism on the part of British manufacturers, and enterprise on the part of American manufacturers, that is so rapidly displacing British hardware and substituting American in the Canadian market.--Ed.]

#### SPONTANEOUS COMBUSTION.

Many substances take fire easily, says an English exchange. Greasy rags, cotton waste, etc., are self-ignitable. Some foreign manufacturer has instituted experiments on the self-ignition of cotton waste, and the results were very interesting. A handful of cotton waste was dipped into linseed oil, squeezed out, placed in a wooden box, and the temperature observed by means of a thermometer introduced into the box. The temperature surrounding the box was kept at 70 degrees C. Soon after the temperature in the box rose to 173 degrees C., and smoke issued therefrom. When opened so as to admit air, flame burst out at once. A box from which the air was perfectly excluded consumed after five or six hours. In another experiment, in which the cotton waste was saturated with rape seed oil, the box burned after ten hours. With an outer temperature of 56 degrees C. galling oil caused the spontaneous combustion of cotton wrapped in paper; castor oil required twenty-four hours; sperm oil, four hours; train oil, two hours, for a lively combustion.

In view of these conclusive practical results, it will readily become apparent to the thoughtful person that it is extremely dangerous to allow greasy or oily rags or waste to lie about the paint shop. Indeed, it is wrong to throw such matter on the floor at all, because it is apt to be forgotten and left lying there for some time. The safer and much better plan is to provide a galvanized iron receptacle, having a cover, in which to throw all discarded waste at once, so that even should ignition ensue, the contents would simply burn without damage to surroundings. If it be urged that one cannot

take the time and trouble to throw such waste matter at once into the can, let us remember that the very habit of being careful in this matter will tend to make us careful in other and perhaps all things. Time spent in doing such little things is not thrown away; nothing can be gained by first littering the floor and then sweeping the litter up.

There are dry substances which sometimes self-ignite. There is the well-known example of lampblack, although it is said that the presence of small quantities of oil, which is to be found in the black coming from the first condensers at the factory, is the cause of the spontaneous combustion to which it is liable. Still, even the dirtiest black may self-ignite. Instances are recorded where casks of lampblack have been almost red hot after standing some time. Prussian blue is another pigment very liable to self-combustion in the dry state, but more particularly in the preparation at the factory. Then it is extremely dangerous, and the utmost caution must be exercised, not only to prevent it from bursting into flame, but to arrange matters so that in case a fire does break out it shall be confined to smaller limits. Outside of the factory we have heard of no difficulty attending Prussian blue in this way; of course, it is usually ground in a medium which prevents this, the dry blue being more rarely employed.

The liability of certain dry matters to explode under certain conditions is well-known. Prussian blue will burst into flame because of its mechanical nature, lampblack because, usually, of the oil present; while such dry matters as flour, coal dust, and other fine organic dust explode when certain outside causes are present. This fact has been demonstrated, and further showed that damp-

# The Royal Electric Co'y

MONTREAL, QUE.

Western Office.... TORONTO, ONT.

## S.K.C. Two-Phase Alternators

Incandescent Light, Arc Light and Power from same Dynamo and Circuit.

Highest Efficiency

Best Regulation

Slow Speed

Least Attention



No Collector

No Moving Wire

No Exposed Parts

No Compounding

S.K.C. 50 Kilowatt Two-Phase Generator

ness destroyed the explosive tendency. Live steam was recommended as a preventive, by damping the air in the mill. The same would apply to the air in the wood-working factory, where it is full of dry dust. Bachr, of Dresden, found that leather belts used in mills are rapid generators of electricity, and that this would fire dry dust and cause explosion. Professor Pepper put some fine flour in a small box, fitting the top with fine wire netting, shook the box and caused the finer dust to come in contact with a flame, like that made with a lighted stick. Under the right conditions the experiment will result in a large flame, resembling that made by burning of loose gunpowder.

To make combustion possible oxygen must always be present. There must be air present. The greasy rags would not take fire of themselves if kept from the air; hence, in keeping them in a tightly covered iron can the probability of combustion is reduced, and possible combustion made of no account. It is well to remember this fact. Liquid kerosene oil never explodes. Plunge a candle flame into a gasometer of pure coal gas and it will go out as it would if plunged into water; but mix air with the gas and the result would be much different. Lamps only explode from mixed air and oil vapor. Flour dust or fine wood dust, when mixed with air, will ignite like gunpowder. In a heap no trouble ensues.

**BUFFALO DISK WHEELS.**

The rapid gain in popularity of electricity as a motive power is continually making the convenience of electric ventilating wheels better appreciated. The Buffalo Forge Company, Buffalo, N.Y., now manufacture

a wheel in which the motor is built as part of the fan and requires only minimum power for driving. They are adapted to all locations and for all ventilating purposes. To start or stop is merely a matter of adjusting a switch or pushing a button and neither engine nor belt is required, their operation being unattended with danger.

It will at once be seen that the important question of proper ventilation need not be out of consideration in locations where a boiler and engine could not be placed. Then again, the electric current to drive these fans can usually be obtained from the street wires of the electric light companies at moderate outlay. When a building is already supplied with incandescent lights, often a very small fan outfit may be connected to the electric light circuit by taking out one of the lamps and attaching the fan conductors to the socket in its place.

For ventilating purposes in dry goods stores, offices, private houses, restaurants and the like, a Buffalo electric ventilating wheel is a very effective and desirable arrangement. Any position suited to obtain the maximum efficiency of a fan may be employed without affecting the arrangement of the motor. All of these fans are of standard high grade, carefully balanced, and the entire outfit designed for quiet running at high speed. Almost any desired make of motors may be employed with Buffalo disk wheels, as the design readily lends itself to such combination. The high speed at which it is possible to run these wheels gives them large capacity, therefore a small fan occupying but little space can be used to ventilate apartments of considerable size. When running at an ordinary speed, they are noiseless and of no inconvenience.

**MR. DUTTON'S PLAN FOR OPENING THE GREAT LAKES TO THE SEA.**

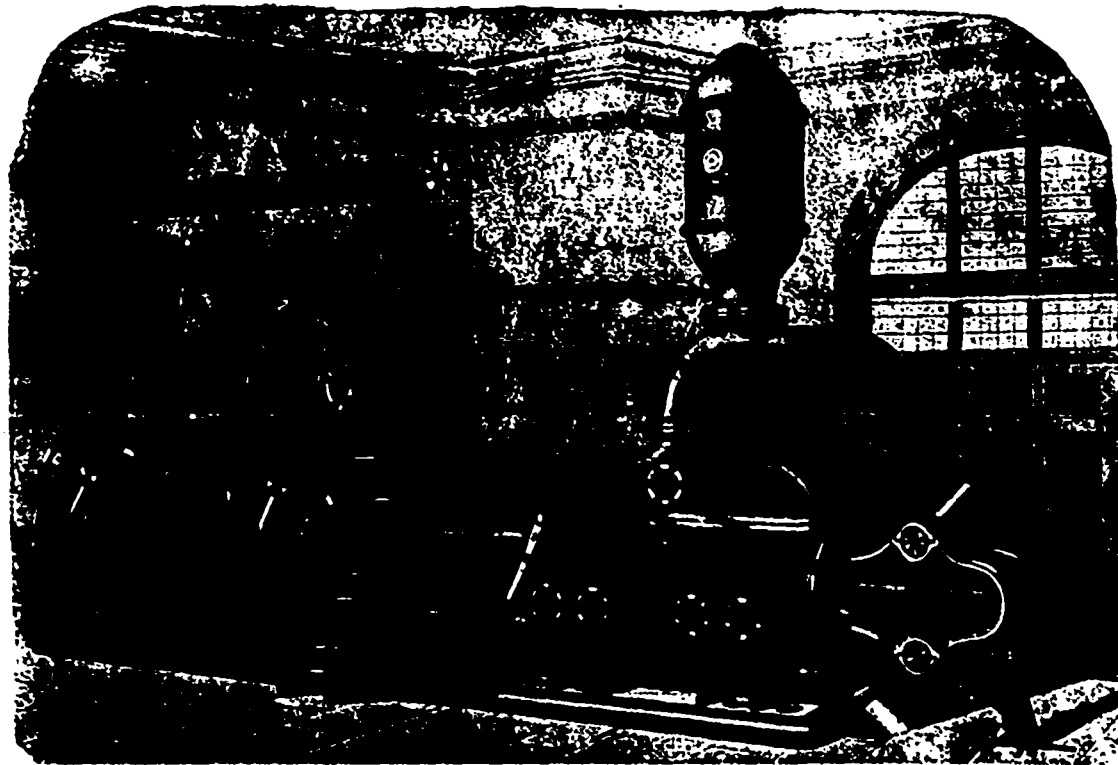
The boldest plans hitherto offered for a ship-canal between Lake Erie and the seaboard have none of them contemplated less than thirty-five locks, and one of the most feasible would have required fifty-five. To be adequate for the traffic they would bear, these locks would have to be as capacious as the new lock at Sault Ste Marie, the largest and finest in the world. The latter is 800 feet long, 100 feet wide, and 21 feet deep, and is costing more than \$5,000,000. With locks like the Sault, the cost for lifts alone for the contemplated ship-canal would be at least \$175,000,000 on the St. Lawrence route, and upwards of \$250,000,000 on what is known as the Oswego route, that is to say, from Oswego to the Hudson. So long as nineteenth-century engineering was unable to advance beyond the lock invented by Leonardo da Vinci, about the time that Columbus discovered America, the problem could not be solved. The cost would have been too great for even governmental undertaking.

It has remained for an American engineer to cut the Gordian knot by the invention of a new lock, exceedingly simple in design, easy and cheap of construction, and quickly and inexpensively operated. In 1890 Chauncey N. Dutton, a young Pittsburg engineer, took out in the principal countries in the world letters patent for what he described as a pneumatic-balance lock. His design, revolutionary as it was, seemed, on the whole, so simple that engineers stared in wonderment that no one had thought of it before. Colonel Haskell had already applied the compressed-air principle to the

**JOHN McDOUGALL**

**CALEDONIAN IRON WORKS,**

**MONTREAL, QUEBEC**



General Agents  
in Canada for

THE FAMOUS

**Worthington  
Pumps**

**Hydraulic  
Machinery**

**Condensers**

AND

**Water Works  
Supplies**

**WORTHINGTON PUMPS ARE UNEQUALLED FOR EFFICIENCY AND ECONOMY**

pneumatic dry dock, now in use in all countries. Mr. Dutton proposed simply to make the pneumatic dry dock into a wet dock by building up the side walls and putting in end gates between them. Simple as this device appears, it puts navigation hydraulics upon an entirely new basis, and, in the judgment of the most eminent engineers, must revolutionize canal construction all over the world.

Merely to indicate the meaning of this new invention, it will now be possible to construct huge ship-lifts of equal size, and at least eight times as high as the greatest lock now in existence. Two locks, each lifting 160 feet, could replace the twenty-five locks now required along the Welland Canal. The cost of these new locks, built as large as the new lock at the Sault, would not be more than \$3,000,000 each. They would pass a ship from Ontario to Erie in an hour, where it now requires a day.

It is from the invention of the pneumatic-balance lock that Mr. Dutton has developed his huge scheme for a maritime canal, which has recently been before Congress and the Legislature of Albany. It will extend from the mouth of the Welland Canal on Lake Erie, utilize a portion of the canal, descend, by a pair of locks set tandem, into the Niagara River at a point about opposite Lewiston, utilize and enlarge the present Canadian canal system along the St. Lawrence river as far as Lake St. Francis, and there fork in two directions; one arm will reach by a new canal to Montreal, and thence by the St. Lawrence river to the sea, while another will extend from Lake St. Francis to Lake Champlain, reverse the current of that lake, and reach from the lower end of Champlain to Waterford, on

the Hudson river. It will involve only about ninety miles of artificial canals, and afterwards fifteen miles of this will be cut out by the construction of a new canal from Lewiston, on the Niagara river, to a point above the Falls on the American side. The project will require the expenditure of a vast sum of money, but Mr. Dutton has associated with him some of the best-known engineers in the country, together with a number of heavy capitalists, and it is proposed to construct this gigantic system without a dollar of subsidy from either the Canadian or United States government. The Canadian Parliament, in chartering the North American Canal Company two years ago, gave it the right to use the summit levels of the Canadian canal system along the St. Lawrence and across the Welland Peninsula, to acquire and enlarge any present locks, and to construct such new locks and canals as will be required to complete the enterprise. Such national legislation as is needed in this country has been introduced in Congress by Senator Allison, of Iowa.

Specifically, Mr. Dutton proposes to build a canal equipped with locks of sufficient size so that an ocean freighter like the Cevic may sail at river speed from New York to Chicago, and that without material interruption. He proposes a canal system with locks of twenty-six feet draught, sixty-five feet wide, and 510 feet clear length, which will lift vessels carrying 12,000 tons of freight. In place of the thirty-five to fifty-five locks required in any other plan yet proposed for a similar canal, this project involves but five. In a word, instead of an estimated expenditure of at least \$200,000,000 for locks, the latter, under the new

construction, will not require more than \$15,000,000. The projector estimates that to carry the first ocean steamship from New York to Chicago will require the expenditure of \$100,000,000, and to complete the canal to enable vessels like the Cevic to make river speed through the dredged channels will require the outlay of as much again—in all, some \$200,000,000.—Harper's Weekly.

