

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
									✓		

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

*The best of the Dominion  
The Pioneer of the Industry  
MANUFACTURE THAT PROSPERS*

VOL. 33.

TORONTO, AUGUST 21, 1896.

No. 4.

**Canada Chemical Manufacturing Co.**

Manufacturers of

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

LONDON  
ONT.

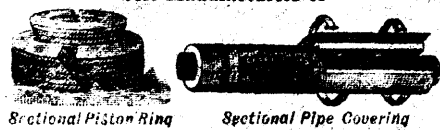
**ANILINE LIZARINES**  
DOMINION DYEWOOD & CHEMICAL CO.  
TORONTO

TRADE MARK

PRODUCTS OF  
The Farbenfabriken vorm. F. Bayer & Co.  
DOMINION DYEWOOD & CHEMICAL CO.  
SOLE AGENTS FOR CANADA TORONTO.

**HAMILTON ENGINE PACKING CO.**

Sole Manufacturers of



CLAPPISON'S  
IMPROVED RING AND COIL PACKINGS  
ALSO CLAPPISON'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., etc.

56 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 P. CLARK, Pres. EDW. F. RANDOLPH, Treas.  
ESTABLISHED 1848.

**THE BRADSTREET MERCHANTILE AGENCY**  
THE BRADSTREET COMPANY - Proprietors  
NEW YORK

Office 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 wider ramifications, with more capital invested in the business, and it expends more money every year for the collection and dissemination of information than any similar institution in the world. Toronto Offices—  
36 Front St. E., and 27 Wellington St. E.  
THOS. C. IRVING, Superintendent

**THE GUTTA PERCHA RUBBER MFG. CO.**  
OF TORONTO LTD. CANADIAN SECY.

H. WARREN, PRES. & TREAS.

**BELTING PACKING CLOTHING HOSE**

INDIA RUBBER GOODS OF EVERY DESCRIPTION AND SPECIALLY FOR PACKING AND BELTING

FACTORIES  
PARKDALE

WAREHOUSE & OFFICE 61 & 63 FRONT ST. W.  
TORONTO

THE  
**Walkerville Malleable Iron Co., (Limited)**  
Manufacturers of..

REFINED AIR FURNACE

**Malleable Castings**

ALSO LIGHT GREY IRON CASTINGS

WALKERVILLE, ONTARIO

**RIDOUT & MAYBEE**  
J. G. RIDOUT (Late O.E.) J. EDW. MAYBEE  
Barrister, Solicitor, Etc. Mech. Eng.  
103 Bay Street, Toronto

SOLICITORS of and EXPERTS in  
PAMPHLET ON PATENTS SENT FREE  
103 Bay Street, Toronto

**Patents**

PATENTS  
Validity and Scope of Patents Investigated.  
Canada life Building, 46-52 King St. W., Toronto  
Cases, Hand-book on Patents and Trade Mark Law Free on Application.

**OAK TANNED BELTING**  
Reeds—Mill Supplies

TETLOW'S  
English

**Card Clothing**

**ROBT. S. FRASER**

Sheets and Fillet Stock in Montreal

3 ST. HELEN ST., MONTREAL

**McARTHUR,**

**CORNEILLE & CO.**

**Manufacturers**

.. AND ..

**Importers**

310-316 St. Paul Street

.. AND ..

147-151 Commissioners Street

**MONTREAL**



OFFER AT CLOSEST PRICES

PURE OLIVE OIL

WINTER PRESSED LARD OIL

EXTRA FINE SPINDLE OIL

And a full Assortment of Other  
Lubricating Oils.

GREASES, MILL SOAPS, ETC.

.. AND ..

CHEMICALS, DYE STUFFS

DYE WOODS EXTRACTS, ETC.



SOLE AGENTS IN CANADA FOR

**St. Denis Dyestuff & Chemical Co., Paris**  
A. Poirier, President.

Aniline Colors, Aroclor Extract, Cachon de  
Larat, Etc.

**British Alizarine Co., London**  
Paste and Dry Alizarine.

**Stamford Manufacturing Co., New York**  
Dyewoods and Extracts.

**Coignet & Co., Paris**  
Glues, Gelatines,  
Etc.

**Watson, Walker & Quickfall, Leeds**  
Indigo Extracts.

**Millerton, Tannin Extract Co.,**  
Hemelock 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.

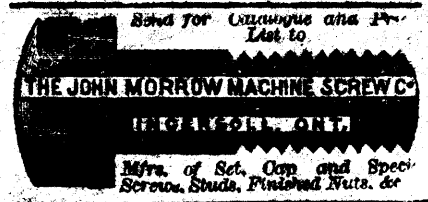
Largest Manufacturers  
of STEEL and BRASS  
STAMPS in Canada

**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 ...

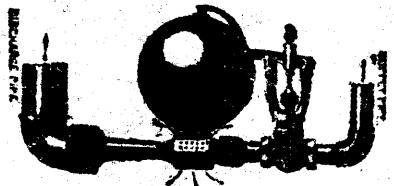
**Toronto Fence & Ornamental Iron Works**  
73 Adelaide Street West, Toronto.

## THE BRAENDER

### JET PUMP, WATER ELEVATOR AND CELLAR DRAINER

Patented  
May 8, 1894.

This automatic device for removing water from Cellars, Excavations, Trenches, Wheelpits, 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 Pop-Safety Valves, for all kinds of Boilers, Water Relief Valves including  
the Underwriter, which is fully approved by the Associated Factory Mutual  
Insurance Companies; Crosby Steam Engine Indicators, with Ser-  
vent's Electrical Attachment; Crosby Improved Steam  
Gages, Recording Gages and Patent Gage Testers,  
Original Single Bell Chime Whistles.

BRANDEN PATENT PUMP VALVES

CLARK'S LINEN FIRE HOSE AND ADJUSTABLE COUPLINGS

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

Gold Medal Paris Exposition, 1889

Yen-Highest Awards Columbian Exposition, 1893

Main Office and Works ...

**BOSTON, MASS., U.S.A.**

Underwriter

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.

**CORRUGATED  
IRON**  
ROOFING & SIDING.  
**FIREPROOF**  
WRITE FOR CATALOGUE  
**THE  
PEDLAR METAL ROOFING CO.**  
OSWEGO, N.Y.

**The Pulsometer  
STEAM PUMP**

OFTEN IMITATED BUT  
NEVER EQUALLED . . .

\*\*\*  
The handiest sim-  
plest and most efficient  
steam pump for gene-  
ral Mining, Quarrying  
and Contractors' pur-  
poses.

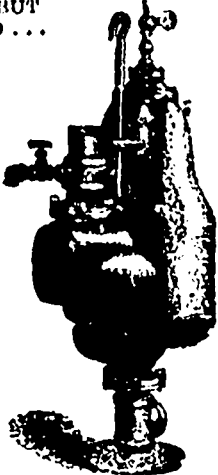
\*\*\*  
Muddy or Gritty Liquids  
Handled without  
wear.

\*\*\*  
Descriptive Catalogue  
with prices, furni-  
shed on application.

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

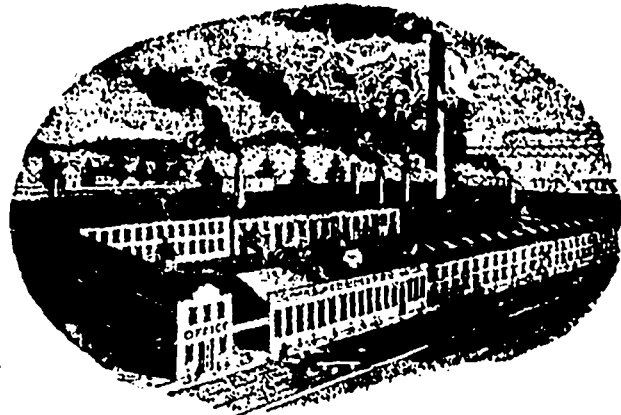
**A. R. Williams Machinery Co.**

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  
SAWMILLS

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

**Rebuilt Wood Tools  
Engines and Boilers**

which we offer at low prices  
and most favorable terms.  
**WRITE FOR  
TERMS, PRICES AND CATALOGUE**



**HAMILTON, CAN.**

Catalogue on Application.

**The Sturtevant  
IMPROVED PORTABLE FORGES**

TWENTY-FIVE SIZES AND STYLES

HAND POWER  
AND  
BELT POWER

**Hand Blowers**

FOR FORGES



**The Sturtevant  
STEAM : FANS**

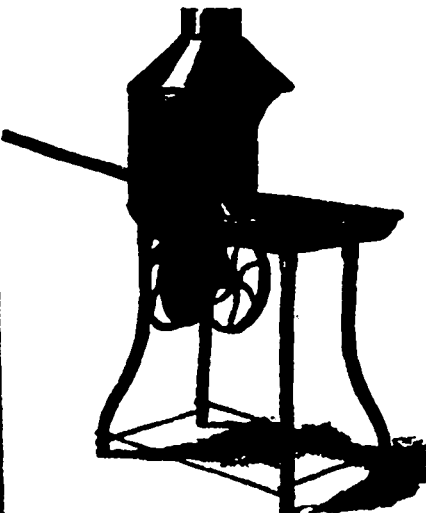
For BOILER FIRES

FORCED OR INDUCED DRAUGHT

MANUFACTURED BY

**B. F. STURTEVANT CO.**

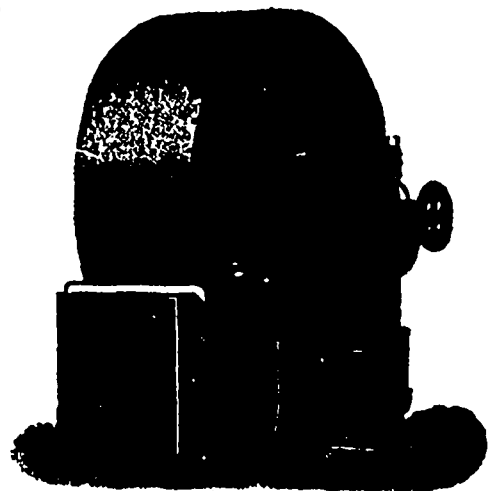
Boston, Mass., U.S.A.



**The STURTEVANT  
Blowers  
and Exhausting  
FANS**

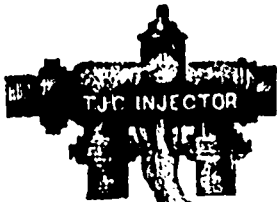
Known as the Monogram Pattern,  
For Blowing Boilers and Fires. Ex-  
hausting Dust and Gases.

SEND FOR CATALOGUES



**A. R. WILLIAMS MACHINERY CO.,** General Canadian Agents, Toronto, Brantford, Montreal.

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 00	8 to 16
15.....	10 00	16 to 40
20.....	15 00	40 to 72
25.....	22 50	72 to 120
35.....	30 00	120 to 220
45.....	38 00	220 to 300

**HAMILTON BRASS MANUFACTURING 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 Segmented Rim Pulleys, to be affected by Steam Dampness or Moist Temperature.

**Every Pulley Guaranteed**

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

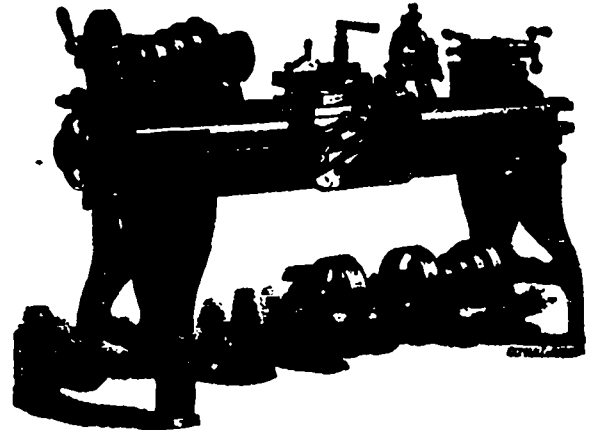
← ESTABLISHED 1850 →

**Robert Gardner & Son**

Manufacturers of

**FINE TOOLS, LATHES, PLANERS**

Shafting, Hangers, Pulleys, etc.