#### OUR CONSULAR SERVICE.

"The consular service is the practical and business side of our foreign intercourse," writes ex-President Harrison in July Ladies' Home Journal. "There are more than twelve hundred persons in the consular service of the United States. These are located in the important commercial cities and towns of the world, and are described generally as Consuls General, Consuls, commercial agents, interpreters, marshals and clerks. The duties of a Consul are various and multifarious. He is the protector and guardian of American commerce; provides for destitute American sailors and sends them home; he takes charge of the effects of American citizens dying in his jurisdiction, having no legal representative; he receives the declarations or protests of our citizens in any matter affecting their rights; he keeps a record of the arrival and departure of American ships and of their cargoes, and looks after vessels wrecked; he reports any new inventions or improvements in manufacturing processes that he may observe, and all useful information relating to manufactures, population, scientific discoveries, or progress in the useful arts, and all events or facts that may effect the trade of the

# MICA BOILER and STEAM PIPE COVERING

## WHAT IS THOUGHT OF IT!

To whom this may concern.

This is to certify that we have used some of the Mica Pipe Covering on one of our main pipes in the tannery during the present winter and must say that it has given the very best satisfaction, there is no heat that escapes from the outside covering, it hardly being warm, in consequence there is very little condensation in the pipes. We can cheerfully recommend it to any parties wanting pipe coverings.

Yours truly,

(Sgd.) BREITHAUP T BROS. & HALL.

PETROLIA April 22, 1896.

MESSRS. THE MICA BOILER COVERING CO., Toronto, Ont.

GENTLEMEN:—In regard to the Mica Pipe Covering on which you have asked us to report, we would say that we placed this covering on the steam pipes in our block of stores and offices last winter and at once noticed the largely increased heating capacity of our plant and a great saving in fuel. The covering was put on by our own men without any difficulty whatever.

Yours faithfully,

(Sgd.) VANTUYL & FAIRBANK.

THE MICA BOILER COVERING CO., City.

GENTLEMEN:—We have tested the Mica Covering which you put on the boiler of the Dredge "Atlantic" in September last and find that it has effected a saving of about one-half ton of coal per day, or about twenty-five per cent. We believe it is the most durable covering for marine boilers in

the market, and will stand the wear and tear incidental to such boilers. We consider it a valuable improvement over the cement coverings owing to the convenience of removal and replacing same, for inspection or repairs to boiler.

Yours truly,

TORONTO DREDGING & CONTRACTING CO.  
(Sgd.) F. DOTY.

THE TORONTO FERRY COMPANY, (LIMITED),  
North of Scotland Chambers,  
18 King Street West.

TORONTO, December 12, 1895.

THE MICA BOILER COVERING COMPANY, Toronto.

GENTLEMEN:—I have much pleasure in certifying that the Mica Boiler Covering placed by your company on the boiler of our steamer "Thistle" has proved satisfactory in every respect and has fully proved every claim you made for it. I find that since it has been put on, the consumption of coal has been reduced no less than twenty per cent. My chief engineer's report of the Mica Covering is very favorable, not only for its extraordinary coal saving qualities but also on account of the ease with which any part of it can be removed and replaced without injury. After the season's work I find the covering in perfect condition, and from the flexible nature of it and its inability to crack or crumble I anticipate a very long life for it.

All the steam pipes at our Electric Power Station at Hanlan's Point are covered with the Mica Covering and my engineer there also reports it as a first-class piece of work. From my experience of the above covering during the past season, I have no hesitancy in pronouncing it to be the best that has come under my notice.

Yours truly,

W. A. ESSON, Manager.

Full Particulars, Reports of Trials, Prices, Testimonials, etc., from

## The Mica Boiler Covering Company (Ltd)

9 JORDAN STREET, TORONTO.

United States, and authenticates invoices and statements of the market value of merchandise to be shipped to the United States. Every Consulate is a commercial outpost, and if the service could be given permanence of tenure, and a corps of men of competent equipment, it would become a powerful agency in extending our commerce."

Mr. J. W. Scott, a well-known geologist and coal operator, residing at Loydsville, Cambria County, Pa., claims to be the first to apply the Röntgen process to the discovery of hidden things under the surface of the earth. When the discovery of Röntgen was made public he set about to use it in his work on the Allegheny Mountains, where he is interested in coal developments. The celebrated E vein of coal has for forty years been the object sought after by geologists, prospectors, miners and operators all over the mountain. Mr. Scott has made some experiments in this direction, the results of which, he claims, will greatly aid the science of locating the mineral deposits of the earth.

-Electrical Engineer.

"It is with a degree of satisfaction that most business men look upon the change that is gradually coming over the masses regarding what was once termed, 'pools,' 'trusts,' 'combinations,' etc.," observed Monte L. Green, of the Commercial Pole and Shaft Co., Cincinnati. "The people are beginning to learn the difference between organization brought into existence for the purpose of putting fictitious values on articles of commerce, invariably necessities, and the combining of capital for the purpose of putting manufactures on the market at a reduced expense and keeping the trade from

getting demoralized through invidious competition. There are few manufacturers but at times get over-stocked with some particular article. For instance, take the various plants now owned and controlled by the Commercial Pole and Shaft Co., one factory will have on hand an extra lot of poles or shafts that in its particular territory are low sale, isn't it reasonable to suppose that these goods can be sold to better advantage to all concerned by the united efforts of all the factories than they could be by the one concern that happens to have them? It is accomplished with less expense and therefore they can be sold cheaper. A working in harmony of all manufacturing concerns in the same lines would do much towards putting trade in a shape to pay living profits and at the same time cost the consumer no more money and managers a deal less anxiety and worry."

The news comes from Victoria, B.C., that from advices received by the Australian steamer Mowera, it now seems probable that the Queensland Government will join New South Wales and Canada in granting a subsidy to the Canadian-Australian steamship line. Capt. Bad, on behalf of Jas. Huddart, managing owner of the line, recently interviewed the Queensland Government, and it is said the Government will recommend Parliament to grant a subsidy of six thousand pounds per year for three years. The company are at present negotiating in England for the construction of a larger steamer for the line.

It is dissatisfying to the Philadelphia Record that, while American protectionists favor the establishment of reciprocal trade relations with Latin American countries, they

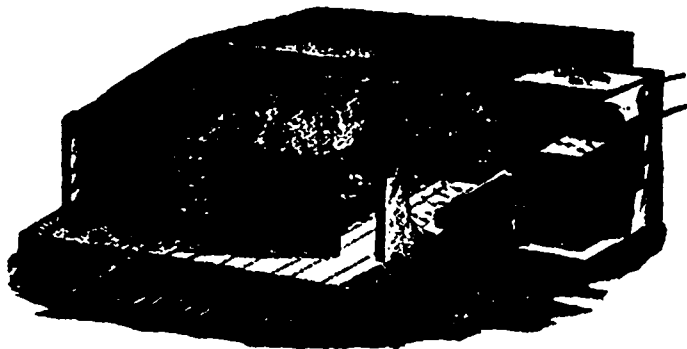
are unwilling to consider with approval the arrangement of reciprocity with Canada. But this is not an inconsistency. The purpose of reciprocity is to enlarge our trade with countries whose products are dissimilar from ours. Canada produces just about what we produce. Reciprocity with her would mean that we should swap easy entry to this market of seventy million people, for easier entrance, for our goods, to a market of five million people. When we tried that, some years ago, the main advantage was, naturally, reaped by the Canadians. We do not want to import more foreign stuff to compete with our products. We want to sell more of our products to countries like Brazil, which now buy in Europe the things we make; and, to do this, we can offer inducements in the shape of low duties or no duties upon materials which we must import because we cannot grow or make them. Besides, free trade between this country and Canada, partial or absolute, being particularly profitable to the Dominion, must tend to build up and strengthen that British dependency; whereas the uniform policy of the United States should be to retard development in that quarter so long as Canada shall maintain its British connections. A Canadian farmer who sells in the United States pays the whole of our duty, because he sells material the price of which is fixed by our own market. But a duty upon tropical material is paid by the American consumer. Thus there is also a good financial reason for making the tariff high towards Canada and low towards Brazil.

-The Manufacturer, Philadelphia.

After a series of experiments Mr. Claus Spreckles, the millionaire sugar refiner of the Pacific coast, has decided that the manufac-

## McEachren's System of Drying, Heating and Ventilating

Under Recent Patents.



In construction and process of drying this Kiln differs widely from all others in use. They have given entire satisfaction where all others by Kiln have failed. They will season More Lumber in a Given Time, with a given heating surface and a given quantity of steam than any other Kiln now in the market. Their construction and mode of operating is such as to season lumber without Case Hardening, Checking or Warping. They work equally well on Lumber Right from the Saw and on Air Seasoned Lumber, the only difference being that one takes a little more time than the other. By a Peculiar Arrangement Found Only In Our Dry Kilns we extract the moisture from the heated air, return it through the heater again and thus preserve the heat passing from the Kiln instead of wasting it as is the rule with all other Blast Kilns.

Ventilating Fans, Shaving Fans, Pressure Fans, all sizes.

### BLAST HEATING SYSTEM FOR LARGE BUILDINGS

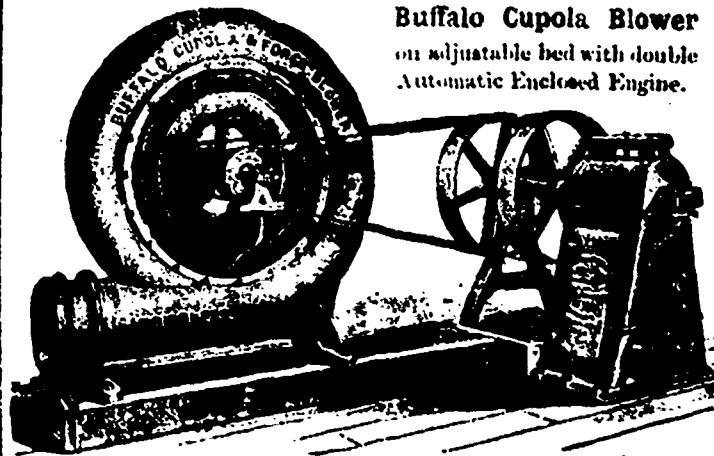
Little Wonder Boiler and new Hot Water Heating System half price of usual hot water system. STEAM BOILER CLEANERS, Feed Water Heaters covered by Patents of recent date in Canada and United States.

Second-hand Heaters and Fans made by the best American Manufacturers, only in use a short time, for sale at great reduction.

Send for Illustrated Catalogue and Prices to

McEACHREN HEATING & VENTILATING CO.

GALT, ONT.



Buffalo Cupola Blower on adjustable bed with double Automatic Enclosed Engine.

Buffalo Dry-Kilns, Shaving Fans, Forges, Blowers, Exhausters, Blacksmith Drills, Etc.

Are described in Sectional Catalogues FREE on application.

Their Efficiency, Smooth Running, and Durability are Unsurpassed.

Buffalo Forge Co., Buffalo, N.Y., U.S.A.

SOLD IN

Toronto, Ont., by M. W. Patrie.

Brantford, Ont., by Canadian Machinery and Supply Co.

Montreal, Que., by Canada Machinery Agency.

Chicago Store, 22 and 24 West Randolph Street

New York, 26 Cortland Street

ture of beet-root sugar can be established on a profitable basis. He proposes to establish a plant capable of manufacturing about 400 tons a day. That is about five times the average importation of sugar in the Dominion, and the success of his experiment will open to Canada a new source of supply. It would be greatly to the advantage of Canadian agriculture did the discovery of new methods enable our farmers to furnish the material for the sugar supply of the Dominion. Beet-root sugar may soon become a commercial possibility.

The immense wood-pulp mills, known as the Sault Mills in Canada, are shipping 400 tons of wood pulp per week to England, by way of Montreal. The managers state that the quality and price of pulp is such as to lead to the expectation, that in a very short time the Sault Co'y will hold the lion's share of the English pulp trade. This is very pleasing to the Canadians, and some of their journals object to the fact that the Dominion Government permits the free exportation of 400,000,000 feet of pulp wood annually to the United States, when the pulp industry might be developed as a home industry, to the advantage of Canada in every respect.—The Northern Lumberman.

Several journals of London, England, are now printed on white paper made in the United States; a New Hampshire paper mill is supplying white paper to a Scottish publishing house, while the Freeman's Journal, Dublin, Ireland, has contracted with an Ottawa, Canada, paper manufacturer for its regular supply of newspaper, says an exchange. The American continent must ever be the leading factor in the world's supply of white paper.—The Paper Mill.

## CAPTAINS OF INDUSTRY.

The following items of information, which are classified under the title "Captains of Industry," relate to matters that are of special interest to every advertiser in these pages, and to every concern in Canada interested in any manufacturing industry whatever, this interest extending to supply houses also.

If a new manufacturing enterprise of any kind is being started, or an electric lighting plant instituted, or an electric railroad, or a telephone, or a telegraph line is being constructed; or a saw mill, a woolen, cotton, or knitting mill; or if any industrial establishment has been destroyed by fire with a probability of its being rebuilt, our friends should understand that possibly there may be something in the event for them. Do you catch on to the idea?

The starting of any such concern means a demand for some sort of machines, machinery, or supplies, such as steam engines and boilers, shafting, pulleys, belt-ing, lubricants, machinery supplies, wood or iron working machinery, ventilating and drying apparatus; pumps, valves, packing, dynamos, motors, wire, arc and incandescent lamps, and an infinite variety of electrical supplies, chemicals, acids, alkalis, etc. It is well worth the while of every reader of the Canadian Manufacturer to closely inspect all items under the head of Captains of Industry.

The Wm. Hamilton Co., Peterborough, Ont., furnished the two 150 h.p. vertical turbine wheels for the new power house at Trenton, Ont.

Thos. Andrews, of Thornbury, is installing a five hundred light alternating plant to furnish incandescent lighting in Thornbury and also in Charksburg, distant about one mile.

We stated in our last issue that The Ontario Rolling Mills, Hamilton had closed down. We are informed the report was incorrect—that their mills were partially closed down soon after that time but for a few days only, a thing not unusual at this season.

The Ottawa Car Company recently shipped two electric cars to the Berlin and Waterloo railway, and the same number to the Galt, Preston & Hespeler railway.

The largest single lockage ever known at either "Soo" was made through the Canadian canal last week. No less than five vessels of a total length of 1,191 feet, and a total tonnage of 4,018 tons passed through at one time. When both locks are in working order, vessels are seldom detained, but run straight into the lock, either up or down as the case may be.

Nearly \$7,000 worth of paper was shipped from New York city to Sydney, Australia, during the week which ended yesterday. Over \$2,000 worth went to Melbourne, and there were these other large shipments during the week: to Antwerp, \$1,422 worth; to Lagnayra, \$1,070 worth; to Mexican ports, \$2,153 worth. The value of all the paper exported from New York during the week was \$18,463.—The Paper Mill.

## If Your Business is Dull

The Best way to Put Life into it and increase Your Out-Put is to

EXHIBIT AT

# ...Canada's Great Industrial Fair, Toronto...

**AUGUST 31ST TO SEPTEMBER 12TH, 1896.**

**Early Applicants for Space will Secure the Best Positions**  **All Entries Close August 8th.**

Visitors are coming from all parts of the continent and Europe . . . .

This year's Fair will be greater than ever

. . . . Excursions on all Railways in Canada and the Northern States

**ALL SPACE FREE.**

**NO CHARGE FOR POWER.**

**For Prize Lists, Entry Forms, and all information, address**

**J. J. Withrow,**  
President.

**H. J. Hill,**  
Manager, Toronto.

The dates of the Toronto Industrial Fair are fixed. It will open on Monday, August 31st, and close on Saturday, September 12th.

The Department of Marine and Fisheries has published the Canadian shipping list for the year 1895. The total number of vessels on January 1 last was 7,262, measuring 825, 836 tons registered tonnage, being an increase of 17 vessels and a decrease of 43,788 tons register as compared with the previous year. The registered tonnage is valued at \$24,775,080. Canada is the fifth marine power in the world.

The contract for the entire development of 20,000 horse-power on the Richelieu river, the outlet of Lake Champlain, has been let to the Stilwell-Bierce and Smith-Vaile company, of Dayton, Ohio, for \$550,000, the electric machinery not being included. This power is to be carried to Montreal by wire and electrically distributed, the distance being about twelve miles. This is the second electric water power development in Montreal, the first being for 12,000 horse-power at the Lachine rapids, five miles above the city.

**MACHINERY AND SUPPLIES WANTED.**

If any subscriber to THE CANADIAN MANUFACTURER who may desire to purchase any machinery or supplies whatever, and so inform us, we will publish the fact in a conspicuous manner, and will make no charge therefor. These wants will be stated similar to the following:—

**WANTED.**

**SITUATION** as foreman or leading dyer by a Scotsman. 25 years' practice. Dress goods, tweeds, flannels, hosiery, ribbons, laces and garments. Dyeing and cleaning the latter preferred. Address SCOT, care of The Canadian Manufacturer.

**A WOOD Pulp Mill Site for Sale.** One of the most eligibly located in Canada. Easily accessible by both railway and water. Virgin spruce timber limits. Unlimited water power. Saw mill of 60,000 feet daily capacity in operation. Doubtless the Government that will be returned to power next week will place an export duty on pulp wood. Splendid chance for a profitable investment. For further particulars write W. R. H., care of Canadian Manufacturer.

**WANTED**—Address of parties who make machinery for the manufacture of horse shoes. Address G. P. T., care Canadian Manufacturer.

**MACHINE LATHE**, 18 in. swing, 8 foot bed; also a No. 2 or No. 3 Stile's Power Press or one of equal size. Toronto Electrical Works 37 Adelaide St. West, Toronto.

**Wm. KENNEDY & SONS, OWEN SOUND, ONT.**

MANUFACTURERS OF HIGH-CLASS

**WATER WHEELS,**  
Electric Water Wheel Regulators,

Machine-dressed Heavy Gearing,  
Shafting, Etc.

... PROPELLER WHEELS AND MARINE REPAIRS A SPECIALTY....

**TURBINE AND CASCADE WATER WHEEL**

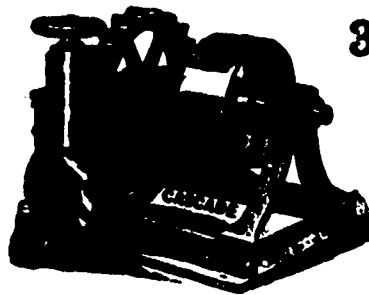
Adapted to all Heads from

**3 Feet to 2000 Feet.**

Our experience of 33 YEARS building Water Wheels enables us to suit every requirement of Water Power Plants. We guarantee satisfaction.

Send for a Pamphlet of either Wheel and write full particulars.

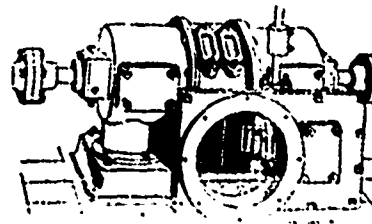
**JAMES LEFFEL & CO.**  
SPRINGFIELD, OHIO, U. S. A.



**Burnham's**

BURNHAM BROS., York, Pa.

**"LITTLE GIANT" TURBINE**



One Type of Horizontal.

Built in 17 Standard Sizes and 27 Special Sizes, making a range of 44 different wheels in vertical and horizontal cases.

We solicit correspondence from those interested in developing or improving water power.

... ADDRESS ...

**J. C. WILSON & CO., Glenora, Ont.**

**WM. BARBER & BROS.**

GEORGETOWN, ONT.

Manufacturers of

**BOOK AND FINE PAPERS****THE TORONTO PAPER MFG. CO.**

CORNWALL, ONT.

Manufacturers of...

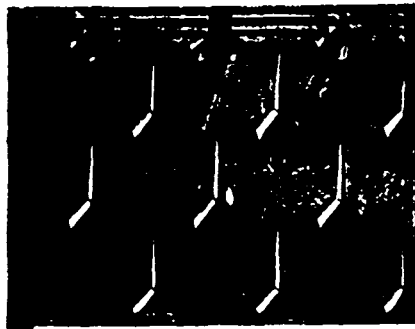
Engine Sized Superfine Papers  
White and Tinted Book Papers  
Blue and Cream Laid and Wove Foolscaps, Account, Envelope and Lithographic Papers, etc.

**C. G. ELRICK & CO.**

MANUFACTURERS OF

**HORN and RUBBER COMBS, Etc.**

FACTORY - Sheppard Street, Toronto.  
MONTREAL OFFICE - Fraser Building.

**Eastlake Steel Shingles**

Beware of Worthless Imitations.

**METALLIC ROOFING CO., Ltd**

TORONTO

SOLE MANUFACTURERS.

**McLAUGHLIN BROS.****TEASELS**

Skaneateles Falls

NEW YORK

BUSINESS ESTABLISHED IN 1822

**Welland Vale Manufacturing Co.**

LOCK No. 2, ST. CATHARINES, ONT.

Manufacturers of...

**AXES, SCYTHES, FORKS, HOES  
RAKES and EDGED TOOLS****W. H. STOREY & SON**

ACTON, - - ONT.

Manufacturers of...

**Fine Gloves and Mitts**

In Every Variety and Style.

**MOCCASINS****SPECIALTIES.**

Machinery Brushes for woolen and flour mills, jewellers, shoes, breweries, latrics, platers, foundries, and all machinery work; old rollers refilled.

**Frank Wehrle & Co.,**

Brush Manufacturers,

131 Bay St., Toronto.

**BROWN & CO.**

Manufacturers of

Square and Hexagon

**HOT PRESSED NUTS**

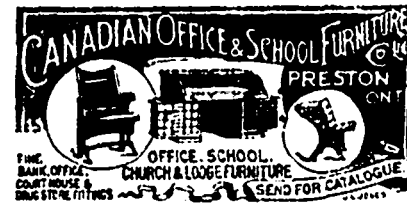
PARIS, - ONT.

**Haekney Power Hammers**

Are superior in many respects to most in the market. Made by

**STEVENS, HAMILTON & CO.**

Manufacturers of Iron Working Machinery  
GALT, - ONTARIO.

**THE PARIS ELECTRO-PLATING CO.**

Manufacturers of

Stove Trimmings, Organ and Piano Trimmings, also all kinds of Brass and Nickel Plating Done

Paris Station, - - Ontario

**CONSUMERS GAS METERS** Any Size

We make an O. K. METER. You should own one, it will pay you.

**JOHN S. MOORE, Dominion Gas Meter Works**  
1 to 11 Carfield Ave., LONDON, Ont.  
Meters of every description repaired.  
Established in Canada in 1879.

**SMITH WOOL-STOCK CO.**

219 FRONT STREET EAST, TORONTO

Makers of **WOOL STOCK, SHODDIES, Etc.**

All lines of Graded Woolen Bags, Carbonizing and Neutralizing, Is. Vars of Wool Pickings, All lines of Hard and Soft Waste.

**F. W. HORE'S SONS**

HAMILTON, ONT.

Manufacturers of...

**WHEELS, Wheel Materials, Shafts, etc.****CIRCULAR RIB****KNITTING MACHINERY**

Superior Quality Reasonable Prices

**STAFFORD & BABCOCK**

LITTLE FALLS, N.Y., U.S.A.

Ripans Tabules cure bad breath.  
Ripans Tabules cure biliousness.  
Ripans Tabules: one gives relief.  
Ripans Tabules cure indigestion.

This space is one inch high. It may be used for advertising purposes at the rate of 50 cents per issue.

Fire destroyed 430,000 feet of lumber the property of Daniel Campbell, Port Elgin, Ont., July 4th.

An explosion of chemicals occurred in the laboratory of the Central experimental farm, Ottawa, July 6th, resulting in a fire that destroyed the building. Loss \$4,000.

The Hull Lumber Company, Hull, Que., is being incorporated with a capital stock of \$400,000.

The McMillan & Haynes Company, St. Catharines, Ont., is being incorporated with a capital stock of \$30,000 to manufacture saws, axes and other edged tools.

The Bryson and Fraser timber limits on the upper Conlonge above Ottawa, formerly Perley limits, were recently sold for \$207,500.

The Toronto Brass Co., Toronto, is being incorporated with a capital stock of \$25,000 to manufacture all kinds of cabinet and builders' hardware.

The high commissioner's office London, England, sent out a request to Canadian firms manufacturing wood in lengths, presumably box shooks, to communicate with the Johannes Water Company of London, England, which desires to procure a large supply.

The Little Liscomb Gold Mining Co., Stelbarton, N.S., is being incorporated with a capital stock of \$12,000.

Truro, N.S., has voted \$7,000 for improvements in the water service of the town.

Pictou, N.S., will spend \$6,000 for heating apparatus for the new academy building there.

W. C. Trenholm, Port Elgin, N.B., will start a furniture factory at that place.

W. & F. A. Scott's planing mill at Galt, Ont., was damaged by fire June 27th, to the extent of \$500.

Harvey and Van Norman's boot and shoe factory at Toronto, is being removed to Quebec city. The firm will still have their chief office at Toronto.

Lovell & Son's saw mill at Coaticook, Que., has been fitted with electric light and has been running night and day for sometime to fill orders.

The Truro Foundry and Machine Company, Truro, N.S., will furnish designs for additions to the existing plant of the North Brookfield Mining Association to cost \$1,500.

A raft of logs, containing 52,234 pieces measuring 4,028,717 feet and valued at about \$32,000, was towed across Lake Huron from a Canadian port to Bay City, a few days ago.

The London Electrical Specialty Co., had the contract for wiring the new House of Refuge at Sarma.

The Bennett Manufacturing Company, London, Ont., are so pressed with orders that they are working overtime, and with a largely increased staff. It was found impossible to close on Dominion Day. Among the export orders is one for the interior furnishing of the chapel of Linnithgow Palace. This palace is one of the historical spots in Scotland. There Mary Queen of Scots was born and in the chapel James IV. of Scotland prayed before leaving for the battle of Flodden. Cromwell afterwards occupied the palace as a barracks for his men. The chapel is being refurnished throughout.