Nazareth, Brennan and Dalhousie Streets, MONTREAL

**HAIR**

**"CAMEL"**



**BELTING**

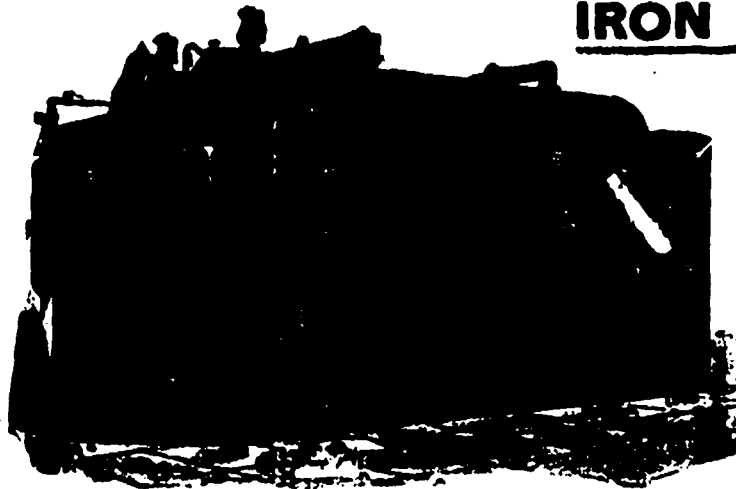
**W. A. FLEMING**

57 St. Frs. Xavier St. | 24 Front St. East | Victoria Chamber  
MONTREAL | TORONTO | OTTAWA

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"

"O. R. Co. Stitched"

"Forsyth Patent" Seamless

First Quality **RUBBER BOOTS and SHOES**

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

J. H. WALKER, Manager

# 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

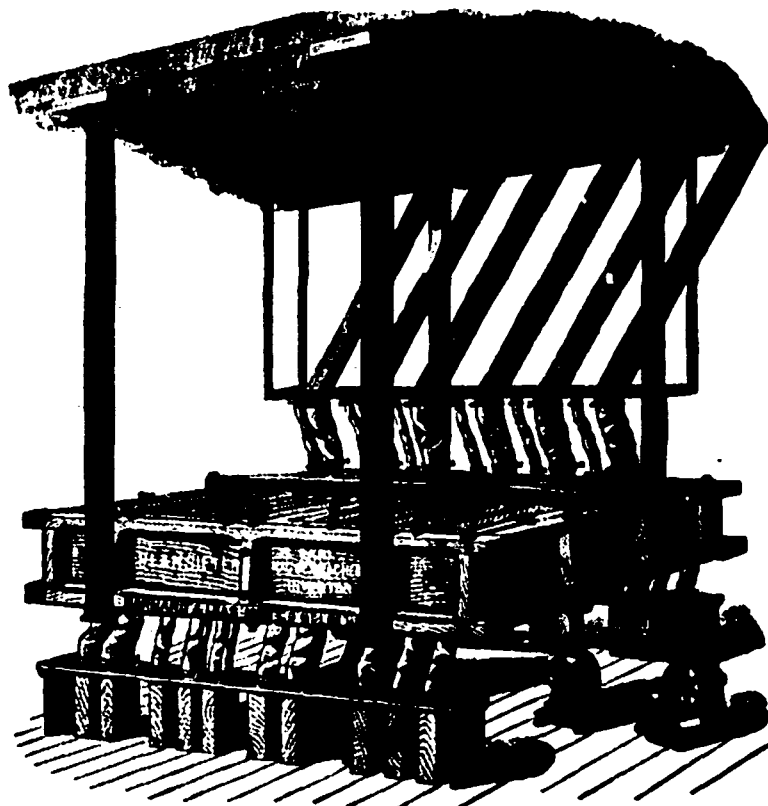
Makes Better Separations

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

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

..SEND TO..

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

(LTD.)

BELLEVILLE, - ONT.

BRIDGE BUILDERS, ENGINEERS,  
BOILER MAKERS, MACHIN-  
ISTS AND FOUNDRYMEN.

...Manufacturers of....

Flags, Diamond Crossings, 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 desir-  
ous of practicing the invention in the  
manufacture of Aluminum and Alloys thereof,  
for which certain letters patent of the Domini-  
on of Canada were granted on June 7th, 1890,  
to Cas. 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 20th, 1892, to  
John W. Langley, assignor to the Pittsburg Re-  
duction Company, to wit, No. 32,402, that the  
undersigned is prepared to grant licenses upon  
reasonable terms under each and all of said  
letters patent, and otherwise place the patent  
inventions in possession of the public in accord-  
ance with the provisions of the above recited  
act.

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

**EXHAUST STEAM UTILIZATION TO EFFECT ECONOMY**

OR INCREASE OF POWER - AND HOW?

**Before Buying** any type of Feed Water Heater and  
Purifier, or Separator for Steam  
and Oil .....

**Consider** the efficiency, simplicity, construction and  
prices of those we manufacture .....

**Tests** and complete information forwarded by re-  
quest upon the .....

**Webster** "Vacuum" Feed Water Heater and Purifi-  
er, and .....

**Guarantees** and efficiency fully established by suit-  
able trial, and hundreds in use through-  
out the United States and Canada.

Also the WEBSTER SYSTEM OF STEAM HEATING,  
without back pressure on engines - guaranteed. Can  
be attached to existing plants with great economy.

Manufactured by

**DARLING BROTHERS, 112 Queen St., Montreal**



The World-Recognized  
**PENBERTHY**

**Automatic Injectors** ARE THE RECOGNIZED  
STANDARD

Because of honesty in material and workman-  
ship, secured by the employment of the best skilled labor  
and the use of the best material 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.**

BRINE SAFETY STEAM BOILERS.

BLAKE "CHALLENGE" STONE BREAKER

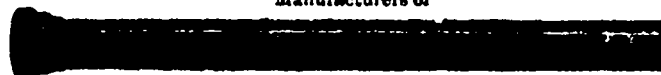
**The Attention**

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 mar-  
ket that will make yarn positively even. These machines are built by **The Tor-  
rance 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..



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

MANUFACTURERS OF

## PURE ALKALI

GUARANTEED 88 DEGREES

### BLEACHING POWDER AND CAUSTIC SODA, 70%, 74%, & 76%

The Strongest and Cheapest Form of SODA ASH for the Manufacture of . . .

SOAP, GLASS, PAPER, WOOD PULP AND COLORS

Also for Printers and Bleachers



# Winn & Holland, Montreal

SOLE AGENTS FOR THE DOMINION OF CANADA.

# HEMOLIN

PATENTED



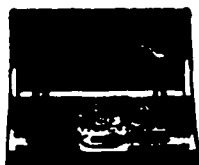
THE Cheapest Black-producing Dye for Wool on the Market. Has all the advantages of Logwood with none of its inconveniences. Can be Dyed in one Dip, or may be employed in Wool Dyeing as a self-color, or in combinations, wherever Logwood is used, by following the same recipes.

This is not a mixture, but a new product for which patents have been granted in U.S.A., Great Britain, Canada, Germany, France and Austria, and use in these countries has increased constantly since its introduction.

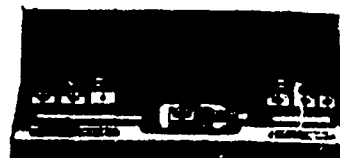
MANUFACTURED BY—

*WM. J. MATHESON CO., Limited, New York, U.S.A.*

BRANCH HOUSES - BOSTON, PROVIDENCE, PHILADELPHIA, CHARLOTTE, N.C., U.S.A., and MONTREAL, CANADA

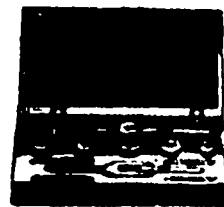
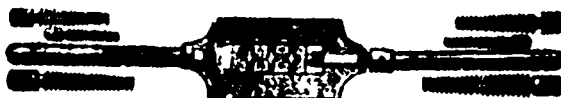


**Bicycle Plates in all the most desirable sizes and threads. Taps and Dies of Every Variety**



# 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.

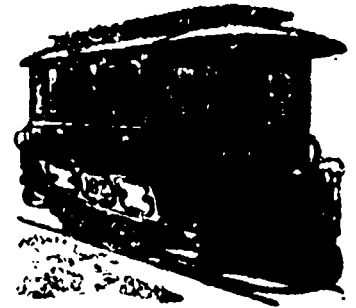
# DODGE WOOD SPLIT PULLEY COMPANY

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. Jarvis and Melinda Streets, Toronto

Tel. 1274.

### THE OBJECTS OF THIS ASSOCIATION ARE:

To 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 Size 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

# Pumps

& HYDRAULIC MACHINERY

FOR  
ALL  
DUTIES

The UNITED ALKALI COMPANY, Ltd.

OF  
ENGLAND

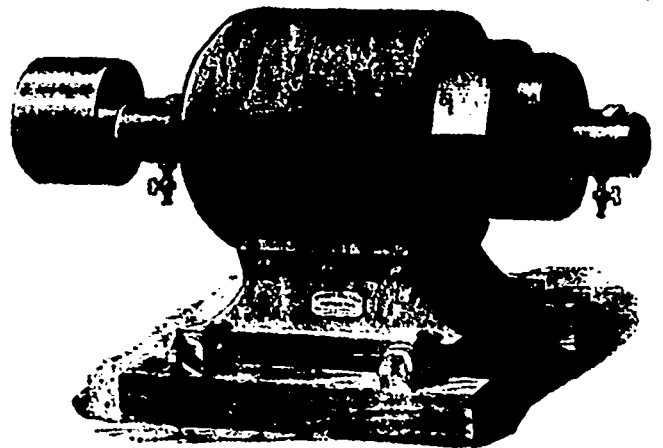
**WILSON, PATERSON & CO.**  
MONTREAL, Sole Agents

CAUSTIC SODA, 60, 70, 74, 76, 77; SODA ASH, all strengths  
SAL. SODA, PURE ALKALI, 188.

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.

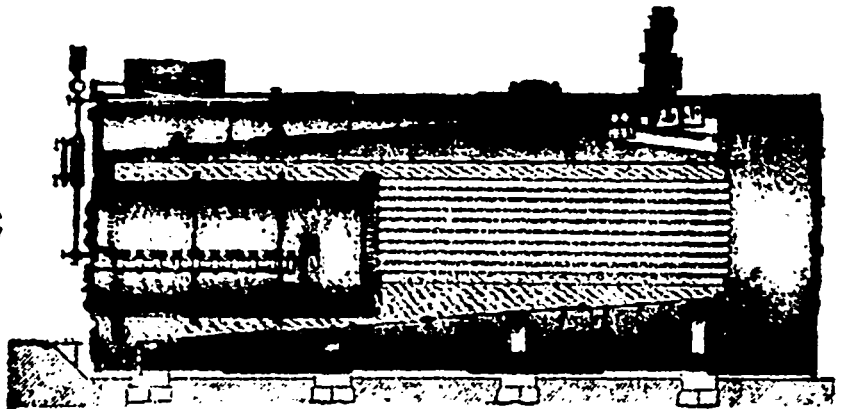
The STOREY MOTOR and DYNAMO



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

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 50 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 1896.

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. C. GARDNER, - - Manager and Secretary.

OFFICERS OF

**THE CANADIAN MANUFACTURERS' ASSOCIATION**

President,	ALBERT E. KEMP.
First Vice-President,	D. W. KARN.
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.

**WOOLEN MANUFACTURERS' ASSOCIATION**

President,	B. ROBERTSON, M.P.
Vice-President,	JAR. KENDRY.
Secretary,	J. J. CASSIDY.

**KNIT GOODS MANUFACTURERS' ASSOCIATION**

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

**CARPET MANUFACTURERS' ASSOCIATION**

President,	JAMES P. MURRAY.
Vice-President,	ROBERT DODD.
Secretary,	J. J. CASSIDY.

**GLOVE MANUFACTURERS' ASSOCIATION**

President,	W. H. STORRY.
First Vice-President,	JOHN MACLAREN.
Second Vice-President,	A. H. CLARKE.
Secretary,	J. J. CASSIDY.

REPRESENTATIVES TO

**TORONTO INDUSTRIAL EXHIBITION ASSOCIATION**

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

**RECIPROCITY WITH THE UNITED STATES.**

At the St. Johns meeting, Mr. Laurier referred to reciprocity, saying: "If we succeed in establishing friendly relations with the United States we will revive the treaty of reciprocity of 1853-56, the golden age for the provinces of Quebec and Ontario."

The Globe of Saturday, 8th inst., contains a five-column paper on same subject by Mr. John Charlton, M.P. From these indications, it may be inferred that it is the intention of the present Government to waste their energies in a vain attempt to procure a fair treaty of reciprocity with the United States. It will be noticed that Mr. Laurier hopes to revive

the old treaty which was confined to raw products, while Mr. Charlton would extend its scope so as to include a list of specified manufactured articles.

It was unworthy of the Premier to mislead the people with the idea that the revival of the old treaty would produce for the provinces of Quebec and Ontario a golden age such as they enjoyed during these ten or eleven years, thirty to forty years ago. In that period, coincident with the reciprocity treaty, these provinces benefited greatly from the Russian war, the construction of the Grand Trunk and other railways, and the war of secession; the last of which created a demand for all kinds of Canadian products which would have prevailed, with or without reciprocity. If Mr. Laurier could show any prospect now for a similar combination of events all contributing to prosperity, he might be justified in his anticipations, but in the absence of these, he might just as reasonably maintain, that in the event of a war between Britain and Russia now, France would be found in alliance with England as she was forty years ago. All the conditions as between Canada and the United States have undergone a complete revolution since 1854. At that time Canada was a large purchaser of the manufactures of the Eastern States in many classes of goods which she now manufactures for herself, and on the other hand, the Eastern States bought largely of Canadian farm products which they now obtain from the then undeveloped West. At that time the greater part of Canada's trade with England, the Maritime provinces and West Indies, was transacted through United States channels, now it is nearly all done through our own channels.

While Mr. Laurier, in his customary habit of evasiveness, refrains from advancing any grounds for his expectation of reviving what he terms the "golden age" by means of reciprocity, Mr. Charlton fills five columns of The Globe with statements and deductions which he imagines fully establish the soundness of that policy of reciprocity of which he is the advocate. He begins with the proposition that inasmuch as our export trade with the United States nearly quadrupled during the twelve years of reciprocity, the continuance of that policy would have resulted in maintaining the same annual average increase, and our exports to that country in 1894-95 would have reached \$110,000,000 instead of only \$41,297,676. Mr. Charlton is too modest, why should he not contend that in the twelve years ending 1878, under the quadruple increase, our exports would have reached \$159,500,000; and in 1890 would have reached \$639,200,000? The fallacy of his argument lies in the assumption that all the Canadian goods exported to the United States during years of reciprocity were taken for consumption in that country, whereas, a large proportion of them only passed through there on their way to Europe, the maritime provinces, West Indies, etc. A still greater fallacy is in the assumption that the United States in proportion to its present population, requires or could absorb for its own use, a greater or even as great a value of Canadian products as it did during the war of secession. The advocates of reciprocity are in the habit of pointing to the large exports, as exhibited in the Trade and Navigation tables of Canada, as affording a correct indication of United States purchases from Canada. They studiously avoid any reference to that proportion of these exports which is not bought for consumption, but merely passes through in transit for other countries. We have not any returns showing the

value of merchandise imported into the United States from Canada, and entered there for consumption, later than for the fiscal year 1891-92, but the reports of the Bureau of Statistics at Washington, give the values so entered for years ending June 30, 1890, 1891, and 1892, and they compare as follows:—

Imports into the United States, from the Dominion of Canada, and entered for consumption

During the year ending June 30, 1890 .....	\$32,416,156
“ “ “ 1891 .....	35,079,402
“ “ “ 1892 .....	29,452,540
	<u>\$96,948,098</u>

Exports from the Dominion of Canada to the United States, per Trade and Navigation Tables,

During the year ending June 30, 1890 .....	\$ 40,522,810
“ “ “ 1891 .....	41,138,695
“ “ “ 1892 .....	38,986,027
	<u>\$120,649,532</u>

It is thus shown that about twenty per cent. of the merchandise exported from Canada to the United States is not sold there for consumption, but merely shipped through that country to Great Britain, etc. By deducting this twenty per cent. from our exports to the United States, and adding the greater portion of it to our exports to Great Britain the relative proportion of our sales to these two countries is materially altered. Mr. Charlton, as a business man, must be perfectly cognizant of this feature of our trade. It is dishonourable to attempt to conceal it.

It is equally discreditable to pretend that under free trade, our exports to the United States should have reached \$110,000,000 in 1895. Mr. Charlton illustrates the repressive effect of American duties upon our export trade by giving a table of nine articles, the value of our exports of which was \$9,572,205 in 1890, prior to the McKinley tariff, but in 1895, only \$1,911,302, and would leave it to be inferred that this reduction is altogether owing to the duties imposed. The first article is horses, the value of which declined over \$1,375,000. Now Mr. Charlton knows that owing to the general use of electric power, bicycles, etc., there has been an enormous decrease in the value of horses both in the United States and Canada during the past five years, so that the former country, instead of requiring to purchase horses in Canada, is now exporting them to Europe, its exports for the twelve months ending June 30, 1896, amounting to 25,126 horses, valued at \$3,530,703. He refers also to sheep, the exports to the United States showing a reduction of \$415,000. No doubt under free trade there might be sold quite a number of lambs; but as to sheep the United States exported in above twelve months 491,565 sheep, valued at \$3,076,384. It is sheer absurdity to pretend that under free trade or reciprocity, the United States would become a large purchaser of our horses and sheep. So also as to horned cattle, during 1895-96, the United States exported 372,461 live cattle valued at \$34,560,672; of canned beef \$5,636,953; of fresh beef \$18,974,107; salted beef \$3,034,484; tallow \$2,523,764. Then as to barley the export value of which has declined nearly \$1,000,000 in the five years, similar changes in the conditions have occurred. Five years ago, the brewing, distilling and pearling industries of the United States furnished a market for all the barley grown in that country and in Canada. During these five years, there has been a very large increase

in the acreage sown to barley, in the western states particularly; together with this, there has been a rapid increase in the use of substitutes for malt, so that there is now a large excess in production over consumption of barley. The quantity of barley imported into the United States during the year ending June 30, 1896, was 837,484 bushels, value, \$317,259 (average value not quite thirty-eight cents a bushel). During same year, the exports of barley from the United States were 7,683,331 bushels, value, \$3,100,311. In addition to this there is a large quantity of last year's barley in the hands of dealers unsold, and a still larger quantity in the hands of western farmers. California has no duty to pay on its series of barley to eastern or western brewers, and even the favored, has to find a market in Europe. It is wantonly unachievous to attempt to delude Canadian farmers with the idea that reciprocity would return the barley prices of five or six years ago.

Mr. Charlton says: "Agricultural protection for the Canadian farmer is a humbug. A comparison between the prices of horses, fat cattle, sheep, hogs, poultry, butter, grains (except corn), malt, beans, potatoes, eggs, hay, vegetables, etc., in Canadian markets and in corresponding markets in the United States, will, unless under exceptional circumstances, such as scarcity in Canada requiring importation for home consumption, show higher prices in American than in corresponding Canadian markets." As both countries are under ordinary circumstances, exporters of these articles, the prices in both countries should be about the same except varied by cost of transportation to the seaboard. How can Mr. Charlton show that they are higher in one market than in the other? It is amusing to see in one paragraph the statement that agricultural protection is a humbug, but that under exceptional circumstances when Canada requires to import, it may increase values. It was to meet these exceptional circumstances that agricultural protection was adopted, and it is sheer humbug on the part of any business man to dispute the fact that in many of past few years this despised protection has greatly benefited Canadian farmers in the prices they obtained for their wheat, oats, corn, hog products, etc. A fair estimate of the advantages so derived would more than balance any advantages which can be fairly shown they would have realized from reciprocity. The Canada Year Book for 1895 (page 358) has a table showing the value of the agricultural products and stock exported from Canada and the United States during 1894-5, from which the following of the most important are selected:

	Exports from Canada.	United States.
Horses .....	\$1,312,676	\$2,201,286
Cattle .....	7,120,823	30,003,796
Sheep .....	1,624,587	2,630,686
Pork .....	32,426	4,122,029
Bacon .....	3,546,107	37,776,263
Hams .....	200,602	10,980,567
Beef .....	439,653	20,464,597
Meats canned .....	319,702	5,729,933
Hides, horns and skins .....	961,267	2,310,323
Wool .....	1,049,459	484,463
Butter .....	697,476	915,533
Cheese .....	14,253,002	5,497,539
Eggs .....	807,980	25,312
Wheat .....	5,359,109	43,895,623
Barley .....	720,718	767,216
Oats .....	320,458	200,968
Beans .....	425,283	429,006
Pean .....	1,730,659	
Corn .....	112	14,650,767
Corn meal .....	3,092	618,844

(Continued).

	Exports from Canada.	United States.
Oatmeal .....	\$276,310	\$566,321
Flour wheat .....	839,112	51,651,928
Potatoes .....	527,379	418,221
Hay .....	1,539,691	699,029
Seeds, clover and grass.....	823,059	2,402,157
Apples, dried.....	250,320	461,214
Apples, green or ripe .....	1,821,463	1,954,318
Fruits, canned or preserved ..	109,122	918,885
Fruits, all other .....	40,602	1,637,374

Other items make up totals....\$48,531,344 \$319,535,852

It seems strange, in view of the immense surplus of agricultural products available in the United States for export, that so much value should be attached to the privilege of free access to that market, and no notice, whatever, given to the danger to the smaller market in Canada from being flooded with the surplus of the larger country, during the exceptional seasons, when through short crops or stocks Canadian farmers should realize good prices.

The Canadian Government has time and again submitted propositions to the United States Government for reciprocity. These propositions have been liberal and reasonable, but have been rejected because of the belief that under a change of Government in Canada, still better terms might be extorted. From a purely business point of view it might be expected that the United States, not Canada, should be offering concessions in order to maintain and extend business relations between the two countries. Canada purchases from the United States about fifty per cent. more merchandise than it sells to that country; it purchases about one-seventh part of all the manufactured goods which the United States exports; it offers them the use of our grand canal system on the same terms as for our own people; it offers them access to our valuable sea fisheries. If this is not enough, then drop all negotiations until the Americans find out for themselves that they are more interested in reciprocity than we are. But Mr. Charlton, whether writing in his own behalf or authorized by the reform leaders to issue his proposition as a feeler, is so enamored of what he calls "The Continental Market," that he desires to extend the scope of a new reciprocity treaty by including in it a list of manufactured articles such as are now almost wholly imported from the United States and which might be admitted on a free or preferential basis with only a trifling injury to British interests. In the position of the Dominion finances, the loss of customs revenue resulting from free trade in raw products would sufficiently tax the ability of the Minister of Finance to meet. To this, add the loss of revenue to result from Mr. Charlton's policy, and the aggregate loss would be very serious indeed. If the articles in his schedule are to be admitted free of duty from the United States, they must also be free of duty if imported from any other country. They are principally of the kinds now made in our own factories, and come into close competition with them. Most of them are now sold to dealers in Canada at much lower prices than to their own dealers in the United States. Take off the present duties, and so much loss of revenue would result, and in the great majority of the articles, the American manufacturer would obtain the same prices as now, plus the amount of duty remitted. Many of our flourishing manufacturers would be ruined. It may be argued: if Canadian manufacturers are now making and selling these goods at as low prices as in the United States, would they

not be able to sell their wares as freely and as easily in the United States as the American manufacturer could sell in Canada. No, because they would start heavily handicapped. Many of their articles are so covered with patents and royalties in the States, that they cannot be offered for sale there. In the United States, the manufacturers there have had great assistance from the Press, in praising the quality of their goods, and the people have been impressed with the belief that Canadian manufacturers are far behind their American competitors in skill and enterprise. On the other hand the Grit Press of Canada have persistently asserted that Canadian manufacturers do not and cannot manufacture as good articles or as cheaply as in United States and that it would be a great advantage to farmers and others if American goods could be imported free of duty. In the one country the people have been educated to feel a pride in the skill and inventiveness of their own artisans. In the other country they have been educated to look upon the manufacturer as a bloated monopolist, who by virtue of the tariff, has been exacting inflated prices for inferior goods. There are many other objections to this scheme of Mr. Charlton's. One may suffice. Take agricultural implements. The practice of every manufacturer is to turn out in each season a sufficient number to cover the requirements of a large crop. In the case of the United States where the harvest is generally some weeks earlier in Canada, there will be, in an inferior crop year, a large number of implements remaining unsold which can be dumped on Canada at sacrifice prices, but still at prices which are better than holding them over for another year. No such advantage can occur to the Canadian manufacturer.

Mr. Charlton does not state expressly that in order to carry his proposed policy into operation, his party would be willing to discriminate against like goods from Great Britain, but as to his own views, there can be little doubt that he is willing to adopt this policy. The country will not submit to this. If the United States is willing to consent to a reciprocity treaty on fair and honorable terms, well and good: if not, Canada can get along without it as well as she can. THE MANUFACTURER believes that much more advantageous relations can be established with the mother country than there is any possibility of securing from the United States.

#### MR. CASTELL HOPKINS AT THE GREAT TRADE CONGRESS.

Some weeks ago, during the proceedings of the Congress of the Chambers of Commerce of the British Empire, an unusually virulent American cable despatch appeared in our Canadian papers concerning a speech made by Mr. Castell Hopkins, the delegate of the Canadian Manufacturers' Association. The speech as published in our columns to-day speaks for itself. The cable as we now learn from those who were present spoke for no one but the American readers whom it was intended to please, and the consequent abuse of whose papers was a compliment to Mr. Hopkins rather than otherwise.

As representing the Manufacturers' Association Mr. Hopkins seems to have been cautious and at the same time strong. He did not entirely support Mr. Chamberlain's free trade Zollverein proposal, but favored a compromise and modification by which lower duties in the colonies would meet a slight imposition of duty on certain foreign products entering the

mother country. This as he pointed out to the pronounced free-traders present, would extend the future area of freer trade without meanwhile destroying colonial industries and injuring colonial prosperity.

Questions connected with British and Canadian relations with the States Mr. Hopkins handled without gloves, and, as most Canadians will say, with truth. It was certainly of value at this juncture and the fact that four hundred delegates from all parts of the Empire listened to the remarks and in part cheered the speaker explains the animus of the American correspondent. But from what we learn our delegate did not limit his exertions in England to the several speeches which he made at the Congress. He spoke at a meeting of the Royal Colonial Institute, when Lord Lorne was in the chair and a large audience present, and at the Conference of the United Empire Trade League.

He was also asked to meet the committee of the British Empire League at a special gathering called for the purpose and had interviews by appointment with Mr. Chamberlain, Lord Rosebery, the Earl of Selbourne, under Secretary for the Colonies, and others, besides being hospitably entertained by friends of Canada such as the Earl of Jersey, Lord Tennyson and Sir Howard Vincent, M.P. Those who know something of Mr. Hopkin's enthusiasm in connection with the union of Britain and Canada, can very well imagine that he everywhere did his best to make the Dominion better known and understood.

#### EFFICIENT AND CHEAP TRANSPORTATION.

At a recent meeting of the American Society of Civil Engineers, Mr. E. P. North, a distinguished member of the profession made some valuable statements on this subject. He claimed that it is the comparatively low cost of collecting raw products for manufacture or consumption, and distributing the finished products, which governs the location of the great centres of manufacture and consumption. Among other historical facts he stated that in the time of Queen Elizabeth the first canal act was passed, but the great flood of canal bills came in 1758, when Brindley commenced building canals. These waterways reduced the freight rates in England immediately, more particularly in the manufacturing counties, to from one-third to one-fourth of what they had been previously, and they made England the manufacturing country she has been since. During the whole period of the Napoleonic wars England increased in wealth, enabling her to subsidize her allies on the continent, the gold which she paid being received back for manufactured goods. In 1830, when England left off canal building and commenced railway construction, she had more miles of canals and improved waterways per given area, than the United States now has of railways. Her very rapid railway building up to 1847 confirmed her position as a manufacturing nation, and it was thought for years that this position was unassailable. In 1870 Great Britain was making more than half the iron of the world, the total production being about 11,000,000 tons, of which England made 54 per cent.; the United States 15 per cent.; Germany 10.5 per cent. In 1890 the world's production was about 25,000,000 ton; the United States made 37 per cent.; Great Britain, 31 per cent.; Germany, 18 per cent. This change in the relative proportions, Mr. North attributes in a large

measure to the great fall in the cost of transportation in the United States, whereas, the cost in England is naturally as high now as it was in 1846. He said, there is not in Great Britain a canal or water course which is not in the hands of a railway company, a trust or a private corporation. Tolls are charged on all of them, and very few have been enlarged or improved in recent years. Other countries, however, have increased the size of their waterways, have made them free, and effected noticeable reductions in freight rates. Up to about 1870, the British had the advantage of the lowest internal freight rates, they were the leading manufacturers of the world and controlled the price of finished products. To-day, no manufacturers pay as high a rate per ton-mile for assembling raw materials and distributing finished products as the British, and Americans pay the lowest rates. In spite of the former's ownership of between 60 and 70 per cent. of the world's effective ocean tonnage, they have given up the first place as manufacturers to the United States, and are now fighting with Germany, which is enlarging her waterways and building new canals, to retain the second place.