# BREWERS COPPER WORK

Brewing Kettles, Boiling Coils,  
Beer Coolers, Attampartors,  
Spargers, etc., etc.

THE  
**BOOTH COPPER CO.**

LIMITED.

TORONTO, ONT.

Established 1854.

The General Mining Association and the Dominion Coal Co., shipped more coal during May than in the corresponding month of any previous year. The total hoisting for the month reached 128,000 tons, and the shipping 111,000 tons.

There is a rumor current to the effect that the Dominion Typograph works will at an early date transfer its extensive plant from Windsor to Brantford.

The Sault Ste. Marie Pulp and Paper Co. have taken out 4,000,000 ft. of pine saw logs, 20,000 cords of pulp wood, and 50,000 cubic feet of waxy pine timber.

The barrel factory of W. H. Matthews, Trenton, was recently destroyed by fire.

The Morgan Falls Pulp Co., Limited, of New Germany, N.S., have shipped ten vessel loads of pulp to the American market, aggregating 1,457 ton, during the past ten months.

The Fensom Elevator Works, Toronto, manufacturers of electric, hydraulic, steam and hand elevators are putting on the market a very useful article in the shape of a Floor Stop and Lock which stops the elevator even with the floors without handling the rope, saving all short lifting, and locks the elevator at the same time, securing absolute safety while removing or loading freight. The device is for freight elevators only.

Allen Bros., Grimsby, Ont., will build a new planing mill.

At Orillia, Ont., the Tudhope Carriage Company is getting out plans for a \$15,000 enlargement to their premises. It will be a three-storey metal covered building, 50 feet wide by 140 feet deep.

A company has been formed at Ingersoll, Ont., to take over the old Russell foundry and transform it into a bicycle rim factory.

H. G. Hall's tub factory and John Jones cream separator at Bolton (Glen, Que., were destroyed by fire, June 27th, and on the 28th the tub factory of Manoch & Welcome at Stukely, Que., was burned.

The Bowmanville Cycle Wood Rim Company, Bowmanville, Ont., is being incorporated, with a capital stock of \$95,000, to manufacture rims, guards, etc.

The Imperial Government is building a powerful electric light plant at Fort Clarence, Halifax, entirely concealed from view and protected by earth and masonry. The object of the installation is to obtain a revolving search light of great power to control entrances by eastern passage and Drake's passage, also all the western entrances north of York Redoubt.

The Government has announced that the tender of the Messrs. Allan, of Montreal, for a 20-knot service was the lowest, and that it not only complied with all the requirements of the specifications but that the amount was within the joint subsidy offered by the Imperial and Canadian Governments, to be paid, two-thirds by the Canadian and one-third by the Imperial Government. The contract is subject to the approval of Parliament. The tenders provide for a twenty-knot service in vessels of over five thousand tons, fitted up with a large amount of refrigerator space for fruit, fish, meat, butter, and similar freight.

In a recent issue of the Nelson, British Columbia, Tribune that journal says: "Samuel M. Trapp announces that he has perfected a new process for smelting and refining ores and that he will give a demonstration of the same shortly. Trapp is credited with saying that he has been at work on it for sixteen years, during which time he has visited Europe seven times for the purpose of consulting scientists of the highest authority. The hydro-carbonic oxygen process, as he calls it, is capable of reducing ores, no matter how refractory. With it he claims to reduce gold, silver, copper, or iron and other ores, separate the metal from all base metals, and refine it so that it is ready for market, all at a cost of less than \$1 a ton. He expects to make use of the slag to make bricks for various purposes, including paving and material for many other uses." Should Mr. Trapp's anticipations be realized, his process is will be just the thing for this country.

Graphite works are being erected in Ottawa. In a few days there will arrive in that city says the Journal, the first consignment of machinery for these works. The ore to be treated will come from our extensive deposit of high grade plumbago in the Renfrew district, owned and operated by Ottawa capitalists. Mr. Cirkel, the expert for the company, recently returned from Germany, where he inspected the graphite works in Bavaria and elsewhere, and has selected a plant which will be put into operation here shortly. He proposes to treat the Canadian ore by a new process of his own invention.

## Abell Patent Automatic ENGINES Easton System Electrical Machinery

The John Abell Engine and Machine Works Co., Ltd  
TORONTO, CANADA. Catalogues Free by Mail.

# CANADA MACHINERY AGENCY

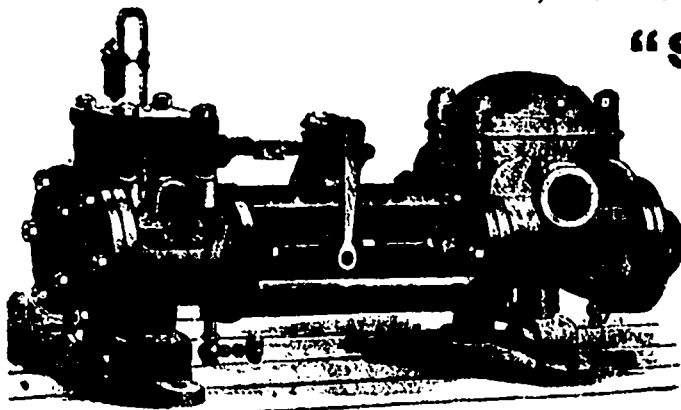
321 ST. JAMES STREET, MONTREAL

"SNOW"

DUPLEX  
STEAM  
PUMPS

..FOR..  
EVERY SERVICE

Iron Tools, Wood-  
Working  
Machinery



STEAM ENGINES, BOILERS OF EVERY TYPE, SAW  
MILL MACHINERY, ETC.

CANADA MACHINERY AGENCY, W. H. NOLAN, Manager  
321 St. James Street, Montreal



**ALGOMA IRON WORKS**

SAULT STE. MARIE, ONT.

**Engineers  
Founders  
AND  
Machinists**

PULP AND PAPER MILL

AND  
MINING MACHINERY

DESIGNED, CONSTRUCTED and  
REPAIRED

... MANUFACTURERS ...

Seeking Locations  
Communicate with

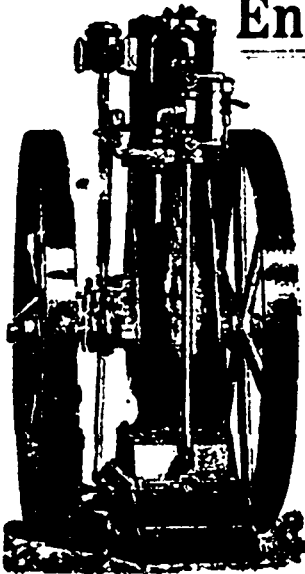
JAMES MORE, Town Clerk  
DUNDAS, ONT.

Liberal Inducements—Good Location  
Desirable Buildings

**METAL STAMPS****BRASS SIGN** MNFRS, ETC.**PATTERSON & HEWARD**

40 WELLINGTON ST. WEST, TORONTO

THE ELECTRICAL GAS OR GASOLINE...

**Engine**

WRITE  
FOR  
PRICES  
AND  
TESTI-  
MONIALS

**J. R. BAIRD**

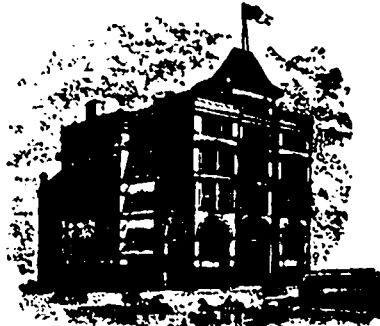
WOODSTOCK, ONTARIO

**The Grand Union**

The most modern Hotel in the City.  
RATES \$1.50 and \$2 PER DAY

**Special Features**

Steam Heated, Elevators  
Bath Rooms on Every Floor.  
Speaking Tubes from Every Room.  
Street Cars Pass the Door.  
Roof Garden for Exclusive Use of Guests.



Corner of Front and Simcoe Streets,  
Opposite Entrance to Union Station  
TORONTO

CHARLES A. CAMPBELL, Proprietor

WRITE TO THE

**PATON MANUFACTURING COMPANY**

OF SHERBROOKE, QUE.,

— FOR —

**WORSTED KNITTING**

— AND —

**FINGERING YARN.**

Montreal Office:—409 Board of Trade Building.

Toronto Office:—33 Melinda Street.

**H. W. KARCH****HESPELER, ONT.****IRON FOUNDER and MACHINIST**

MANUFACTURER OF

**WOOLEN . . .  
MACHINERY**

FULLING MILLS;  
CLOTH WASHERS,

**WOOL & WASTE DUSTERS**

DRUM SPOOL WINDERS,  
REELS,

Spooling & Doubling Machines,  
Ring Twisters, Card Creels,  
Rag Dusters.

**Dead Spindle Spooler**

(For Warp or Dresser Spools).

**Patent Double-Acting Gigs,****Dyeing Machines.****Firstbrook Bros.****Dovetail and Packing Boxes**

Top-Pins, Side Blocks and Cross Arms. Wood  
Printers, Etc.

Cigar Boxes. Shipping Cases.  
TORONTO. ONTARIO.

Write for Prices

The proposed bicycle factory in Smith's Falls, Ont., has been granted exemption from taxes for eight years.

The British and Canadian Gold and Silver Mines Co., Toronto, is being incorporated with a capital stock of \$15,000,000 to develop mines in British Columbia.

An agreement has been entered into between the town of Midland and the Manitou Wood and Pulp Company, in accordance with which the company is to erect and run a pulp mill in Midland in consideration of tax exemption and other privileges granted by the town. Midland is in the centre of a fine pulp wood country in north central Ontario, and is well situated for shipping both by rail and boat.

The changes in the mills of the E. B. Eddy Company, of Hull, Que., comprise the putting in of a further supply of beating engines, stuff pumps, rotary and guillotine paper cutters, printing presses, and one of the most modern types of fast running cylinder machines for making fine quality, light weight tissue and toilet papers.

During June 10,850,833 feet of logs went to Bay City from Canada, also 4,374,322 feet of lumber and 1,378,900 pieces of lath. This is the largest month's exportation of forest products on record.

Jas. Brodrick & Son's new Crown Roller flour mills at Sterling, Ont., were started up on the 11th instant.

E. Benjamin is erecting a wheel and hub factory 45x72 feet, a brick warehouse 36x75 feet, and a brick dry kiln 45x45 feet, three storeys high at Yarker, Ont.

The Dominion Cold Storage Co., of Montreal, purposes erecting a storage warehouse at London, Ont., at a cost of \$125,000. A proposition has been submitted to the city council which will be considered at an early date.

The Cascapedia Pulp and Lumber Co., Quebec City, is being incorporated with a capital stock of \$300,000, to manufacture pulp and lumber.

The Bowmanville Rubber Co., Bowmanville, Ont., is being incorporated with a capital stock of \$75,000.

The W. A. Johnson Electric Co., Toronto, have been awarded the contract for a 40-arc light dynamo for Toronto Junction, Ont.

Work is being pushed on the Facor Car Wheel Co's. Works at Perth, Ont.

Listowel, Ont., is agitating for water works and electric light systems.

The first sod was turned on the Coboury, Northumberland and Pacific Railway on the 8th instant.

During the month of June the traffic through the Canadian Soo and the St. Mary Falls Canal showed an increase of 481,641 tons of freight and 336 passengers over June, 1895.

The Dominion Bridge Co., Montreal, has the contract for a new bridge at Glen Sutton, Que.

The Geiss Machinery Works, Hamilton, Ont., are again in operation.

The North American Paper and Lumber Co., Halifax, N.S., is being incorporated with a capital stock of \$100,000.

St. Thomas, Ont.—George Taylor boiler maker was burned out recently.

The following mining companies are being incorporated in British Columbia:—The Erie Gold Mining Co., Rossland, capital stock \$1,000,000; The Queen Gold and Silver Mining Co., Vancouver, capital stock \$500,000; the Victoria Mining and development Co., Victoria, capital stock \$1,000,000; the Alliance Prospecting Syndicate, Vancouver, capital stock \$100,000; the Red Mountain View Gold Mining Co., Rossland, capital stock \$1,000,000; Alberni Mountain Rose Gold Mining Co., Vancouver, capital stock \$250,000; The San Francisco Gold Mining Co., Rossland, capital stock \$1,000,000; Pittsburg Gold Mining Co., Rossland, capital stock \$750,000; Kootenay-London Mining Co., Rossland, capital stock \$1,000,000; The Columbia Mining Co., of Victoria, British Columbia, Victoria, capital stock \$100,000.

The Sturgeon Falls Pulp Co. will erect a new mill at Sturgeon Falls, Ont. The Company expect to get about 10,000 cords of pulp wood this season. The amount to be expended by the Company is estimated at about \$75,000.

Watson & Malcolm, furniture manufacturers, Kincardine, Ont., are building an addition to their factory.

The Gurney-Tilden Co., stove manufacturers, Hamilton, Ont., are enlarging their works.

Millen & Pyott's basket factory at Stoney Creek, Ont., was burned July 8th, loss \$5,000.