These statements and conclusions of Mr. North are well entitled to the serious consideration of the people and government of Canada, not only as illustrative of the large influence of cheap transportation on the prosperity of all its industries, but because they may aid us in a proper appreciation of the invaluable natural advantages we enjoy, through our magnificent waterways from the far west to the ocean, advantages which, through railway influence and interest, too many are inclined to undervalue. The relative cheapness of water carriage as compared with railway carriage has been so often and so clearly demonstrated as to require no argument.

From the speeches of several of the members of the new Government at Ottawa, every assurance has been given that the question of efficient and cheap transportation will receive their early and favorable consideration. Canada has for many years been paying a great amount of annual interest on its expenditure for the enlargement of the Welland and St. Lawrence canals, the prosecution of which has been conducted in a shamefully dilatory manner. The benefits to be derived from this enlargement cannot be realized until the whole work is complete. Under a vigorous policy and rapid completion, the cost would perhaps have been somewhat increased, but this increase would have been trifling when compared with the loss sustained by our commerce through the inexcusable delay; to which add years of interest on almost hitherto valueless expenditure. It may be hoped that the new government will see that the unfinished part of the work is pushed forward as fast as possible. There can be no doubt that the completion of our canal system will reduce the cost of transportation from Ontario and Manitoba from one to two cents per bushel, and proportionately on flour, dairy products, etc. Then we have the question of fast Atlantic service and cold storage coming prominently to the front. We hope that government may find itself able to carry out both projects. We have their assurance as to the cold storage. Exception might be taken as to the inconsistency of this action with the former utterances of the party. Manufacturers are more concerned about the enterprise of the Government than they are about their consistency. Ten times more good can be effected for our farmers by giving them better facilities and cheaper rates of transportation, than can be done

by any tariff alterations or cheese-paring economy. Anything which benefits farmers must help manufacturers. It also appears that considerable expenditure is required on the channel between Montreal and Quebec. Neither our debt or annual expenditure is so oppressive, but that every needed improvement to our waterways may be vigorously proceeded with.

When estimating the advantage to be derived from better and cheaper transportation, this must not be based on the quantities carried through our waterways or exported from our seaports. A reduction by water transportation means a corresponding reduction in rail freights. Every cent thus saved adds so much not only to the value of produce exported, but also to the value of what is sold off the farm for home consumption.

### INTER-STATE RAILWAY COMMISSION.

A national convention of Railroad Commissioners of the different States was held at the office of the Inter-State Commerce Commission at Washington, on May 19th and 20th; the proceedings at which are published in neat book form. The discussions, reports and resolutions are of a very interesting and important character, referring to the status, rights and obligations of railroad companies, railway statistics, uniform classification of business, legislation, regulation of State and Inter-State railways, powers, duties and actual work accomplished by the several State railroad commissioners during the year, Government control and regulation of railways, safety appliances, pooling of freights and division of earnings, etc. As the questions of cheap transportation and of Government control of railways are exciting a great deal of attention and discussion in Canada, *THE MANUFACTURER* intends to devote considerable space to the consideration of the proceedings at the above convention.

#### DUTIES OF RAILWAY COMMISSIONERS.

Hon. Simeon R. Billings, of Michigan, the Chairman, in his opening speech, stated that one of the objects of a convention of Commissioners of the several States was to discuss methods and means, and adopt such plans as will make State supervision of railroads more uniform and efficient. The reason for this is, that railroad business is not confined to State lines, the same cars and coaches moving on continuous lines through several States, thus necessitating co operation in carrying out any general needed regulation by Government regulation. An exchange of thought by the Commissioners of the different States should result in good to the people, and at the same time establish a standard of fairness to the railroad companies. He remarked, that the great wave of railroad building for speculative purposes had vanished, and new railroads must prove their active value and reason for their existence. Time was when railroads were the pet wards of the people, the State and even the nation. Now, the energy and effort formerly expended on building is now largely directed to tearing down and destroying. With many politicians, attacks on railway property form the stock-in-trade by which they hope to gain votes. We are confronted with an almost insolvable problem—to give justice to the railroads, and at the same time be just to all the people. Cheap and rapid transit is revolutionizing the business world: and it is building up and tearing down; destroying the business in one locality and building it up in another. To one the transportation is too cheap, to the other

it is too dear. In agriculture, cheap transportation of farm products has nearly wiped out the New England farmer; has brought those of the Middle States upon their knees, and built up those farther west, while those of the extreme west clamor that rates are too high, and that all profits are absorbed in transportation. Cheap passenger fares are destroying the business of country merchants and small villages, and building up and concentrating business in large cities. The great cities want passenger fares still cheaper, and make them so by frequent and cheap excursions, thus enabling large departmental stores to absorb the trade for many miles around. This business revolution cannot be stopped, but every effort should be made to protect the weak against the strong. No two prices should be allowed. No wholesaling of transportation should be permitted. Every form of discrimination should be prohibited. All legislation and rulings of commissions should be to promote safety, equality and stability.

The conditions in the United States, the problem of equal justice to the people and to the railroads, and the rules to be observed in working out this problem apply with like force to the different provinces of the Dominion.

#### STATUS OF RAILWAY CORPORATIONS AND RAILWAY RATES.

A paper prepared by Mr. Stickney, President of the Chicago Great Western Railway Company, was by consent read to the convention; dealing with the question whether Government has the right to control the rates charged by railway companies, and, if so, what limitations are there to the authority of the Government in this respect.

Mr. Stickney says that a quarter of a century ago, railway companies contended that they were private corporations like common carriers, and that they had the right to make such contracts for compensation of their services as they thought advisable, without interference from the Government. After years of discussion, the highest courts have decided that railway companies are not private, but quasi public corporations, and in this view the best thought of the country seems to coincide. The public characteristic of the railway corporation predominates, because the prime purpose of the organization is to perform a public or government function. In the process of civilization, the paramount title of all land is vested in the sovereign or government, as the representative of all the people, the Government in turn granting the right of possession of limited areas to the individual, but upon conditions; one of the conditions is, that the sovereign or government, but no one else, may again take possession, by due process of law, and upon payment of a just compensation, of the whole or any part, for a public use. The prerogative of sovereignty to take private property for a public use without the consent of the owner, is delegated to railway corporations. This fact alone shows the public character of railway corporations, and that railways are public highways, created for the public use, and therefore should be open to the use of every citizen upon equal terms and conditions. The fact that the power and duty of providing highways is exclusively and inalienably vested in the sovereign or government is the fundamental principle on which turns the right of the government to control railway rates. Another fundamental principle is, that while a government can delegate the use of a sovereign power to an agent, it cannot irrevocably alienate or part with a single sovereign power. Therefore all such powers exercised by an agent are



subject at all times to the supervision and control of the sovereign or government.

#### WHAT ARE RAILWAY RATES?

Mr. Stickney lays down the proposition that an individual or private corporation may recover for services performed, upon a contract expressed or implied, but the right of a railway corporation to recover for services does not rest upon the law of contract but upon the license of the sovereign to collect tolls. This, he says, is logic, and it is law. When the acts of the legislatures read that all railway rates shall be just and reasonable and this is construed by the courts to mean taxes to be collected under the rules pertaining to the levying of taxes, the insuperable difficulty of ascertaining the value of each particular service will be avoided.

The first step towards levying just and reasonable taxes is to ascertain the aggregate amount required. This is done by estimating the operating expenses, and adding the fixed charges. It is contended that the aggregate par value of the stock and bonds issued by most railway corporations exceeds the amount for which such railways could have been built for cash, and this excess is called "water," and it is argued that railway companies should not be permitted to collect revenue to pay interest on "water." Mr. Stickney says in reply, that this "water" objection may be taken with equal propriety against the securities of nearly all the counties, cities, towns and other corporations and against the United States as well, for it can hardly be said of any of them that there was not a time when they were not compelled to sell securities at less than their par value. In the case of railway corporations, not a share of stock, a bond or any other evidence of debt can be issued without the previous consent and specific authority of the sovereign, and the sovereign is not in a position to repudiate or question the validity of securities which have been issued under the express authority of the laws, neither is the sovereign in a position to plead that the laws granted a larger authority than was prudent, because that would be taking advantage of his own fault. Hence, all obligations issued without fraud, are valid, and entitled to payment. Taxes sufficient to pay operating expenses, agreed upon interest on outstanding obligations, and a reasonable dividend upon stocks, would be just and reasonable taxes or rates. The next step is to ascertain whether the field of authority is large enough to collect taxes equal to the requirements. When the conditions are examined, railways will naturally be found in two classes—"the cans" and "the can'ts." The holders of the securities of "the cans" took that risk when they bought them, and are not entitled to any consideration on that account. Such corporations are justified in collecting such taxes as they are authorized to do, under their charter—no more—but they are entitled to collect all that they can.

Having determined the aggregate amount of just and reasonable rates and on what they can be levied, the next step is to arrive at a proper distribution among the different classes. A single rate has no relation to cost; it may be just and reasonable although less than cost, and it may be just and reasonable although several times more than the cost. Thus, two dollars a ton for hauling coal may be a just and reasonable rate, while fifteen dollars per ton for dry goods may also be just and reasonable. In levying taxes, government may, for reasons of public policy, admit some articles without tax, while on others, such as luxuries, a heavy tax is imposed, and

still others which it is thought desirable to have produced in the country may be protected by so large a tax as to prevent importation. But let the volume of imports decrease until it becomes difficult to get sufficient revenue: then the law of possibility would control. The distinction between necessities and luxuries and the policy of protection would be disregarded, and the rates would be adjusted so as to yield the highest revenue. Taxes in the nature of customs duties or railway rates may be too high as well as too low to produce in the long run the maximum revenue. A tax of one cent per pound on all the sugar imported into the United States would yield a revenue of \$35,000,000, but raise the duty to five cents per pound, and there would be no revenue in a few years, because there would be a sufficient quantity produced in the country to supplant the imports. So with railway rates; if too high they will stop production and that would stop transportation, and there would be no freight rates to collect. Hence, with railways which cannot collect sufficient revenue to meet all their charges, the correct rate on each class of commodities is that nicely adjusted rate, neither too high nor too low, which will produce the largest revenue. In the case of a railway corporation which is collecting a larger revenue than is just and reasonable, the nice adjustment of the rate for the purpose of producing the maximum results must be disregarded, and the aggregate revenue may be decreased by either raising or lowering the rates as the reasons of public policy may demand.

#### LIMITATIONS OF STATE CONTROL.

It is the sovereign's right and duty to confine railway corporations to the authority which has been granted to them; to see that their authority is strictly pursued; that their taxes are levied with uniformity and impartiality, and that they do not collect more revenue than the law allows. It is equally the duty of the state to compel them to collect all the law does allow, if the maximum collection is necessary to meet their obligations, and if the field for taxation is large enough to permit it. The holders of railway securities have a clear case of right, supported by reason and by the letters of the law, to compel the levy and collection of a sufficient tax. The law of Congress says (and the laws of the States have similar provisions) that all railway rates shall be "reasonable and just," and "every unjust and unreasonable" rate is prohibited and declared unlawful.

#### PREFERENTIAL TRADE WITH ENGLAND.

In former issues of THE MANUFACTURER, copious extracts have been given from British trade journals showing growing distrust with respect to the operation of one-sided free trade, and an increasing interest in the establishment of preferential trade between the mother country and her colonies and dependencies.

The Textile Mercury, Manchester, August 1st, in a long article being No. VII, on the Federation of the British Empire, deals with the free trade argument, as follows: "We are perfectly willing to concede that the repeal of the Corn Laws and subsequent abolition of import duties upon many other things removed a great impediment from the way of a large extension of our commerce." The Mercury objects to the assumption that the removal of these duties was the only cause of the increase of trade, and contends that the main cause was "the enormously increased productive capability of

our industries, revolutionized as they had been by their transformation from manual to mechanical systems.' It says that free-traders have allowed their intellects to be dominated so long by one idea that they have become its slaves and can see nothing else. The Mercury concludes its long article by saying:

The conclusions naturally to be drawn are the following: 1st, that Free Trade is theoretically a correct principle. 2nd, that experience has proved that the world cannot be brought to adopt it; 3rd, that its partial adoption, as in this country where it resolves into a system of free imports only, may or may not be advantageous according to conditions and circumstances; 4th, that its adoption in 1846 and its maintenance thenceforward, say until 1875, was an almost unmitigated advantage; 5th, that since 1875 it has been a diminishing advantage, which has now almost altogether ceased; 6th, that the time has arrived when the country should review its commercial relations with other countries, and their relations with it; 7th, it would then find circumstances have changed so greatly that the present system is no longer an advantageous one to maintain, owing to foreign countries having adopted our mechanical systems of industry, and to their becoming more and more able to dispense with our manufactures—the medium in which we should pay for their productions; 8th, that the condition of many of our industries proves the injurious results of the present policy; and 9th, that a system of Imperial Federation should be established by which the different parts of the Empire might sustain one another in preference to foreign States, so many of which have long cherished and avowed sentiments of hostility to this country. The details of this policy should receive the immediate attention of statesmen with a view to carrying it into effect at the earliest possible time. We do not ask the assent of our readers to these views, only that they should give them their unprejudiced consideration.