The following foreign mining companies have been registered in British Columbia:—The Emu Mining Syndicate, England, capital stock £10,000; The Green Crown Mining Co., Spokane, Wash., capital stock \$1,000,000; The Interstate Mining Co., Spokane, Wash., capital \$750,000; California Gold Mining Co., Spokane, Wash., capital stock \$2,500,000.

The new cold storage warehouse of the Winnipeg Cold Storage and Refrigerating Co. is nearing completion. The walls have been closed in for some time, showing the building to be large and substantial. Some of the cold storage apartments will soon be ready to receive goods.

Mr. Nat McNair's shingle mill at Dunlap Settlement near Bathurst, N.B., was burned July 5th.

Brown & Bogg's Foundry at Hamilton was damaged by fire to the extent of \$200 on the 5th instant.

The Canadian Band Drill Company, Sherbrooke, Que., contemplate an enlargement of their factory.

The Hobbs Manufacturing Company, of London, Ont., is making arrangements largely to increase its manufacturing business.

Wm. A. Eby, Floradale, Ont., has rebuilt his saw mill burned some time ago, and will refit it with the latest improved machinery.

The Montreal Street Railway Company is now engaged in enlarging its William Street power house. A number of men are at work upon the foundations for a new chimney which is to be some 230 feet in height, and for an extension of the present premises. When completed, the building will be about double its present size, and will compare favorably with any electric power house on the continent.

R. C. Jamieson, A. T. Higginson.  
**R. C. JAMIESON & CO.**  
 Manufacturers of  
**VARNISHES AND JAPANS** | Importers of Oils, Paints, Colors,  
 SPIRITS, Shellacs, Resins, Glues, Gold Leaf, Bronze, etc.  
 Office—13 ST. JOHN STREET  
 Factory and Warehouse—25 to 29 ST. THOMAS ST., | MONTREAL.

**ROSAMOND WOOLEN COMPANY**  
 ALMONTE, ONT.  
 FINE TWEEDS, CASSIMERES, AND FANCY  
 WORSTED SUITINGS AND TROUSERINGS.


**AUBURN WOOLEN COMPANY**  
 PETERBOROUGH, ONT.  
**Manufacturers of Fancy Tweeds, Etc.**  
 Selling Agents, D. MORRICE, SONS & CO., Montreal and Toronto.

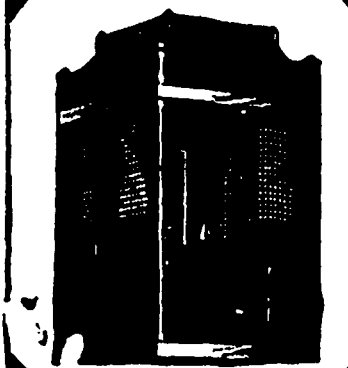
**FERGUSON & PATTINSON**  
 PRESTON, - - ONTARIO.  
 MANUFACTURERS OF  
**FINE AND MEDIUM TWEEDS**

**Penman Manufacturing Co., Ltd.**  
 PARIS, ONTARIO.  
 Manufacturers of  
**HOSIERY, SHIRTS, DRAWERS,  
 GLOVE LININGS AND YARNS**  
 Selling Agents: D. MORRICE, SONS & CO., Montreal and Toronto.

**Guelph Woolen Mill Co., Ltd.**  
 GUELPH, - - - ONTARIO  
 Manufacturers of  
**Underwear, Hosiery, Wheeling, Fingering and Worsted Yarns**  
 EIDERDOWN FLANNEL, ETC.  
 Selling Agents: Donald Fraser, Montreal E. H. Walsh & Co., Toronto

JORDAN CHAMBERS 17 JORDAN ST.  
  
**W. J. ENGRAVER ON WOOD**  
 TORONTO ONT.

Babbitt Metal.   
**BRASS, BRONZE, PHOSPHOR BRONZE, ALUMINUM  
 BRONZE, COPPER, ZINC and ALUMINUM  
 CASTINGS TO ORDER. Large or Small.**  
 Write for Prices... **DEAN BROS., 184 Richmond St. West, Toronto**

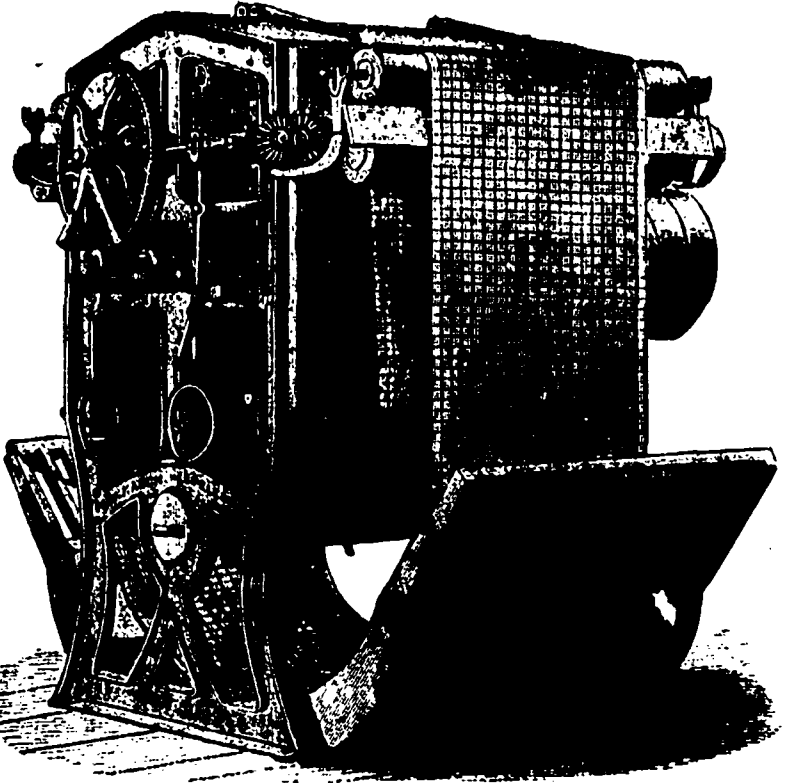
  
**ELEVATORS**  
**FENSOM ELEVATOR WORKS**  
 52-54-56 DUKE ST  
 TORONTO.  
 ELECTRIC HYDRAULIC  
 STEAM & HAND-POWER  
 PASSENGER & GOODS  
 ELEVATORS. DUMB WAITERS

**IMPROVED DOUBLE-ACTING ROTARY GIG.**

The illustration represents H. W. Karch's Improved Double-Acting Rotary Gig. It is built in a thorough and substantial manner. Heavy iron frames, large shafting, wide-faced pulleys, and has two driving belts—straight and cross—so that can be reversed without changing the goods. The draw rollers are driven by a system of bevel gears, so arranged that the goods can be run with or against the cylinder, and be kept perfectly straight and free from wrinkles with little attention on part of the operator. The contacts of the cloth with the gig cylinder can be increased, and the tension increased or diminished to a nicety, allowing more and a different kind of work, while the nap is more thoroughly raised. By this method of construction the cylinder is completely enclosed, so that the operator may examine the cloth, and at the same time be protected from all flocks or flyings, or from any dust that may arise by the action of the teazels upon the cloth, a most objectional feature in all gigs heretofore made. The cylinder vibrates rapidly, making it impossible to leave streaks. The cloth is run continually onward, or reversed at the same time, if desired, and is brought in contact with the teazels in two places in passing over the cylinder. It requires less attention than an up and down gig, and is so constructed that the slats can be changed rapidly. It takes no more floor space than an ordinary gig. It needs only to be seen in operation to be appreciated. Advantages claimed are:—

1. Throwing no flocks or dust, no need of the operator wearing a sponge.
2. The cloth traverses through the machine with its right side outward, so that it is always in view of the operator, allowing more rapid, easier, and more accurate gigning.
3. The contact of the cloth with the cylinder can be increased and the tension increased or diminished to a nicety, allowing more and a different kind of work, while the nap is more thoroughly raised.
4. The goods can be run with or against the cylinder.
5. Can be used as an up and down gig if desired.

6. Requires less attention than any other gig made.
7. Less dangerous to the operator than any other gigs. No bolts to slip.
8. Gears are enclosed and will not clog up with flocks. These machines made any width desired.



**Kay Electric Manufacturing Co.**

255 James St. N., Hamilton, Ont.

Makers of.....

**ELECTRIC MOTORS**

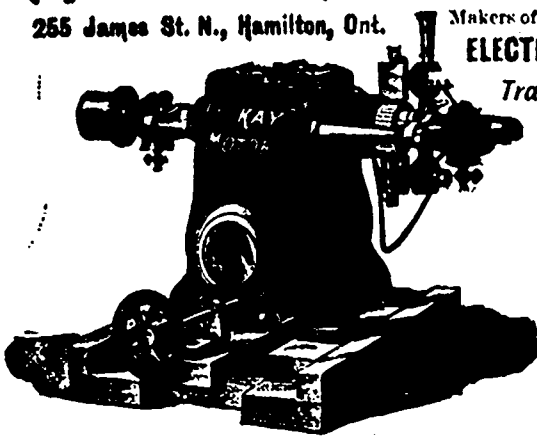
Transformers

**DYNAMOS**

**PLATING MACHINES**

ETC.

Please let us know your requirements. Write for latest prices and testimonials.



**OUR NEW**

**4-Pole Motor**

In sizes down to 6 h.p. and speed down to 125 revolutions per minute.

At this speed it is especially adapted for direct connection. We have over 300 motors running in Toronto.

Our sales in Toronto for the past three years exceed the combined sales of all others.

**TORONTO ELECTRIC MOTOR CO.**

106, 107, 109 Adelaide Street West, Toronto, Ont.

**VALVES AND PIPE FITTINGS**

WRITE FOR LATEST PRICES

**RICE LEWIS & SON**

(LIMITED)

Corner King and Victoria Streets, TORONTO

ESTABLISHED 20 YEARS.

**A. KLIPSTIEN & CO.**

122 PEARL ST., NEW YORK.

**ANILINES, DYESTUFFS, AND CHEMICALS**

Of every variety, of the best quality and at the lowest prices. Delivery made at New York, Montreal or Hamilton

WRIGHT & DALLYN, Agents, HAMILTON, ONTARIO.

**CANADIAN PATENTS.**

The following patents have been issued from the Canadian Patent Office, from April 28th, to May 18th, 1896.

Information regarding any of these patents may be had on application as follows:—

Fetherstonhaugh & Co., Bank of Commerce Building, Toronto.

Ridout & Maybee, 103 Bay Street, Toronto.

C. H. Riches, Canada Life Building, Toronto.

A. Harvey, Central Chambers, Ottawa.

Copies of any American patents can be procured from either of these attorneys for the sum of twenty-five cents each.

- 52,133 Attachment for bicycles, C. A. Coey, Fairfield, Wash.
- 52,134 Steam pump, J. B. Erwin, Milwaukee, Wis.
- 52,135 Machine for making box planks, Wm. Healey, Chicago, Ill.

- 52,136 Rivet-setting machine, H. S. Crombie, Waltham, Mass.
- 52,137 Culinary implement, D. Ward, Arnprior, Ont.
- 52,138 Machine for blowing glass, M. J. Owens and E. D. Libbey, Toledo, Ohio.
- 52,139 Machine for blowing glass, M. J. Owens and E. D. Libbey, Toledo, Ohio.
- 52,140 Bed-plate for paper pulp engines, F. E. Maxfield, Holyoke and E. W. Lovejoy, Lowell, both of Mass.
- 52,141 Apparatus for separating and saving gold, Jos. Mait, Oakland, Cal.
- 52,142 Calendar for pencils, etc., G. W. Johnson, Toronto.
- 52,143 Funeral monument, E. Cote, St. Cesaire, Que.
- 52,144 Cigarette making machine, J. A. Allagnon and G. J. Allagnon, Vitry sur-Seine, France.
- 52,145 Road making machine, A. Barbite, Toronto.
- 52,146 Calendar, A. S. Walmer, Palmyra, Pa.
- 52,147 Sprocket chain, B. F. Spurr, Newark.

- 52,148 Process of and apparatus for obtunding the sensory nerves of a tooth during the excavation of a cavity therein, W. P. Horton, Jr., and A. B. Jones, Cleveland, O.
- 52,149 Vehicle spring, R. T. Lombard and W. J. Hopkins, Racine, Wis.
- 52,150 Brake, E. S. Hall, New York City.
- 52,151 Seed Drill, W. L. Marshall, Port Perry, Ont.
- 52,152 Railway gate, J. N. Goltz, Buffalo, N. Y.
- 52,153 Pneumatic tire puncture band, D. W. Noyes, Boston, Mass.
- 52,154 Box-iron, F. E. Hunter, North Fitzroy, Victoria, Australia.
- 52,155 Self cooling condenser, H. R. Worthington, Elizabeth, N.J.
- 52,156 Bicycle, R. Grilli, 15 Sumscaia, Charkoff, Russia.
- 52,157 Sprocket chain, The Fanning Ball Bearing Chain Co., Keokuk, Iowa.
- 52,158 Couch, E. V. Peck, Brooklyn, N.Y.
- 52,159 Air brake, W. K. Omick, Pontiac, Mich.