The Chamber of Commerce Journal, London, July 1896, reports the proceedings of the monthly meeting of the Glasgow Chamber of Commerce at which the President, Mr. Paul Rottenburg, submitted a report regarding the proceedings at the recent Congress of Chambers of Commerce held in London. With respect to the subject of a closer commercial union between the Colonies and the mother country, he said; that the "discussion on this subject could not fail to resolve itself into a hot controversy of Free Trade versus Protection, for, by whatever name it is called 'differential tariff,' 'Zollverein,' 'Fair Trade,' 'Reciprocity,' or what not, Protection was at the bottom of it." "It was but natural that the mother country should buy the agricultural produce of her colonies and sell her products to them in return, in preference to buying from foreign countries; and it was equally desirable that buyers and sellers should meet as often as possible and discuss the possibility and means of increased intercourse to mutual advantage; but barring the Imperial door against all and every one not of British descent would, in his humble opinion, bring about a very undesirable state of things." Mr. James A. Duncan, another of the delegates at the Congress, said: "The impression he took away from the Congress was not the same as that just stated by the President. To him it appeared that there was a unanimous desire on the part of the commercial classes for a closer commercial union of the Empire. The chairman had said the arguments were sentimental, but it was sentiment that made the Empire. He could not agree with the President that this was a case of Free Trade or Protection. It was a question of freer trade against our present stupid system."

It does not appear that any action on the report was taken by the Glasgow Chamber, but a vote of thanks was passed to the President and Mr. Duncan.

One of the greatest obstacles in the way of preferential trade between England and her colonies which British Journals notice, is the great variety of conditions and tariffs which are found, and the difficulty if not impossibility of arriving at any policy which would prove acceptable to all the colonies. So far as the commercial relations between Canada and the Empire are concerned, what necessity is there for delaying the arrangement of these until unanimity of opinion and uniformity of policy are arrived at? There should be no difficulty on the part of the Canadian government to submit to the British government, a proposition which they think would prove to mutual advantage. Suppose this proposition should be of the following character. If England would impose a duty of say ten per cent. on the products of the farm, the forest and the fisheries of foreign countries, Canada will admit all the produce and manufactures of Great Britain and all her dependencies at ten per cent. less ad valorem duty than those from any foreign country. This might necessitate for purposes of revenue, a somewhat higher scale of duties on goods from foreign countries than at present. It may be said that British India, Australia and other colonies would under such an arrangement reap the same benefit as Canada, without having to grant any equivalent. Canada need not grudge them any such advantage. What Canada desires to obtain is a preference for its products against those of the United States, Russia, Danubian principalities, Argentine, etc. If preferential trade with England is ever to be attained, the initiative must come from Canada. That this policy would prove of infinitely greater benefit to Canada than reciprocity with the United States is unquestionable. The new Government has the hearty support of a large majority in the House of Commons. They profess to be especially solicitous about the prosperity of the farming interest. It should not require any very great effort to prepare a proposition to the British Government such as they think would receive favorable consideration. It may require a great deal of correspondence and negotiation before all the details can be arranged, but if an agreement on the general principles can be arrived at, the sooner effort is made in this direction the better.

#### OTTAWA CANAL.

A very large proportion of the traffic on the upper lakes is now being conducted on propellers and sail vessels of such large dimensions and draught of water, that they cannot now avail themselves of our canal system from Port Colborne to Montreal, nor will they be able to do so when the whole of the canals are enlarged to the extent at present contemplated. Canada possesses through its St. Lawrence and Ottawa routes the shortest, quickest and cheapest water channels from the great West to the ocean and Europe. If we hope to secure our natural share of the trade of the West, we must adapt our system to the capacity of the large vessels now employed on the upper lakes, and this is all the more urgent, because the tendency is constantly towards a still larger capacity. This can only be effected by enlarging and deepening our present canals to correspond with capacity required; or by building new canals via Welland and St. Lawrence river, which would

probably cost less than the enlargement; or by utilizing the Nipissing and Ottawa route for barge transportation. A great deal can be said in favor of the last proposition. With large elevators at French River and Montreal, with large locks through which a tug and consort could pass with one lockage, this should prove the most economical means of transportation that can be adopted. The cost of elevators and transshipment at the western terminus would be insignificant as compared with the saving of interest on cost of proposed canal as compared with a twenty foot ship canal. If the traffic prospects for an Ottawa canal are such as to justify its construction, it ought to be undertaken and operated as a Government work, to be employed in connection with and supplementary to the Welland and St. Lawrence route. A charter should not have been granted to any company for a work of such magnitude and importance, which may be used as a competitor instead of an addition to the Government canal system. We notice that an application is being made to Parliament for amendments to the charter, for extending the time within which operations were to be commenced, etc. As the charter has expired through non-fulfilment of conditions, it is to be hoped that Parliament will refuse to extend it. The country will cordially approve of a sufficient money appropriation being made to procure a thorough survey of proposed canal and reliable estimates of cost and probable through and local traffic to be obtained. We believe that the cost will be so moderate, and the public advantages so great, that Government will see its way towards the early construction of this Ottawa canal.

PROTECTION AND THE UNITED STATES PAPER TRADE.

The Paper Mill, New York, August 6th, quotes from an article in the New York Tribune:—

Most kinds of paper are cheaper in this country to-day than they were only a few years ago. The kinds used for the printing of newspapers, for instance, cost at the end of the war about twenty-five cents a pound, and now they cost two to two-and-half cents a pound; writing papers which cost then fifty or sixty cents a pound cost now from ten to twelve cents a pound; and so on. . . "This has all been brought about by the tariff. The tariff always stimulates domestic competition. The foreign paper has been kept out, and the home industry has been developed. The process of making paper out of wood pulp was discovered in Germany, and was perfected in this country. The changes in prices have been brought about gradually, till they are what they are now. They could never have come if foreign papers had been admitted freely."

Paper Mill is advised by its London correspondent, that even Canada has joined the list of competitors against British paper makers. Canadian paper is reported to have been shipped to Ireland, and among the arrivals at London this week may be mentioned thirty-two cases from Montreal; over 500 bales were received from the United States. The exports of paper and paper manufactures from the United States for the year ending June 30, 1896, amounted to \$2,713,875 as compared with \$2,185,257 last year.

MINERAL PRODUCTS OF UNITED STATES.

The report of the Geological Survey of the United States for the calendar year 1895, gives the following statement:

METALLIC PRODUCTS

	Quantity	Value.
Pig iron, long tons.....	9,448,308	\$105,198,250
Silver, coinage value, troy ounces.....	47,000,000	60,766,300
Gold, coinage value, troy ounces.....	2,273,629	47,091,000
Copper pounds.....	\$81,108,868	\$8,682,317
Lead, short tons.....	181,440	10,635,019
Zinc, short tons.....	89,688	6,278,020
Quicksilver, flasks.....	36,104	1,337,111
Aluminum, pounds.....	\$20,000	161,000
Antimony, short tons.....	450	68,000
Nickel, pounds.....	10,302	3,000
Platinum, troy ounces.....	150	1,000
<b>Total.....</b>		<b>\$270,183,976</b>

The production of non-metallic minerals for the year, with recapitulation and total, is given as follows:

	Quantity.	Value.
Bituminous coal, short tons.....	133,118,193	\$115,718,750
Pennsylvania anthracite, long tons.....	61,783,122	82,118,272
Building stone.....		31,688,816
Petroleum, barrels.....	82,983,526	5,001,273
*Miscellaneous, including natural gas.....		5,192,171
<b>Total.....</b>		<b>\$340,311,311</b>
Total value of metallic products.....		270,183,976
Estimated value of mineral products unspecified.....		1,997,000
<b>Grand total.....</b>		<b>\$611,795,287</b>

\*These are itemized in the full report.

The increase in value over the year 1894 was over \$80,000, 000, the value in latter year being \$527,368,594, but the total value in 1895 was exceeded in 1892, when it was \$618, 600,000.

In pig iron the increase in 1895 over 1894 was about 3,000, 000 tons largely due to the great retrenchment during 1894.

The production of iron ores was 15,957,614 long tons as compared with 11,879,679 long tons in 1894; the value in 1895, \$19,219,684; in 1894, \$13,577,325.

The product of limestone for iron flux was 3,698,550 long tons in 1894; 5,247,949 tons in 1895; value in 1894 \$1,849, 275; in 1895, \$2,623,974.

The value of the gold product was in 1894, \$39,500,000; in 1895, \$47,000,000. The value of the silver product in 1894, \$64,000,000; in 1895, \$60,766,300. The value of copper products in 1894, \$33,141,142; in 1895, \$38,682,347. All the above were from domestic ores.

The above statements are from the Marine Record, Cleveland.

THE CANADIAN SAULT CANAL.

The Marine Record, Cleveland, August 6th, supplies the following information as to the traffic on the Canadian canal at Sault St. Marie, from the opening of navigation to August 1, 1896:—

EAST BOUND.		1896.
Copper, net tons.....		7,461
Grain, other than wheat, bushels.....		2,639,184
Building stone, net tons.....		1,140
Flour, barrels.....		755,630
Iron ore, net tons.....		1,747,319
Iron, pig, net tons.....		5,815
Lumber, M. ft. B.M.....		14,000
Wheat, bush.....		9,532,411
Unclassified freight, net tons.....		23,908
Passengers.....		3,458

WEST BOUND		
Coal, hard, net tons.....		56,169
Coal, soft, net tons.....		469,176
Flour, barrels.....		
Grain, bushels.....		
Manufactured iron, net tons.....		3,339
Salt, barrels.....		5,536
Unclassified freight, net tons.....		31,826
Passengers.....		4,468
Canadian craft passing in July, 1,202; registered tonnage, 1,074, 695.		

## RUSSIAN VIEW OF CANADIAN PACIFIC RAILWAY.

Bradstreet, quoting from the Fortnightly Review, says:—

"Siberia is a Russian Canada, larger and more populous, it has a great future before it. The Russians have been struck by the fact that the prosperity of Canada and its productive activity have grown and continue to grow with a rapidity which appears to us (Russians) miraculous, and by us imitable, just from the date of the completion of the Canadian Pacific Railway from the Pacific to the Atlantic ocean. In 1889, they deputed two engineers to observe the Canadian line and its conditions and results. Attention in Russia was drawn to the fact, that Canada, then a country of 4,000,000 people, had, by its own resources, without any pecuniary help from outside, connected the two oceans by an iron road, 4,500 versts (3,000 miles) long, over very difficult and expensive ground for building, in the short time of four years; that the energetic population of Canada, 3,600,000 in 1871, and only increased to 4,300,000 in 1881, reached 5,000,000 a year or two after the first train passed in Winnipeg in 1886; that the quantity of grain carried in Canada had increased from 303,571 tons in 1886 to 500,000 tons in 1888; that in places without population there had arisen seven new towns, such as Vancouver, founded only in 1856, and holding 9,000 inhabitants in 1891. It was made known to Russia that the cost of the Siberian Railway should not be even sixty-five per cent. of the cost of the Canadian Pacific."

What a contrast is found between the tributes of admiration which are everywhere abroad paid to Canadian pluck and enterprise, and the whining of Canadian pessimists who pretend to see no better results than what they sometimes term a mountain of debt.

### EDITORIAL NOTES.

The Age of Steel, St. Louis, says that the quality of the ores of the Lake Superior region is adapted to the manufacture of Bessemer steel, and the output has reached the 100,000,000 tons mark, distributed as follows: Marquette Range, 44,500,000 tons; Menominee, 22,000 tons; Gogebic, 19,500,000 tons; Vermilion, 7,500,000 tons; Mesaba, 6,500,000 tons. The capital invested in mines, docks, railroads and vessels amounts to \$243,250,000. By the aid of the latest and most improved labor-saving machinery, and by the use of electricity, great economies in production have been accomplished.

Only a few weeks have elapsed since the Democratic convention was held in Chicago, but in that short time, the financial interests and corporations of the United States have suffered severe losses resulting from the proceedings and decisions of that convention. Comparing the quotations for active shares on the New York Exchange, as shown in Bradstreet's tables, on June 26th and August 6th, it is seen that during these six weeks there has been an aggregate decline in the value of thirty-four industrial stocks, of over \$70,000,000, and on forty railway stocks, \$144,000,000. When to this is added a corresponding decline in the value of the bonds of these companies, the total loss is immense. It may be, that minor influences have contributed to this result, but all financial authorities seem to agree in attributing the decline to the feeling of disquiet and uneasiness as to the future which has been created by the uncertainty as to the future fiscal policy of the country. It is generally recognized that the coming Presidential campaign will resolve itself into a war between labor and capital. What the result will be no one can foresee.