**FETHERSTONHAUGH & CO.**

PATENT BARRISTERS AND SOLICITORS

ELECTRICAL AND MECHANICAL EXPERTS AND DRAUGHTSMEN

Cable Address "Invention Toronto." TELEPHONE 2389

**Patents** Procured in Canada and all Foreign Countries.

Head Office: Canadian Bank of Commerce Bldg, Toronto

**A. HARVEY, C.E.**  
PATENT ATTORNEY

OTTAWA

CANADA.

Established 1884, with Twenty years Professional Experience in Canada, England and Germany.

OFFICES—Rooms 33 and 34 Central Chambers

Address: Postal Box 1071.

TELEPHONE

Send for Circular 48a "How to Obtain a Patent."

**BRUNNER, MOND & CO., (LTD.), Northwich, Eng.**

MANUFACTURERS OF

**PURE ALKALI**

GUARANTEED 38 DEGREES

**BLEACHING POWDER AND**

**CAUSTIC SODA, 70%, 74%, & 76%**

**Winn & Holland, Montreal**

SOLE AGENTS FOR THE DOMINION OF CANADA.

**Wm. J. Matheson & Co., Ltd.**

423-425 ST. PAUL ST., MONTREAL

ALSO AT

NEW YORK, BOSTON, PHILADELPHIA, AND PROVIDENCE, U.S.A.

IMPORTERS AND MANUFACTURERS OF

**DYE STUFFS NATURAL AND ARTIFICIAL**

Works—Long Island City, Port of New York  
Main Office—178 Front Street, New York

The Strongest and Cheapest Form of 300A ASH for the Manufacture of . . .

**SOAP, GLASS, PAPER, WOOD PULP AND COLORS**

Also for Printers and Bleachers

WE MANUFACTURE AND IMPORT

**Every Modern Dye Stuff**

Sole U.S. and Canada Agents for

Leopold Cassela & Co., Frankfort-on-the-Main, Germany.

W. C. Barnes & Co., London, England.  
Manufacture Lyonnaise de Matieres Colorantes  
Lyons, France.

Albany Coal Tar Dye & Chemical Co., Albany, N.Y.

- 52,160 Washing machine, J. H. Lamson, Sreator and W. A. Bass, Pow Wow, Ill.
- 52,161 Hand car, W. H. Saladeo and G. P. Parks, Bedford Ind.
- 52,162 Car-coupler, J. Wagner Aschersleben and Franz Jordan, Cothorn in Anhalt, both in Germany.
- 52,163 Kettle cleaner, Ella G. De Laney, Conway, North Dakota
- 52,164 System of flooring, walling, etc., E. L. Peace, Harwarth-on Tees Eng.
- 52,165 Horse collar, O. J. Westfall, Fairmount, N.Y.
- 52,166 Frog for railway track, U. Gilbeault, St. Isidore Junction, Que.
- 52,167 Split switch, U. Gilbeault, St. Isidore Junction, Que.
- 52,168 Stove leg, J. A. Partridge, Saylesville, R. I.
- 52,169 Stove truck, L. O. Wiswoll, Albany.
- 52,170 Heater for vehicles, T. H. C. Beall, Cicero, Ind.
- 52,171 Ice harvesting machine, D. B. Arnold, Terre Haute, Ind.
- 52,172 Domestic heating furnace, J. Jamieson, Truro, N.S.
- 52,173 Sash holder, J. A. Hemzerling, Seattle, Wash.
- 52,174 Ball bearing, The American Harrow Co., Detroit, Mich.
- 52,175 Pneumatic tire, F. W. Morgan and Rufus Wright, Chicago, Ill.
- 52,176 Saw set, R. Dillon, Oshawa, Ont.
- 52,177 Anti-rattler and shaft holder, A. M. Stewart, Winnipeg, Man.
- 52,178 Shock cover, H. Walker, Isle aux Peches, Ont.
- 52,179 Car coupling, T. Hagen, Tripoli, Iowa.
- 52,180 Cushion, W. Vagler, Somerville, Mass.
- 52,181 Smelter for fusing mineral ores, C. Bishop, Tacoma, Wash.
- 52,182 Bicycle frame, J. P. McCloskey, Sarnia, Ont.
- 52,183 Can, W. A. Read, Liverpool, England.
- 52,184 Massage appliance, W. Douglas, Toronto.
- 52,185 Non-refillable bottle, J. L. Wolf, New York City.
- 52,186 Life boat, A. L. H. Short, Tarborough, N.C.
- 52,187 Valve, J. C. Getty, Indiana, Pa.
- 52,188 Pianoforte, R. M. Squire, Montreal.
- 52,189 Coin operated gas meter, D. Orme, Oldham England.
- 52,190 Current motor, J. W. Cover, Everett, Wash.
- 52,191 Apparatus for raising sunken vessels, A. Leech, Harringay Park, London, England.
- 52,192 Manufacture of mouth pieces for cigar, J. S. Beeman, Camberwell, Australia.
- 52,193 Tie plate, B. Wollhaupter, Chicago, Ill.
- 52,194 Block signalling on railways, J. G. Dixon, Huddersfield, England.
- 52,195 Type casting and setting machine, The Goodson Type Casting and Setting Machine Co., Minneapolis, Minn.
- 52,196 Wood working machine, Wm. Tickle, Liverpool, England.
- 52,197 Bottle stopper, F. J. Robinson, Chicago, Ill.
- 52,198 Coin feed fluid meter, F. Wright, Westminster, England.
- 52,199 Advertising block, O. L. Owen, Paterson, N.J.
- 52,200 Spray nozzle, T. L. Murphy, New York City.
- 52,201 Manufacture of cast metal wheels, A. D. Thomas, Little Rock, Arkansas.
- 52,202 Piano stool, H. Martin, Toronto.
- 52,203 Strength testing apparatus, J. Currie, Montreal.
- 52,204 Raisin-seeding machine, C. Bristow, Wellington, New Zealand.
- 52,205 Vehicle wheel and device for expanding the fellyes, A. Charbonneau, Spokane, Wash.
- 52,206 Letter file, W. O. Gottwals, Ottawa, Ont.
- 52,207 Hot water furnace, E. A. Manney & Co., Beauharnois, Que.
- 52,208 Bottle stopper, C. H. Davis, Chicago.
- 52,209 Bottle stopper, C. C. Brown, Marquette, Mich.
- 52,210 Gun carriage, The Right Hon. Douglas Mackinnon Bailie Hamilton Cochrane, 34 Portland Sq., London, England.
- 52,211 Gas controller, E. Brownhill, New York City.

## KERR WATER MOTORS

18 TO 20 HORSE POWER.



Noiseless Running, Requires No Attention, operated with water at a pressure of 30 pounds and upwards.

**R**ELIABLE Intending purchasers can have our Motors on trial by writing us, stating water pressure available, power required and class of work to be done.

Our Motors are sold on their merits. Our prices are low. Write us. Enquiries solicited and cheerfully answered.

**Kerr Water Motor Co.,**  
NIAGARA FALLS, CANADA.

### RICH DISCOVERIES OF GOLD

At Cripple Creek, Colo., and elsewhere, are being made daily, and the production for 1896 will be the largest ever known, estimated at Two Hundred Million Dollars. Cripple Creek alone is producing over One Million Dollars a month, and steadily increasing. Mining Stocks are advancing in price more rapidly than any other Stocks, and many pay dividends of 25 to 50 per cent. They offer the best opportunity to make a large profit on a small investment.

JOHN I. TALLMAN & CO., 45 Broadway, New York, are financial agents for the Prudential Gold Mining Co., and others in the famous Cripple Creek district. They will send you free, interesting particulars of the Mining Companies they represent, also their book on speculation in Stocks, Grain and Cotton, containing many new and important features.

Send for these books at once if you are interested in any form of speculation or investments. They may prove profitable to you.

Reproductions Made for Eight Cents per Square Inch



Half Tones Made Direct from Photos

The COAST LINE to MACKINAC

TAKE THE



TO MACKINAC  
DETROIT  
PETOSKEY  
CHICAGO

2 New Steel Passenger Steamers

The Greatest Perfection yet attained in Boat Construction — Luxurious Equipment, Artistic Furnishing, Decoration and Efficient Service, insuring the highest degree of

COMFORT, SPEED AND SAFETY.

FOUR TRIPS PER WEEK BETWEEN

Toledo, Detroit & Mackinac

PETOSKEY, "THE SOO" MARQUETTE, AND DULUTH.

LOW RATES to Picturesque Mackinac and Return, including Meals and Berths. From Cleveland, \$18; from Toledo, \$15; from Detroit, \$13.50.

EVERY EVENING

Between Detroit and Cleveland

Connecting at Cleveland with Earliest Trains for all points East, South and Southwest and at Detroit for all points North and Northwest.

Sunday Trips June, July, August and September Only.

EVERY DAY BETWEEN

Cleveland, Put-in-Bay & Toledo

Send for Illustrated Pamphlet. Address

A. A. SCHANTZ, S. P. A., DETROIT, MICH.

The Detroit and Cleveland Steam Nav. Co.

THOMAS PINK

PLMEROKE ONT

Pink Peaveys, Handles, Cant Hooks

Split Maple Handles

Duck Bill Cant Hooks

Cast Steel Skidding Tonge

Duck and Round Bill Peaveys

Car Load or Dozen Lots

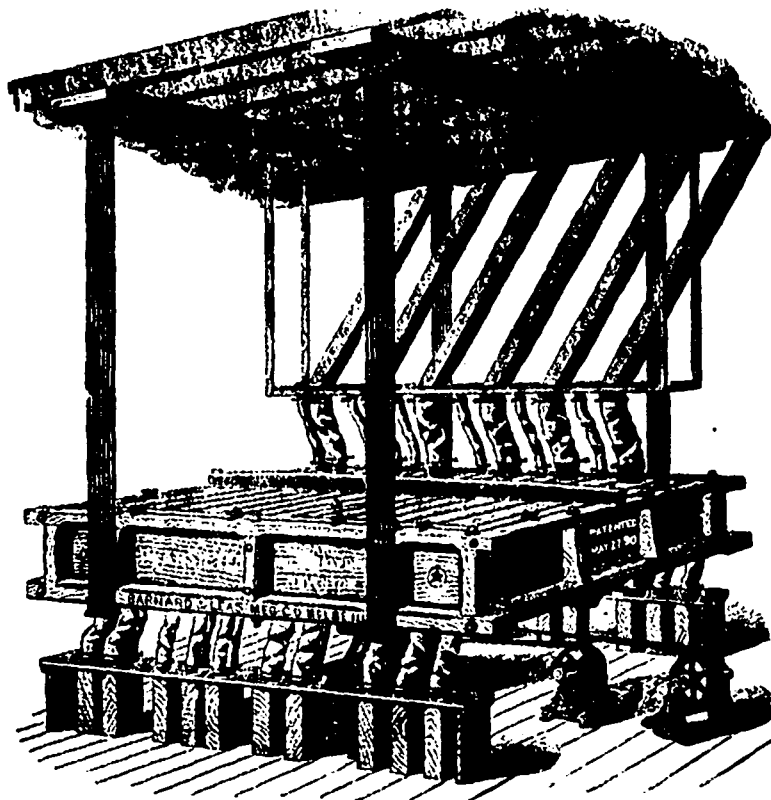
# THE PLANSIFTER

## HAS COME TO CANADA TO STAY!

This wonderful Machine will Scalp, Grade off Coarse Middlings, Grade off Fine Middlings, and Bolt the Flour from each Reduction, whether on Wheat or Middlings.

### ADVANTAGES ARE

- It Saves Space
- It Saves Power
- It Saves Cloth
- Makes Better Separations
- Makes Purer Stock
- Makes Better Flour
- Makes Better Clean-up
- Makes Closer Finish



- Makes Larger Yield
- Makes Milling Easier
- No Vibration
- No Noise, No Dust
- Easily Controlled
- Insures Uniform High Grade
- Increases Capacity
- Must Come Into General Use

## ONE PLANSIFTER AND TWO LITTLE WONDER REELS

Will do all the Scalping and Bolting in any mill from 25 to 100 barrels' capacity.

## ...Two PLANSIFTERS and Two Little Wonder Reels...

Will do all the Scalping and Bolting in any mill from 125 to 200 barrels capacity. The size of these machines varying according to capacity required.

We invite Millers to thoroughly investigate the results of THE PLANSIFTER System and be convinced of its superiority, and that it is bound to supersede all others. A careful enquiry will convince the most skeptical.

**BIG MILLS CAN'T AFFORD TO DO WITHOUT THEM, AND THEY DO CHARMING WORK IN THE SMALLEST MILLS**

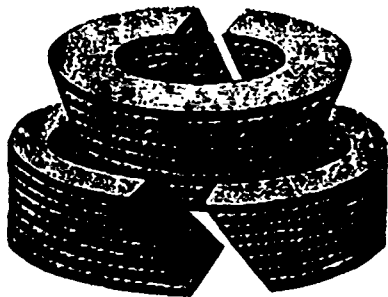
CORRESPONDENCE INVITED, AND WILL RECEIVE PROMPT ATTENTION

# WM. & J. G. GREY, 2 Church St., Toronto, Ont.

SOLE LICENSEES AND MANUFACTURERS FOR CANADA

- 52,212 Cash register, D. MacLaren, Ottawa, Ont.
- 52,213 Lamp chimney holder, W. G. Trethewey, Vancouver, and L. G. Munn, New Westminster, B.C.
- 52,214 Gas lamp, W. J. Thomas, Denmark Hill, Surrey, England.
- 52,215 Touch-regulating device for pianos, G. H. Arthur, Terre Haute, Ind.
- 52,216 Wheelwright machine, S. C. Deane, Englewood, Ill.
- 52,217 Buffing appliance, G. H. P. Flagg, Boston, Mass.
- 52,218 Buffing appliance, G. H. P. Flagg, Boston, Mass.
- 52,219 Method of producing the paste for electric accumulators, R. Lunde, Berlin, Prussia.
- 52,220 The mode of sealing and opening tin cans or boxes, P. J. Taeger and Oliver Asselin, Ottawa, Ont.
- 52,221 Combination tool, W. Thompson, Fremont, Ohio.
- 52,222 Regenerative furnace, S. M. Trapp, Tacoma, Wash.
- 52,223 Saw set and gauge, G. Hope, Shrigley, Ont.
- 52,224 Inspirator, G. B. Farmer, Perth, Ont.
- 52,225 Car coupler, The Moonaw Car Coupler Co., Salem, Va.
- 52,226 Paper box machine, A. B. Cowles, Rochester, N. Y.
- 52,227 Apparatus for supplying gas to atmospheric or other burners, J. F. Duke, 160 Rosendale Road, Dulwich, England.
- 52,228 Show fixture, E. Leger, Chicago, Ill.
- 52,229 Pen holder, S. Bromley, Pembroke, Ont.
- 52,230 Medicine case and saddle bag, J. F. Smoot, Concord, N. C.
- 52,231 Bottle, etc., J. Moyur, Brooklyn, N. Y.
- 52,232 Grinding machine, H. A. Hayward, Londonderry, Vt.
- 52,233 Wagon, W. K. Loft, Luscarora, Ont.
- 52,234 Process of making flexible metal baths, J. L. Hutcheson, Toronto.
- 52,235 Shirt making system, M. L. Schloeman, Montreal.
- 52,236 Bicycle attachment, G. W. Aldrich, Brooklyn, N. Y.
- 52,237 Bicycle support, W. K. Andrews, Mill Village, Pa.
- 52,238 Driving mechanism for cycles, C. Voss and G. Sauer, Minden, Prussia.
- 52,239 Interchangeable hood and drip tray for bottles, F. T. Trebilcock, London, and C. A. Bastedo, Toronto.
- 52,240 Garment protector, M. J. Foxworthy, Lincoln, Nebraska.
- 52,241 Device for hanging sliding doors, J. M. Titrent, Chicago, Ill.
- 52,242 Wheel barrow, W. P. Carmichael, Savannah, Ga.
- 52,243 Canister for tobacco, A. G. Snowden, Montreal.
- 52,244 Gravity dam for impounding water, S. D. Phillips, La Fayette, Ind.
- 52,245 Device for protecting and cancelling checks, etc., The Beebe Check Protector Co., Minneapolis, Minn.
- 52,246 Process of and apparatus for producing fancy colored jacquard double-plush, Kunstwerber, Clavies & Co., Leipzig, Germany.
- 52,247 Derailing frog, O. J. Travis and R. A. Dugan, Joliet, Ill.
- 52,248 Bottle stopper, A. Stern, B. Stern and M. J. Hinckel, Cleveland, Ohio.
- 52,249 Rolling pin, F. E. Wolff, G. Finfrock and W. Pratt, Chicago, Ill.
- 52,250 Wheel, The National Malleable Casting Co., Cleveland, Ohio.
- 52,251 Guard rail, R. B. Pool, Utica, N. Y.
- 52,252 Drill, W. J. Pease and J. A. Harth, Clinton, Ind.
- 52,253 Bicycle garment, Mrs. A. M. McCauley and L. J. Lennox, Detroit, Mich.
- 52,254 Curry-comb, J. Cardon, Carpantaria, Cala.
- 52,255 Combined exhaust, blower and air brake exhaust pipe for locomotive engines, W. E. Borbridge, Ottawa.
- 52,256 Hose supporter, L. G. Abbott, Syracuse, N. Y.
- 52,257 Mechanical movement, W. S. Johnson, Milwaukee, Wis.
- 52,258 Heat regulating apparatus, W. S. Johnson, Milwaukee, Wis.
- 52,259 Window shelf, L. A. Pendexter, Randolph, Me.
- 52,260 Stove, J. F. and G. Chapler, Montreal.
- 52,261 Furnace, R. Deissler, Treptow, Prussia.

## ENGINEERS' FAVORITE RING PACKING



Rainbow Sheet Packing. Eclipse Gasket Packing  
Sheet Rubber and Plumbago.  
Square Flax. Hemp and Soapstone.  
Asbestos Cement and Pipe Covering.  
Sutton's Boiler Compound.  
Albany Grease.

**WILLIAM C. WILSON & CO.**  
LUBRICATING OILS AND GREASES  
24 FRONT STREET EAST. TORONTO

## George White Fraser

C.E., D.T.S., A.Am. Inst. Elec. Eng.

### CONSULTING ELECTRICAL ENGINEER

Electric Railways and Electric Light  
Construction Superintended.

18 IMPERIAL LOAN BUILDING  
TORONTO

## The UNITED ALKALI COMPANY, Ltd.

OF  
ENGLAND

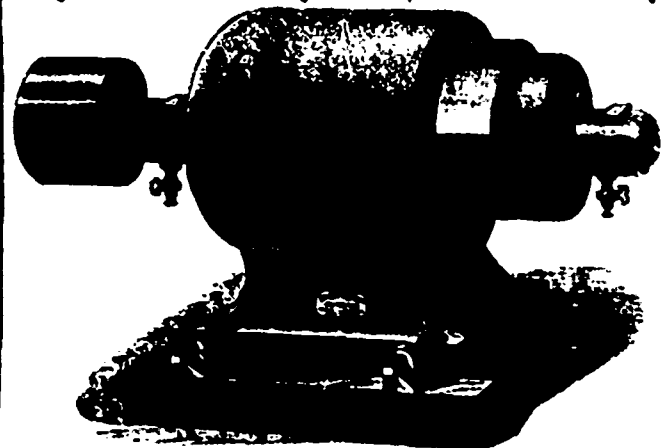
**WILSON, PATERSON & CO.**  
MONTREAL, Sole Agents

CAUSTIC SODA, 99%, 70%, 74%, 76%, 77%; SODA ASH, all strengths  
SAL. SODA; PURE ALKALI, 58%.

Sulphate of Alumina, Borax, Caustic Potash, Hyposulphite of Soda, Bichromate of Soda, Silicate of Soda,  
Crystal Carbonate, Coconut Oil, Palm Oil,  
Castor Oil, Cottonseed Oil, Rosin Oil.

**ROSIN OF ALL GRADES. SOAP MAKERS' SUPPLIES**  
New York Office, 134 Front St.

## The STOREY MOTOR and DYNAMO



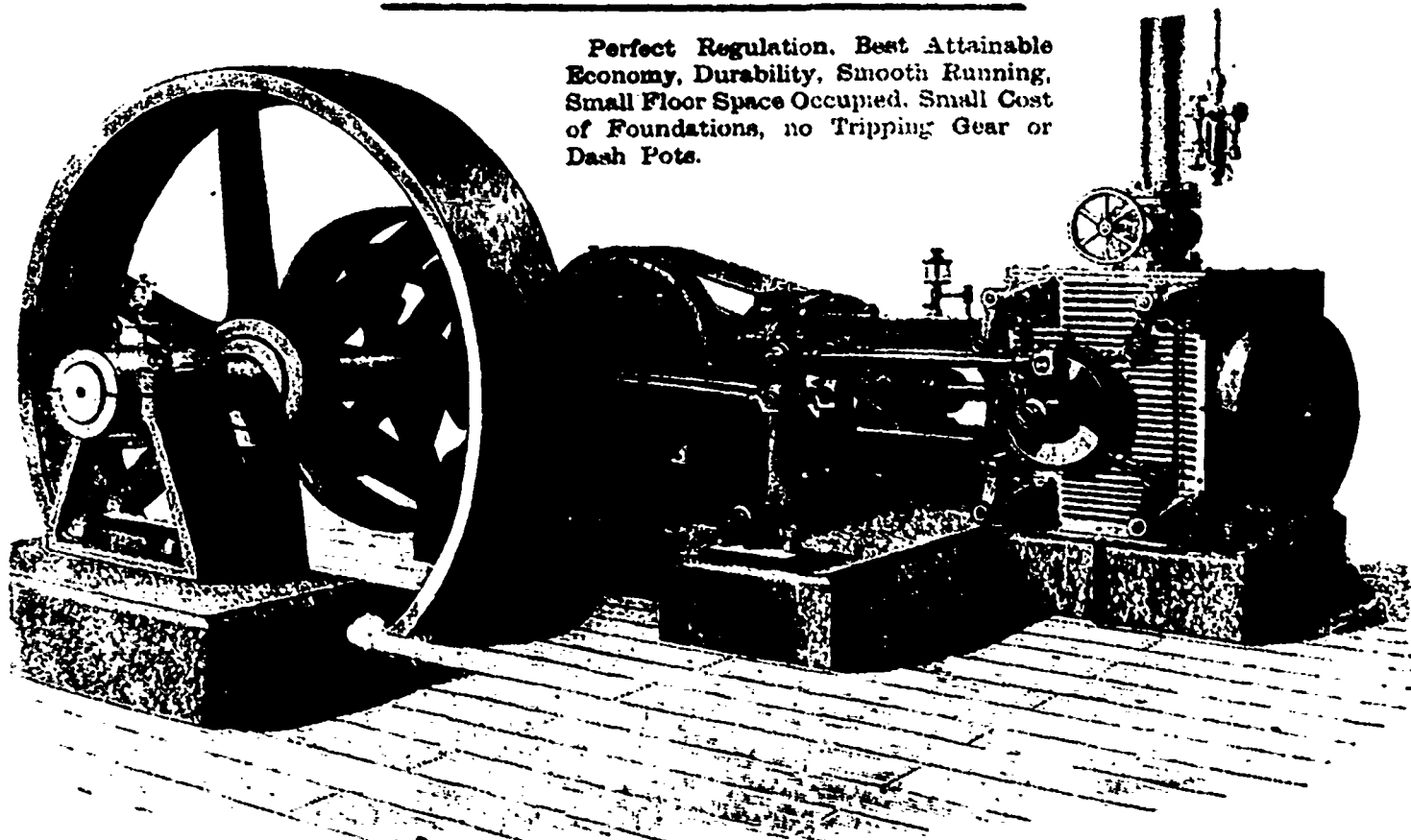
Send for Catalogue. MANUFACTURED BY  
**The STOREY MOTOR and TOOL CO.**  
John St. North, Hamilton, Can., and Philadelphia.

52,262 Oscillating steam engine, H. Mullen, Syracuse, Ill.	52,277 Machine for pickling wheat and other grains, R. Davidson, North Cypress, Man.	52,289 Corn shocker, J. A. Shimp, Ridgely, Ill.
52,263 Method of and apparatus for constructing foundations, R. L. Harris, New York City	52,278 Game, J. H. Cranston, Galt, Ont.	52,290 Lubricator, J. H. Smith, Belleville, Ill.
52,264 Alarm for steam boilers, D. C. McAulay, Port Morion, N.S.	52,279 Bicycle shoe, A. M. Bollinger, Williamsport, Pa.	52,291 Hub for vehicles, M. L. Killam, Malone, N.Y.
52,265 Gas enriching apparatus, G. G. Schroeder, Washington, D.C.	52,280 Burglar proof car, S. H. Williams, Clearmont, Mo.	52,292 Box or receptacle for coal, wood, etc., H. Kenue and E. Rebenkhan, Brooklyn, N.Y.
52,266 Force pump, W. E. McCall, Peterborough, Ont.	52,281 Method of constructing buildings, J. Thompson, Wilson, N.Y.	52,293 Lace fastener, S. Strasburger, Allegheny, Pa.
52,267 Rubber boot, S. J. Harris, Millville, Mass.	52,282 Band cutter and feeder for threshing machines, J. E. Spenseller, Fort Apache, Arizona.	52,294 Process of and apparatus for extracting gold from ore, J. G. Murphy, Middletown, Conn.
52,268 Ventilating device for cooking stoves and ranges, E. Bookout, Cranford, N.J.	52,283 Threshing machine, J. Goodison and G. Strangway, Sarnia, Ont.	52,295 Attachment to lamp burner, W. T. Ross, Montreal.
52,269 Railroad car, J. Shaw, Woodburn, Oregon.	52,284 Combined draught regulator for locomotive engines, R. Deisler, Treptow, Prussia.	52,296 Combined support and keeper for bicycles, O. M. Shannon, Riverside, Ill.
52,270 Child's seat for bicycles, W. G. Bristow, Medicine Lodge, Kan.	52,285 Combined spark arrester and draught regulator for locomotive engines, R. Deisler, Treptow, Prussia.	52,297 Apparatus for generating and applying vapors, O. S. Rhodes, East Stroudsburg, Pa.
52,271 Horse boot, W. Cain, Perth, Ont.	52,286 Device for locking velocipedes and for other Analogous purposes, Charles Fitz Roy Bagot, London, England.	52,298 Hook and eye, Katherine S. Bort, Chicago, Ill.
52,273 Oil can, F. J. Marolf, Rock Rapids, Ia.	52,287 Valve for use with pneumatic tires, etc., Charles Fitz Roy Bagot, London, England.	52,299 Apparatus used in the manufacture of mouth pieces for cigarettes, etc., J. S. Beeman, Camberwell, Victoria.
52,274 Tilting gate, H. Hodel, Congerville, Ill.	52,288 Sand blast apparatus, F. W. King, Detroit, Mich.	52,300 Bag Filler, R. O. Campbell, Victoria, B.C.
52,275 Baby carriage brake, A. G. Mackenzie, Wellsville, and J. Hollingshead, Tiltonville, Ohio.		
52,276 Bicycle support, J. J. McKanna, Houston, and C. Lindstrom, El Camps, Texas.		