The Iron Trade Review, Cleveland, August 13th, comments very favorably on a work "Iron Making in Alabama" by Mr. Wm. B. Phillips, Ph.D., consulting chemist Tennessee Coal, Iron and Railroad Co. Birmingham, Ala. The first Alabama furnace which produced charcoal iron, was built about 1818; the first coke furnace was built at Oxmoor in 1876. Twenty years ago it was not certain that good coke could be made out of Alabama coal; to-day, the yearly output of coke is 1,500,000 tons, and 800,000 tons of pig iron. The total cost of manufactured pig iron is now less than the cost of raw materials five years ago. A table is given showing the prices of materials as the result of 40,270 charges and 66,653 tons of iron; Hard ore per ton of 2,240 lbs. 67.5 cents; soft ore 55.4 cents; brown ore, \$1.00; Coke \$1.75. The lowest cost of materials per ton of iron was \$3.97, these charges containing 48.5 per cent. of hard ore in the ore burden, 50 per cent. of soft ore, and 15 per cent. of brown ore, with coke consumption of 1.24 tons per ton of iron. Enough evidence is afforded to convince Northern furnacemen that the pressure from southward is not likely to grow less, and that Alabama pig iron at \$6.00 at furnace can be produced.

Under the convention between Great Britain and Japan respecting the duties to be charged on British goods imported into Japan, concerning which ratifications were exchanged at Tokio, November 21, 1895, it was agreed: That so far as might be deemed practicable, the advalorem duties of the tariff formerly agreed upon should be converted into specific duties. In the schedule of duties, all the articles except the few which could not be classified, are chargeable according to weight and measure. It is also stipulated that the duties shall only be subject to triennial re-adjustment. These two principles are in accordance with those which the MANUFACTURER has always advocated. In British India, although the customs are all advalorem, they are in many important articles, virtually specific; because, in almost all iron and steel imports, the values of the different kinds of goods are established by the customs tariff, irrespective of the fluctuations in the market. In Guatemala and Mauritius, all the rates of duty are specific. In Argentine, all comestibles, beverages and tobaccos and many miscellaneous articles are subject to specific duties. In Victoria, Australasia, most of the duties are specific.

Sir Donald Smith's suggestion at the recent Congress of the Chambers of Commerce of the Empire that the next meeting should be held in Canada, presumably at Toronto, was an excellent one and is deserving of serious consideration and support. We are glad to see that it is approved in a tentative way by the British Chamber of Commerce Journal and we append its remarks in this connection:

Now that the third meeting of this kind has been successfully carried through by the London Chamber of Commerce it will not be long before it will be necessary to decide the date and the venue of a fourth Congress, for we may safely assume that the series will be prolonged by the general consent and approval of the commercial associations concerned. Sir Donald Smith, the High Commissioner for Canada, threw out the suggestion that the Dominion would give a hearty welcome to the next Congress if it could be arranged to be held there. The change of venue, if change should be decided upon, could not be made more appropriately than to the Colony which has been to the forefront in all recent discussions of closer commercial relations within the Empire, and which has done



ment under British auspices. The general effect of that has been that the industries of Canada did not till within ten years have an opportunity of properly developing. We had, Sir, a revenue tariff for ten or fifteen years, and the Right Honorable gentleman who honored us by presiding this morning frankly asks us to return to the revenue tariff. Well, Mr. Chairman, under that revenue tariff the import trade of Canada with Great Britain decreased from sixty-eight millions of dollars to thirty millions of dollars as the result of the failure in the prosperity of the country and the inability of the people to buy the goods which England had to sell them. Under the protective tariff which followed, British imports of goods have steadily increased, and as the prosperity of the country grows they will continue to increase. The manufacturers whom I represent at this meeting hold a capital of seventy millions of pounds, and they represent an output of one hundred millions of pounds. The capital is invested and used in the Dominion of Canada. During the last ten years, with an increase of British trade, the country has developed, and we have increased our importation of British goods. You may perhaps think I am speaking from a selfish standpoint. I am not. We have had shipowners addressing you; we have had gentlemen represented personally in the interests of free importation addressing you; we have had gentlemen who have put forward the shibboleth of free trade as a principle upon which we must live, and upon which we must die. I have heard that a great many people are very nearly dying for it in this country. I do not know whether it is a fact or not, but that principle, however, whatever it may have been, is not a sacred one. When free trade was inaugurated in this country it had a great effect upon the development of this country for a certain number of years—but with it came the discovery of gold; with it came the discovery and utilization of steam, and with it came other elements which made England for the time being the great commercial and financial power of the world. Circumstances have changed; countries have changed; tariffs have changed. The tariffs of the world are directed against you in England. Formerly you were able to master those countries, and their tariffs were under your thumb. Those conditions have absolutely changed now. You have to face conditions in which the whole world is hostile to you, in which your great Colonies do, as they do at the present moment in Canada, purchase eight pounds per head of your goods per annum, and in Australia purchase forty pounds per head of your goods per annum. They come to you and ask you to give them a preference, to increase their population by that preference, and enable them to trade with you on that basis in preference to countries like the United States, which buy from you at the rate of two pounds per head per annum. There are a great many things to consider in this connection. Canada has one influence permeating its whole politics and the whole discussion of its future—that influence is the desire of approximating closer and closer to Great Britain. The other influence, and I may tell you that it is not a small influence, is the American influence in that country. It is an influence which you must consider. Do you want as business men in the future to look forward to the time when the whole American Continent will be bound under a McKinley or some similar tariff? Do you want as Englishmen to look forward to the whole North American Continent, united under the Munroe doctrine with the South American Continent, shutting out British goods? Or do you want to help us in Canada in our ambition to assert our rights to appear as a power which will develop steadily in the direction of free trade, though at the present moment we are not able to act upon those principles? I am here speaking as the representative of manufacturers whom you would suppose to be selfish in asserting the protective principle. I am here under instructions from them to say that they are willing to accept and to advocate a substantial preference for the British and Colonial products entering Canadian ports. (Hear, hear.) Am I offering you nothing, is the Canadian manufacturer offering you nothing, when he offers you a substantial reduction upon your goods in return for preference upon some of the food products you buy from Canada? Is the Canadian manufacturer offering you nothing when he proposes that? And are we in Canada selfish when we say to you in the time of war, "You are importing from foreign countries, notably the United States and Russia, twenty-five millions of quarters of wheat per annum, and your total of wheat per annum, of food upon which your people live, is twenty-nine millions, so that you have a margin of four million quarters of wheat between starvation in the event of any war, in which Russia and the United States are primarily and jointly interested." How are you going to prepare for that future? Do you know as commercial men that you were within an inch, if we may use such a phrase, of war with the United States a few months ago? (Cries of "No, no.") I assert it conclusively and assuredly. (Hear, hear.) We know the situation in Canada. We read the American press and we know something of American politicians. We know the American voter. We realize in full the hostility of the majority of the

American people; and though the American travellers, the American men of culture, and the American men of letters who know something of the mother country are not in favor of war, the majority of American people are.

The Chairman: I think this is travelling somewhat beyond what is either correct or expedient.

Mr. Hopkins: I shall not say any more than this—that the possibilities of war with any country is something which financial and commercial men must consider; and in outlining and developing the policy for the future, you, as commercial men, are not wise, you are not guiding yourselves according to what should be the case, you are not judging cautiously and carefully of your chance in commercial warfare, if you do not look out for the possibilities of war with other countries. When you are feeding a great mass of people as in England you ought to support a policy which will help to guarantee that the food you require for those people will come from within the Empire and save you from danger of having at a certain crisis to starve half of your people for a short or long period as the case may be. (Cheers.) Now I will just say this much further. With regard to the American and British elements in our country, the British element makes this offer to you; the American element has distinctly introduced several times—I shall not speak of party politics because I will not name any party or any party leader, but it has introduced into the Canadian House of Commons and advocated upon Canadian platforms for at least six years a policy by means of which your goods will be shut out of the Dominion by the adoption of the American tariff and we shall have free trade with the United States. I ask my friends here who represent the iron trade of this country and who sell to us now one-half of our total import of iron, what they would feel if that half of our total import of iron at the present moment were transferred bodily to the United States? I ask them to look into the future and see how much more they would like, how much better they would like, to have the iron imported from the United States to be transferred to them. I say that under the preferential trade arrangement that assuredly can be done. There are a number of manufactured goods which we import from the United States, and which under the preferential trade arrangement we are willing to import from Great Britain. Is not that an inducement to the British manufacturer? Is it not an inducement when you consider the fact that the Canadian population may amount to twenty or thirty millions in the future, and that the market would be of infinitely more value to you than the market of the United States? What we would ask you is that you should develop this phase of the question slowly and gradually—not to approach it at a jump, not as Mr. Chamberlain in voicing that great imperial aspiration which all British statesmen are now following after which the Colonies recognize and rejoice to see—not by assuming that we, with our limited financial possibilities, could at once jump into a free trade system—for that would be absolutely impossible. We are willing to approach it by degrees, we are willing to give you substantial preference in our markets if you will give us a small preference upon some specified articles, not raw materials. What is the use of free traders here speaking of our desire to tax raw materials for manufactures? We do not want you to do it. We do not ask you to do impossibilities. Give us a preference upon one, two, or three, or four, or more food products which you import and which you desire, which are not raw materials properly considered. Do that, and I venture to say that we in Canada, and that the majority of the Australasian Colonies will offer you preferential duties upon your manufactures. Is it too much to ask that we should have a Congress of delegates from all parts, called by the Government of this country, to consider this suggestion, to embody it in some practical detail; as the last Congress in 1887 when it arranged with Australia in sharing in the defence of guarding its shores with a fleet; is it too much to ask that this should be done? Is it too much to embody this principle in a Resolution? I think not. It is not a question of free trade or protection, it is a question of Empire. It is a question of doing your best in the first place to promote the welfare of your Empire, and in the second place to promote your own commercial and financial interests. In this connection let me urge the importance under this commercial system which we desire of directing your financial investments not to Turkey, not to Russia, not to the United States, not to the Argentine Republic, but to Canada and to countries under the British Crown. (Cheers.) What we want is development. That development will conduce to your interests and the interests of the British Empire. Develop our country and develop our vast resources stretching from ocean to ocean, from the United States to the Far North. Help us to develop our millions of acres of wheat land. Twenty-five thousand farmers in the province of Manitoba last summer harvested thirty-one million bushels of wheat. Can you picture the possibilities there? Send us out population, send us out money, send us your wealth and support. Do this by a preferential system within the

Empire, slowly at first, gradually extending, giving a certain amount of protection to the interests of the Colonies and the mother country at first, but gradually extending the area of free trade possibilities—the revenue possibilities of free trade—and in the long run the interests of those who worship free trade and who regard it as the centre of all their thoughts and inspirations will be advanced. All we desire is your support in introducing the beginning of a policy which, in the long run, will conduce to the greatness and the advance of the country, will conduce to the increase of colonial population, colonial wealth, and colonial trade, will conduce to the financial interests of the manufacturers, and in the long run to those of the shipowners of this country and to the people of the Empire as a whole—to the workmen of the cities and towns of this great mass of humanity in the old land. This is what we ask in the interests of the Empire, in the interests of trade and commerce. We press it upon your consideration. (Cheers.)

#### MANGANESE ORE FROM NOVA SCOTIA.

Consul Young of Windsor, N.S., reports that the Tenny Cape manganese mines, situated at Tenny Cape, Hants County, N.S., about one mile from good shipping, produce manganese ore of the best quality, and the quantity seems inexhaustible. The ore is noted for its crystals, and is specially suited for use in the manufacture of glass. The mines have been worked to a limited extent, with but little intermission, for about thirty years. About two years ago a new company was formed with a large capital, for the purpose of mining and selling the ore. Heretofore, not more than seventy-five tons was the average output, but with improved appliances a much greater output is expected. At one time this ore sold in New York as high as \$140 per net ton, and has sold as low as \$75 per ton. The quality of the Tenny Cape ore is said to be unsurpassed, and therefore it is sought for by dealers who require manganese of a high grade.

#### FACTS ABOUT ALUMINUM.

Aluminum, lately looked upon as a scientific curiosity, and costing three shillings an ounce, is a metal destined soon to rank next to iron in its usefulness to mankind. Chronologically, the first article made of aluminum was a baby rattle, intended for the infant Prince Imperial of France in 1856. Its lightness, brightness and ring fitted it admirably for such a purpose; but only a prince could afford such a rattle in those days. Since that time this interesting metal has descended from fashionable articles of jewellery, imperial eagles, sword handles and military buttons, down to aluminum surgical instruments, horseshoes, racing yachts, golf clubs, and cooking utensils, which last adaptation bids fair in a short time to overshadow all the rest.

The reason of this great advance in the use of aluminum is that it can now be produced at a little over one penny per ounce, and also the peculiar and valuable properties of the metal itself. In these days of economising labor, a metal one-third the weight of lead is sure to obtain a hearing in commerce. A racing horse shod with aluminum shoes carried only a little over the weight of one iron shoe, and, other things being equal, will win the race. Dental plates cast in aluminum have only a fraction of the weight of gold plates, but they possess the additional advantage of producing no disagreeable taste in the mouth. If a carpet tack is held in the mouth and touches a gold plate, a bitter sensation is at once felt, due to the electro-chemical action set up between the metals and the saliva. Aluminum, on the other hand, is tasteless. This innocuousness gives aluminum exceptional advantages for use in surgery, and patients on whom tracheotomy has been practiced are now having aluminum tubes inserted in their windpipes, instead of silver ones, as was previously customary. These tubes are very light and easy to carry, and after a long time they are found to be covered by a very thin enamel or coating of alumina, almost invisible, and which is absolutely harmless to the patient. Under the same circumstances a silver tube would be blackened and corroded by purulent matter.

Aluminum, in addition to its lightness and incorrodability is also a splendid conductor of heat, and it looks as if nature had reserved it as the metal in which we are to cook our food. Unlike copper, it is absolutely free from poison and will not taint or spoil food. Although certain acids attack aluminum, nothing a man can eat effects it in the least degree.