# Payne's Improved Corliss Engine

**SIMPLE AND COMPOUND**

Perfect Regulation. Best Attainable Economy. Durability. Smooth Running. Small Floor Space Occupied. Small Cost of Foundations, no Tripping Gear or Dash Pots.



**The Wm. Hamilton Manufacturing Co., Limited**

PETERBORO, ONTARIO

Branch Office, Vancouver, B.C.



**THE LONDONDERRY IRON CO., Ltd.**A. T. PATERSON,  
President and Managing Director.JAMES PHYMISTER,  
Secretary.

.....Manufacturers of.....

**PIG IRON**                      **PUDDLED BARS**  
**BAR IRON**                    **NAIL PLATES**  
**WATER PIPES, ETC.**

Office....

**MONTREAL**

Works...

**LONDONDERRY, NOVA SCOTIA****CANADA IRON FURNACE CO., Ltd.***Montreal, Radnor and Three Rivers*

Manufacturers of the well-known

**"C.I.F." Three Rivers Charcoal Pig Iron**Suitable for Car Wheels, Cylinders and Fine Castings,  
where the utmost strength is required.UNSURPASSED IN STRENGTH BY SWEDISH, RUSSIAN  
OR AMERICAN CHARCOAL IRON.*Offices: New York Life Insurance Bldg., Montreal***The NOVA SCOTIA STEEL COMPANY, Ltd.**

MANUFACTURERS OF

**BRIGHT COMPRESSED STEEL SHAFTHING**FROM  $\frac{1}{2}$  TO 6 INCHES IN DIAMETER. GUARANTEED STRAIGHT AND TRUE TO WITHIN  $\frac{1}{32}$  OF AN INCH.Spring, Ruled Machinery, Tire, Toe Caulk, Sleigh Shoe, Angles, Special Sections  
and all Merchant Bar Steel. Sheet Steel up to 48 inches wide.**RAILWAY AND ELECTRIC RAILWAY CAR AXLES****FISH PLATES, SPIKES AND TRACK BOLTS**

Tee Rails, 12, 18, 24 and 28 lbs. per yard

**HEAVY FORGINGS a Specialty****"FERRONA" PIG IRON, For Foundry Use.**

Works - - NEW GLASGOW, N.S., and FERRONA, N.S.

Head Office - -

**NEW GLASGOW, NOVA SCOTIA****PICTOU CHARCOAL IRON CO., LTD.**

BRIDGEVILLE, NOVA SCOTIA

Works

BRIDGEVILLE, N.S.

Head Office:

NEW GLASGOW, N.S.

Manufacturers of all Grades of

**CHARCOAL PIG IRON**

SUITABLE FOR

Car Wheels, Cylinders, Etc.

**SUSPENDER BUCKLES**

..AND..

**WIRE SHAPES OF ALL KINDS**We have put in a complete plant of Automatic Machinery for  
making above articles.

WRITE FOR QUOTATIONS

**McKINNON DASH AND HARDWARE CO.'Y****ST. CATHARINES, ONT.**

# MACHINE TOOLS

SECOND-HAND LIST OFFERED BY

DUNDAS, **JOHN BERTRAM & SONS** ONTARIO

These Machines have been replaced by New and

## Improved Tools

Are in good Repair and will be Sold Cheap.

.....Write for Prices.....

Montreal Office, 321 St. James St.

- 1, 20 in. x 10 ft. Engine Lathe.
- 2, 12 in. Hand Speed Lathe.
- 1, 26 in. x 16 ft. Engine Lathe
- 1, 14 in. Sq. Arbor Fox Lathe
- 1, 5 ft. 2 in. Break Lathe.
- 1, 30 in. x 8 ft. Iron Planer.
- 1, 20 in. Drilling Machine.
- 1, No. 3 Combined Punch and Shear, 5-8 in. Plate.
- 1, 2,000 lbs. Steam Hammer.

## The Central Bridge and Engineering Co., Ltd.

Capital Stock - - PETERBOROUGH, ONT. - - \$200,000.00

Capacity, 5,000 Tons Per Annum



Capacity, 5,000 Tons Per Annum

- - MANUFACTURERS OF - -

BRIDGES, ROOFS, VIADUCTS, PIERS, GIRDERS, TURNABLES, ARCHITECTURAL WORK, FORGINGS, AND ALL KINDS OF GENERAL ENGINEERING WORK.

Also Law's Patent Surface CATTLE GUARDS and Law's Patent "OPTIMATES" POWER HAMMERS

**W. H. LAW!**

- ENGINEER AND MANAGING DIRECTOR.

# Galt Machine Knife Works



Stave Cutter Knives

PLANING MACHINE  
KNIVES



Stave Jointer Knives

SEND FOR PRICE LIST  
ALL WORK WARRANTED



Moulding,  
Tenoning,  
Mitreing



SHINGLE JOINTER

AND OTHER IRREGULAR SHAPES.

Cheese Box and Veneer, Paper Cutting, Leather Splitting, and any Special Knife made to order.

**PETER HAY, - GALT, ONT.**

When Were  
Your

## BOILERS

Last  
Inspected ?

Consulting Engineer—  
**G. C. ROBB, Chief Engineer**  
**A. FRASER, Secretary-Treas.**

**JOHN L. BLANKIE Esq.**  
PRES.

**E. W. RATHBUN Esq.**  
VICE-PRES.



OF CANADA

Head Office,  
TORONTO

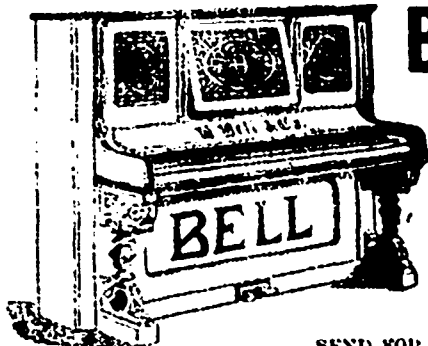
Are You  
Sure

THEY ARE

## SAFE

AND IN

Good  
Condition ?



## BELL -

HIGH-CLASS  
INSTRUMENTS

Used and  
Recommended by

Leading . . .  
. . . Musicians

SEND FOR CATALOGUE.

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

GUELPH, . . . ONTARIO

## AUSTRALIA.

### Boswell, Son & Gilbert

CANADIAN MANUFACTURERS' AGENTS

Wynyard Square, Sydney, New South Wales.

All Communications promptly attended to.

References : { Menzie, Turner & Company, Toronto.  
                          { Dominion Suspender Co., Niagara Falls, Ont.

# Galvanized Steel FIRE PAILS

**NO HOOPS TO FALL OFF**

A Pail that will withstand the action of salt and water.

More fires are extinguished by pails of water than by all other means combined.

They are always ready, simple and effective.

The Official Returns of the New York Fire Commissioners, show that 64 per cent. of the whole number of fires were extinguished by pails of water.

Galvanized, Painted Red and Stencilled, or Plain Galvanized and Stencilled.

PRICES ON APPLICATION

**Kemp Manufacturing Co., - Toronto, Can.**



# The Goldie & McCulloch Co., (Limited)

GALT, - - - ONTARIO

MANUFACTURERS OF

## Steam Engines, Boilers, Water Wheels

Flouring and Saw Mill Machinery, Wood Working Machinery, Wool Machinery, Fire  
and Burglar Proof Safes, Vault Doors, Wood Rim Split Pulleys,  
Friction Pulleys, Friction Clutch, Couplings, etc.

"Dumfries Foundry," Galt, Ontario, Canada



### The WEBBER Patent Straitway Valve

For Steam, Water or Gas.

EVERY VALVE TESTED

The Kerr Engine Co. Ltd.

WALKERVILLE, ONT.

SOLE MANUFACTURERS FOR CANADA.  
SEND FOR PRICE LIST

### HAMILTON COTTON CO.

HAMILTON, ONTARIO.

Yarn Manufacturers  
Dyers and Bleachers

Warp Yarns of all descriptions, in Skein, Chain, or on Beams.  
Hosiery Yarns in Single or Double; in Cop, Skein or Cone.  
Yarns of all kinds for Manufacturers' use.

Twines, Lampwicks, Webbing, Etc.

Dyeing of all colors, including GENUINE FAST BLACK.

## IT LEADS THEM ALL

THE OLDEST THE SAFEST  
THE LARGEST THE CHEAPEST

Canadian Life Insurance Company is

THE CANADA LIFE ASSURANCE CO.

CAPITAL AND FUNDS OVER \$18,000,000

WRITE FOR PROSPECTUS

A. G. RAMSAY,  
President.

GEO. A. & E. W. COX  
Managers for Toronto  
and Eastern Districts

JAMES A. CANTLIE & CO.

MONTREAL AND TORONTO

General Merchants and  
Manufacturers' Agents

CANADIAN TWEEDS, FLANNELS, DRESS GOODS

KNITTED UNDERWEAR, BLANKETS, Etc.

Representative in Canada:

F. P. SAVERY & CO.,  
Huddersfield, Bradford, England.

Also:

FRANZ KNOES, Aachen, Germany.  
I. CUPPER SOHN, Birtchid, Germany.

WHOLESALE TRADE ONLY SUPPLIED.

## WOOL

A. T. PATERSON & CO.

MERCHANTS

35 FRANCOIS XAVIER ST., MONTREAL



Represented by MR. DAVID GUTHRIE

The Dominion Cotton Mills Co., Ltd.,

MAGOG PRINTS

A Full Range of

..PURE INDIGO PRINTS..

Is now being shown to the Trade Ask Wholesale Houses  
for Samples.

All Goods Guaranteed and Stamped "Warranted Indigo Blue."

D. MORRICE, SONS & CO.

SELLING AGENTS

MONTREAL AND TORONTO

USE THE McCASKILL STANDARD VARNISHES

SATISFACTION GUARANTEED

Manufactured by  
**McCASKILL, DOUGALL & CO.**  
Montreal, Que.

**ALIZARINES**  
—AND—  
**ANILINES**

FAST COLORS A SPECIALTY

CHEMICALS, DYESTUFFS AND ACIDS  
"Logwood Extracts"

**BELLHOUSE,  
DILLON & CO.**

47 Wellington Street East, Toronto  
38 St. Francois Xavier Street, Montreal



**The Ontario . . .  
Malleable Iron Co.**

(Limited)

Manufacturers of . . .

**MALLEABLE IRON** . . . . . Castings to Order for all kinds of

**AGRICULTURAL IMPLEMENTS**

—AND—

Miscellaneous Purposes . . . .

OSHAWA - - ONT.

*Sault Ste. Marie*  
**Pulp and Paper Co.**

SAULT STE. MARIE, ONT.

**GROUND  
WOOD  
PULP**

FOR DOMESTIC AND EXPORT TRADE

BRISTOL'S PATENT  
**STEEL BELT LACING**

— ONE HUNDRED SIZES —



READY TO APPLY — FORGED JOINT

**GREATLY REDUCED PRICES**

Is a grand success. Try it and see for yourself.

Saves Time, Saves Belts, Saves Money

SAMPLES SENT FREE

\*\*\*

**THE BRISTOL CO.**  
WATERBURY, CONN.

**SMITH'S FALLS**

**Malleable Iron . . . .  
Works . . . .**

00000

CAPACITY 2,000 TONS

10000

**WILLIAM H. FROST**

PROPRIETOR,

**SMITH'S FALLS**

ONTARIO, CANADA.

**MADE BY AUDITS**  
**A. U. IN H. H. H.**  
**CANADA LIFE BUILDING, TORONTO**



Manufacturers of  
**FINE VARNISHES**

*Japans — Asphalts — Shellacs*

**Maple Leaf Brand Coach Varnishes**

**J. H. FARR & CO.**

**Armature Insulating Compound**

Insulating Compound for Weather-Proof Wire, Tube Compound, Mica Paste, etc., etc.

8 to 16 MORSE STREET  
TORONTO



**CARRIER, LAINE & CO.**  
LEVIS, P.Q.

**ENGINEERS, FOUNDERS, MACHINISTS**  
BOILER-MAKERS AND  
**GENERAL CONTRACTORS**

Montreal Branch  
147 St. Jean  
Quebec Branch  
264 1/2 St. Louis