Bulk for bulk, aluminum is already cheaper than copper. It forms about one-twelfth part of the earth's crust (iron coming next), for every common brick contains between one and two pounds of metallic aluminum. The difficulty of extracting it from the crude clays which contain it has hitherto ruled its cost, for it is not found

in nature in its metallic state. The chief waterfalls of the world are now being harnessed to extract aluminum from its ores. For example, the Great Niagara, the falls of the Rhine at Neuhausen, some Norwegian falls, and recently the Falls of Foyers, near Inverness, are busy producing aluminum by electro-metallurgical processes in such large quantities and at such a comparatively small cost that this useful metal is sure to become more and more widely employed wherever articles are required that will not tarnish, and where lightness combined with strength is desirable.—Good Words.

#### LIQUID FUEL IN DAILY USE.

The use of liquid fuel is becoming more and more an everyday occurrence. The Great Eastern Railway have built a large storage plant for this form of fuel at Stratford. Twenty-five locomotives are now fitted with oil burners under the Holden system, and twelve stationary burners with three furnaces at the shops burn the same sort of fuel. The oil arrives at Stratford in large quantities, old locomotive tenders being employed to transport it. There are thirteen storage tanks, which are placed on low ground not very far from the main line. The oil flows to them by gravity. The tanks have a peculiar rectangular shape; nine of them hold 3,000 gallons each and the remaining four 2,500 gallons.—Invention.

#### THE SOLDERING OF GLASS.

Margot has been making some very interesting investigations upon the subject of the soldering of glass, and has established the fact that an alloy composed of ninety-five parts of tin and five parts of zinc will melt at 200deg. C., becoming firmly adherent to the glass, is unalterable, and exhibits an attractive metallic lustre. An alloy containing ninety parts of tin and ten parts of aluminum will melt at 390deg. C., and also forms a very strong solder for glass, being likewise possessed of a very stable brilliancy. With these two alloys always ready to hand, we may claim to have discovered a means of soldering glass as easily as soldering any two pieces of metal, and the operation is easily performed. When the glass is heated in a furnace the soldering can be accomplished by rubbing the surfaces with a rod of either of the above-named solders. The alloy as it flows can be evenly distributed with a tampoon of paper or a strip of aluminum, or with an ordinary soldering iron.—Invention.

#### GAS MOTORS ON STREET CARS.

A recent issue of the Manufacturers' Record referred to a gas motor which has been applied to a street car by Thos. C. Pole, of Washington. Mr. Pole has calculated the cost of his motor as compared with the cable and other systems, and he gives the following figures: The cost of operating a cable-car line, exclusive of repairs, is estimated at eighteen cents per car per mile, while to construct the system costs \$100,000 per mile. The underground electric system costs \$140,000 a mile, while the cost of operation is fourteen cents per car per mile. The overhead trolley line costs from \$15,000 to \$50,000 per mile for the road, while the cost of operation is ten cents per car per mile. By using the gas-motor system, the inventor claims that it costs \$5000 to equip a mile of line after the rails are laid, while to operate the car costs but two cents per car per mile. The Pole system, it is stated, is similar to that in use in Dresden, Germany, which is giving much satisfaction.

#### RAILS FOR JAPAN.

The fact has just come out that the Carnegie Steel Works have received an order for 9,000 tons of steel rails from Japan, for which they bid in competition with English firms. Precisely what the bids were is not known, but the assurance is given that the American price is considerably lower than that offered in England. The freight charges from here are higher. This is something of a surprise here among those who have heard of it, and it is probable that it will greatly encourage the iron dealers, who, during the recent depression have been among the most acute sufferers from stagnation. The order is not for projected railways, but to supply the ordinary requirements of existing lines, a fact which is thought to give a special significance to the transaction. A government representative from Japan is on his way here whose mission it is to examine railway systems of this country with a view to ascertaining whether it would be wise to adopt any of the methods employed in this country which are different from those in vogue in the East. A principal object of his observations is to look into

the matter of gauges, as the government is considering the advisability of changing the gauge now used in Japan.

This is not the first order received in this country for steel rails from Japan. The Illinois Steel Company sent 10,000 tons about six months ago, and it is understood that they gave complete satisfaction both in quality and price. The dealers here are hoping that a new field for their product is to be opened up in the Orient. Li Hung Chang, who is on his way to this country, has declared that he will advise the Emperor of China to lay railways all over that country.

UNITED KINGDOM.

The Board of Trade Returns for June summarise the imports and exports as below for the first six months of the year in comparison with 1895:—

	IMPORTS.		
	1895.	1896.	Difference.
Animals, living (for food) . . .	£3,861,316	£5,384,470 +	£1,523,154
Articles of Food and Drink:—			
Duty Free . . . . .	67,027,740	69,556,852 +	2,529,112
Dutiable . . . . .	11,047,944	10,839,634 -	208,310
Tobacco, dutiable . . . . .	1,330,963	1,856,002 +	525,039
Metals . . . . .	8,953,000	10,059,166 +	1,106,166
Chemicals, Dye Stuffs, and Tanning Substances . . . . .	3,681,933	4,174,513 +	492,580
Oils . . . . .	3,762,156	4,006,510 +	244,354
Raw Materials for Textile Manufacturers . . . . .	42,443,770	41,586,225 -	857,545
Raw Materials for Sundry Industries and Manufactures . . . . .	17,852,883	20,572,587 +	2,719,704
Manufactured Articles . . . . .	36,349,014	40,623,053 +	4,274,039
Miscellaneous Articles . . . . .	6,852,144	7,290,214 +	438,070
Parcel Post . . . . .	524,837	531,809 +	6,972
<b>Total . . . . .</b>	<b>203,687,700</b>	<b>216,481,035</b>	<b>12,793,335</b>

EXPORTS OF BRITISH AND IRISH PRODUCE AND MANUFACTURES.			
Animals, living . . . . .	£333,650	£399,049 +	£65,399
Articles of Food and Drink . . . . .	4,567,906	4,948,589 +	380,683
Raw Materials . . . . .	8,537,625	8,598,978 +	61,352
Articles manufactured and partly manufactured:—			
a. Yarns and Textile Fabrics . . . . .	48,218,115	53,179,489 +	4,961,374
b. Metals and Articles manufactured therefrom (except machinery) . . . . .	13,142,219	16,535,391 +	3,393,172
c. Machinery and Mill Work . . . . .	7,139,825	8,296,844 +	1,157,019
d. Apparel and Articles of Personal Use . . . . .	4,076,657	5,051,893 +	975,236
e. Chemicals and Chemical and Medicinal Preparations . . . . .	4,168,178	4,451,125 +	282,947
f. All other articles either manufactured or partly manufactured . . . . .	15,350,266	16,773,653 +	1,423,387
g. Parcel Post . . . . .	583,075	767,711 +	184,636
<b>Total . . . . .</b>	<b>106,117,516</b>	<b>119,002,722 +</b>	<b>12,885,206</b>
Exports of Foreign and Colonial Merchandise . . . . .	£30,231,354	£29,938,789 -	£292,565

The first six months of 1896 make a good record for the Foreign Commerce of Great Britain, the aggregate value of imports and exports being 5 per cent. larger than the average for preceding five years, for the same period.

NEW METAL IN DEMAND.

French inventions frequently call into use natural products which had previously possessed no practical value. This is illustrated by the rare metal, thorium, discovered by the great chemist, Berzelius, early in the present century. When burned the metal emits a light more brilliant than that of burning magnesium, but until the recent invention of incandescent gas burners, in

which the flame is encased in a metallic mantle no use was discovered for it. Upon experimenting with various substances it was found that the oxide of thorium, called thoria, makes the best mantle for such burners, and a demand being thus created for it the value of thoria suddenly sprang from almost nothing up to \$250 per pound. Then a search began for new sources from which thoria could be obtained, and this search is not finished. Originally the new metal was found only in certain rare minerals in Norway. Recently it has been discovered that the mineral "monazite" contains a liberal quantity of thoria and monazite is found in North Carolina, Canada and Brazil. The price of thoria is now much lower than it was at first, although it still commands \$15 or \$20, or even more, per pound, the price fluctuating with the supply.

ELECTRICALLY HARDENED STEEL.

Steel, heated and then quenched in a bath through which an electric current is made to pass, is said to acquire extraordinary hardness, the invention being due to a Swiss engineer named Faux, inhabiting Strassburg, who made the following demonstrations before a commission of engineers. A drill thus hardened passed through a piece of chilled cast iron twice as quickly as it would have done if hardened in the ordinary manner. A circular saw, similarly hardened, cut through iron bars with extraordinary facility. With shears of this electric steel, an ordinary steel bar thirty-five mm. wide and eighteen mm. thick (1½ in. by 23-32 in.) was cut through cold; and this operation was repeated five times with the same bar. A table knife cut through an iron wire of 1½ mm. diameter, eleven times running, with the same facility as it would have cut a piece of string if only hardened in the ordinary manner. Examination, by the magnifying glass, of the tools prepared by this method has revealed no change of structure.—American Manufacturer.

ALUMINUM BRONZE CASTINGS.

Some rules are given in a contemporary for obtaining the best casting with aluminum bronze, in order to avoid the difficulties which are so frequently met with in melting. An essential point mentioned is the special care to be taken not to overheat the metal, the fact being that, if it be heated to too high a temperature, the aluminum will oxidize, the oxide which is thus formed making the entire casting what artisans term "dirty," and the metal will also be spongy from the presence of large amounts of occluded gases. The scum, too, which floats on top of the melted bronze in the crucible must be prevented from going into the body of the casting, this being practicable by providing the casting with suitable skim gates. The greatest trouble in making a bronze casting, however, arises from the shrinkage of the metal—which is very great—a difficulty which is overcome if the casting have a large sinking head and "risers," it being necessary, however, in many cases to make the sink head fully as large as the casting.—American Manufacturer.

THE NEW METAL LUMINUM

Which we lately noticed in these columns as a metal for bicycle frames, is occasioning such an active market that the Swedish makers cannot turn out sufficient for the purchasers. Each frame is cast in one piece, when it is put through a test which brings to light any flaws that may exist. A weight of 2,000 pounds is placed upon ladies' machines, and to ensure the strength and efficiency of gentlemen's machine each frame has to undergo a strain of 3,000 pounds before it is passed on to the shops. A recent inspection which was made at the works showed that the frames were exceedingly good, for a few were selected promiscuously, and when struck rang out as clear as a bell. A new feature of the 1897 model machine will be the casting of a gear case which will be one with the frame. The new manufactory has its home in England at Birmingham, with Accles Limited, and it is understood that this metal will provide facilities not only for cycle manufacturers, but in the small arm, ammunition, and sewing machine lines; motor cars will also probably have a look in here.



## CHEAPER ENGLISH STRUCTURAL SHAPES.

At last it seems as if British manufacturers were about to wipe out the reproach that has attached to the remarkable growth of the consumption of Belgian beams, girders, and pillars in this country. Of these various products of Belgian origin we are now consuming from 70,000 to 80,000 tons a year, and this trade has been allowed to grow up year by year until it may be difficult to dislodge it. But it will probably be slowly wiped out, as it certainly ought to be. There are now four or five large firms engaged in the manufacture of beams and girders, notably the Glangarnock Iron & Steel Co., the Leeds Steel Works, the Frodingham Iron Co., the Shelton Bar Iron Co. and Dorman, Long & Co. All of these firms have made special provision for the girder trade, and it is no secret that some of them, at least, can produce girders as low as £3 10s. to £3 15s. per ton, which is, we believe, a lower figure than they can be produced for anywhere in Belgium. English manufacturers have the command of cheaper pig than their Belgian rivals. In some cases the pig is charged to the steel works in this country at no more than 33s. per ton.—Engineering Review.

It is reported that American made shoes have found a liberal market in England. Germany is also buying shoes from Uncle Sam's manufacturers.

The National Industrial Review, referring to the rapid and remarkable increase in the foreign commerce of Japan, says that in the last decade it has jumped from \$75,000,000 to \$300,000,000. In textile fabrics the exports now reach \$25,000,000, ten years ago were only \$500,000. The Review thinks that both Europe and the United States will find Japan a sturdy competitor.

An agreement has been entered into between the town of Midland, Ont., and the Mamtou 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 Paper Mill.

The town of McDonald, Pa., comes to the front with a proposed new industry in the shape of a paper shirt factory. J. S. Johnson is the projector, and the garment he proposes to make is to be worn between the under and the outer shirts as a protection against the frosty winds of winter. He is now having paper manufactured especially for this purpose, and expects to be able to give employment to about twenty women.

The depression in the iron trade is being felt by the vessel owners of the lakes. Twelve big steamers have gone out of the ore carrying trade, and are tied up for the remainder of the season. Others will follow them soon. The docks at Lake Erie ports are piled full of ore which cannot be moved, and the steamer owners fear the rates have fallen so low that there is no profit in the ore carrying trade.

There has been made at Warrington for the new Glasgow (Scotland) subway what is claimed to be the largest rope ever used for haulage purposes. It is about seven miles long, is four and five-eighths inches in circumference, and weighs nearly sixty tons. It has been made in one unjointed and unspiced length of patent crucible steel. When in place it will form a complete circle round Glasgow, crossing and recrossing the Clyde in its course, and will run at a speed of fifteen miles an hour.

There are in the United States, it is stated, 200,000 machinists, 10,000 tool makers, 25,000 boiler makers, 10,000 pattern makers, 750,000 carpenters and joiners, 200,000 masons and bricklayers, 50,000 contractors and builders, 50,000 plumbers, gas and steam fitters, 150,000 stationary engineers and firemen, 100,000 locomotive engineers and firemen, 50,000 electric railway and light employes, 50,000 cabinet makers, carvers and wood-workers, 50,000 civil, mechanical, electrical, and mining engineers.

The New York Evening Post publishes a contribution from a correspondent on Asbestos, who says that it is found in all quarters of the globe, but, from a commercial point of view, the valuable qualities are found in Russia, South Africa, Italy and Canada. Formerly, Italy was the principal source of supply, but the trade is declining. Now Canadian asbestos has taken first place both as to price and quality. The uses to which this article is now applied are constantly increasing, and it promises to become an important item in Canada's trade.

The statistics of electric railways and tramroads in existence in Europe on January 1, 1896, according to the Industrie Electrique,

show that the number of railways in working order in Europe was increased from 70, in 1895, to 111, their total length from 700 to 902 km., the capacity of the central stations from 18,150 to 25,092 kilowatt, and the number of motor carriages or locomotives from 1236 to 1747. Germany appears at the head with 406 km. of electric roads; then a long way down the list France with 132 km., and next England and Ireland with together 107 km. (A kilometer is equal to 3,280 feet, 10 inches . 062137 miles).

Every year the returns of the Suez canal traffic prove the increasing value of that waterway to Britain and provide a strong argument for her control over Egyptian affairs. For the year ending June 30th, 3,434 ships, with a tonnage of 11,833,637 passed through, of which seventy-two per cent. was British. German vessels numbered 314, French 278, Dutch 192, Italian seventy-eight, Austrian seventy-two, Spanish thirty-three, Norwegian fifty-seven, Russian thirty-nine, Turkish thirty-six, and United States only five, while British vessels numbered 2,318. Of war vessels England sent through thirty-two, France twenty-one, Italy twelve, and Germany nine. The time now required to traverse the eight-seven miles average eighteen hours forty-four minutes.

Some of our textile machine shops, says the Industrial Record, are building machinery for export, some for England and some for the Continent. Quite a considerable quantity of American machinery is going into the Chemnitz district of Germany. Apropos to this, we note by recent consular reports that American shoes are being received with marked favor in Germany, and that during the past year an association of manufacturers in Boston has opened at Berlin a store for the sale of men's, women's, boy's and girl's shoes, and it is stated that the sale of these has been considerable, the demand seemingly coming from those who desire a first-class article, they being selected in preference to those made in Great Britain or at home.

The firm of William Baird & Co. are now rebuilding some of their blast furnaces at Eglinton Iron Works, Kilwinning, Scotland, and have recently completed an extensive plant for the recovery of ammonia and tar from the distillation of the blast furnace gases. All the blast furnaces of Scotland are now fitted with ammonia plant, except two works, and it is probable that these will be similarly equipped before long. The effect of this installation is to reduce the cost of the iron by at least 85 cents a ton. The recovery plants, on the other hand, have added a considerable amount to the investment made in Scotch iron works. The average cost of such a plant is about \$300,000, and some of them have run up to \$400,000. Messrs. Dempster & Co., of Manchester, have fitted up a number of the leading plants. The Gartsherrie firm, which led the way in this branch of enterprise, has its own special system.—Iron Trade Review.

A recent statement of the Minnesota Iron Company shows that its total production in the fiscal year ended December 31st, was 2,003,776 tons. This compares with 1,309,575 tons in 1894, and \$30,649 tons in 1893. The company owns the Duluth & Iron Range Railroad, the main line of which is 175 miles long, also five ore docks, one merchandise dock and complete equipment of rolling stock. The capacity for handling iron ore is from three to three and one-half million tons per year. The railroad company has a land grant calling for some 610,000 acres, of which 300,000 acres have been decided. The iron company owns or controls through sub-companies 41,550 acres and has under lease 3,150 acres, mostly of mineral lands. It also owns, through the Minnesota Steamship Company, eight steel steamers and four steel consorts, and will complete another consort in August.—Iron Trade Review.

Sir Henry Bessemer and Sir William Siemens have been reproached with inventing and introducing processes that have practically ruined the manufactured iron industry of the United Kingdom, says an English Exchange. To a large extent this has no doubt been the case. The production of wrought iron during the last fifteen years has dropped from 2,700,000 to 1,500,000 tons, while the production of steel has more than doubled. But even this movement, revolutionary and disastrous as it has been, has not been unattended with its compensations. The basic process of steel making is now largely carried on by the aid of puddler's tap, which would otherwise have been waste a product, but which is now eagerly bought up by basic steel manufacturers at 5s. to 6s. per ton. It is usual to employ from 50 to 70 per cent. of puddler's tap per ton of basic iron produced in the blast furnace. This substance usually contains from 45 to 55 per cent. of iron, and from three to six per cent. of phosphorus, and it is the latter metalloid otherwise not only useless but deleterious, that chiefly makes the product valuable. It is the presence of the large reserves of puddler's tap in Staffordshire, etc., that has enabled the pig iron trade in these districts to keep alive.—Iron Trade Review.

**CANADIAN COAL.**

No industry is more completely the creation of the National Policy than the coal trade of Cape Breton and the St. Lawrence ports. During the months of May and June, 1895, the quantity of coal brought to Montreal from the mines of Cape Breton reached 168,000 tons, while during the opening months of the present year the figure is 187,000—an increase of 19,000 tons over 1895. It will not be surprising, however, if the present and following months show a falling off, as the coal dealers here say that the great manufacturing concerns are so uncertain as to what the future has in store for Canadian industrial establishments that they are going slowly regarding the purchase of coal. At the present time there are about twenty regular steamship liners engaged in carrying coal to the St. Lawrence, and these do not include outside steamers which only make a single trip. The others are engaged by the season, and each of these boats makes from twelve to sixteen trips, beginning the first of May and going into other trades the first of December. Of these boats engaged in building up Canada's inter-provincial trade, there are about eight belonging to Canadian firms, viz: The Coban, the Bonavista, the Cacouna, the Cape Breton and the Louisburg to the Dominion Coal Co.; the Acadian to Debell's; the Polino to the Messrs. Ross, and the Tiber to Archibald & Co.; while the remaining twelve are English ships that go south in winter and come back to the St. Lawrence in summer. The smallest steamer in the trade this season is the Coban, carrying 1,100 tons of coal, while the Murcier is the largest, carrying 3,670 tons. If the duty on American coal were removed this trade

would be completely destroyed, and its importance may be understood from the fact that the disbursements of each vessel in Montreal at each trip reach about \$1,200, while the amount paid at the port of shipment is somewhere near \$520. During the season of 1895 some 634,753 tons of Cape Breton coal was brought to the port of Montreal and 725,000 tons in all, including the ports of Quebec, Three Rivers and Sorel.

The quantity of pulp now produced in Canada is estimated at 170 tons per day, of which on the average 100 tons are exported.

Venezuela has two hundred million acres of forest, in which grow all the varieties of ebony, as well as rosewood, satin wood and mahogany.

P. Dionne, writing to Power, says: "I was using four-bladed propellers on our boats, and decided to try six-bladed ones. After the trial I found the six-bladed propeller to be twenty-five per cent. better than the four-bladed one in both power and economy. The boats which I refer to are the Cook and J. G. Witherbee, running on Lake Champlain."

The capital stock of the London and Northwestern Railway Company of England is \$95,000,000, which is the greatest corporation on earth, unless it be that of the Rothschilds. Its revenue is \$6,500 every hour. It has 2,300 engines and employs 60,000 men. The company makes everything it uses, including bridges, engines, rails, carriages, wagons, even the coal scuttles and wooden arms and legs to supply the injured on its staff. It spends \$130,000 a month on repairs of its permanent roadway.

Calculations as to the speed of an electric locomotive and train of the weight of the Empire State express, running at a speed of 70 miles an hour, show that, without increased cost of coal, the electric motors could make a speed of 103 miles per hour, indicating that much higher speeds are economically possible with electric motors.—The Age of Steel.

One hundred and nine thousand locomotives are at present running on the earth, says the Boston Journal of Commerce. Europe has 63,000, America 40,000, Asia 3,300, Australia 2,000, and Africa 700. In Europe, Great Britain and Ireland take premier position with 17,000 engines; Germany has 15,000, France 11,000; Austria-Hungary, the second largest Continental country, has 5,000.

The last annual report of the British directors of the Suez Canal gives a table showing the annual increase in traffic, from which the following figures are taken:

Year.	Number of vessels.	Gross tonnage.	Net tonnage.
1869. . . . .	10	10,557	6,576
1879. . . . .	1,477	3,236,942	2,263,322
1889. . . . .	3,425	9,605,745	6,783,187
1895. . . . .	3,444	11,833,637	8,148,383

Some very useful light railways have recently been built in Western Australia at the low price of £1 000 a mile, of which the Southern Cross and the Coolgardie lines are 114 miles in length. The Northern and Yalgarn line cost £1,620 a mile. In both of these cases are included rolling stock, stations, fences, and maintenance for six months. If we could have light railways at an approximately similar price they would

# 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.

do well in our own country, and now that the Light Railway Bill has passed the Grand Committee on Trade, we may hope to see some of these lines laid within the year.—  
Invention.

The amount of raw sugar which has come into the port of Montreal this season exceeds in quantity that of any previous year. Ever since the opening of navigation sugar ships have arrived both thick and fast. Next to the coal trade, which is virtually local, as the cargoes come either from Sydney or Glace Bay, and a round trip can be made in ten days, the sugar cargoes to this port exceed both in tonnage and numbers that of any other product. From July 23rd to date no less than 41,277,061 pounds of raw sugar have arrived in this port. Every available space in both the St. Lawrence and the Canada Sugar Refineries is packed with the raw product.

Japan at present imports kerosene oil largely from this country. According to a statement made by a good authority, the United States will soon lose this trade. Petroleum fields have been discovered in Sumatra and the output in one district alone is 6,000 barrels daily. Dr. Muir, who is managing an oil refinery in the Sumatra fields for a Dutch company, is in the United States, and he predicts that, within five years, Japan will take all her kerosene oil from the Eastern source of supply. The Dutch will not allow Americans or other foreigners to enter their territory. It is believed that other rich fields await development.—Buffalo Express.

The progress made by Japan during the last decade in extending foreign trade has been rapid, and all things considered has been

remarkable. It is a big jump from \$75,000,000 to \$300,000,000. This is not a case of whistling for the wind, but of putting the shoulder to the wheel and by dint of energy, enterprise and commercial aggressiveness reaching out for and securing the golden apple of success. The export trade in textile fabrics alone is placed at about \$25,000,000. Some ten years ago \$500,000 represented this branch of exports. In some lines it would seem to be certain that both Europe and the United States will yet find a sturdy competitor in Japan—at least so far as Asiatic markets go.

The Pall Mall Gazette says: "In view of the probable election of McKinley and a higher tariff, a number of English manufacturers are projecting branches in the United States. We know that quite a number of invitations have come from America since the St. Louis convention, with the object of inducing English manufacturers and capitalists to construct woollen, worsted, cotton, lace and silk mills in good locations. On the strength of McKinley's popularity, an American corporation, in fact offers to build and equip mills to lease, with the option of purchasing, to reputable English manufacturers. The offer has been provisionally accepted in three instances, two of which are worsted men, and in the other a lace maker, and a second firm of lace makers has purchased the Mineola curtain mills near Philadelphia.

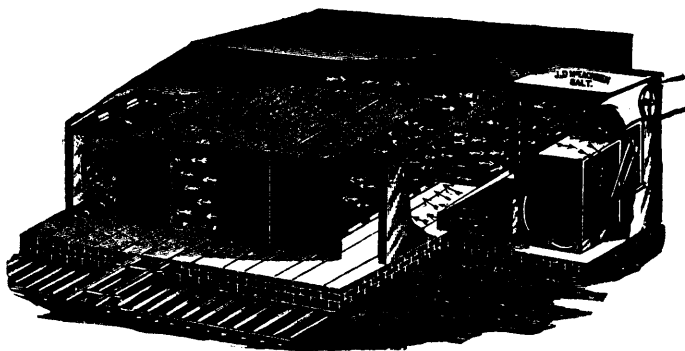
A Times telegram from Melbourne dated June 11th, says:—"Mr. G. Turner, Premier of Victoria, says:—"Mr. G. Turner, Premier of Victoria, said the Ministry would not accept the Free Trade proposals, on the ground that they would be injurious to local factories, which were founded

in the belief that Protection would be maintained. Differential duties of thirty or thirty-five per cent. on British goods against forty or forty-five per cent. on foreign goods would be worth considering; but absolute Free Trade between Great Britain and Victoria was hopeless at present. Mr. G. Turner declined to initiate a request to Mr. Chamberlain to summon a conference on the proposed Zollverein, but said if other Colonies moved in the matter the Cabinet would consider it. Mr. G. H. Reid, Premier of New South Wales, declined to speak. Mr. C. C. Kingston, Premier of South Australia, said that he would consult his Cabinet."

If the object in using woollen yarn is to make a plain cloth, such as a Doeskin or a Superfine Black Broad, where it is requisite to hide the make of the cloth, then in order to obtain this result the weft requires to be twined the opposite way to the twine of the warp, in order to afford the greatest facility for the fibres mingling quickly, and felting and forming one homogeneous mass, hiding every vestige of the "make" or frame-work of the fabric. In the fancy cloth you require to preserve as much as possible the individuality of the threads for the sake of the pattern, in the plain cloth you require to lose it as quickly as possible in order to obtain the closeness of face and cover for the finisher to operate upon, and to do this the folds of the twine in the weft require to meet with, or fall in with, the folds of the twine in the warp, and not cross them at right angles as in the fancy cloth. By using opposite twine for warp and weft in a fancy cloth you get closeness and evenness of face as in the plain cloth, but you sacrifice distinctness of pattern in doing it.—Vickerman.

## 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 Dry Kilns 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.

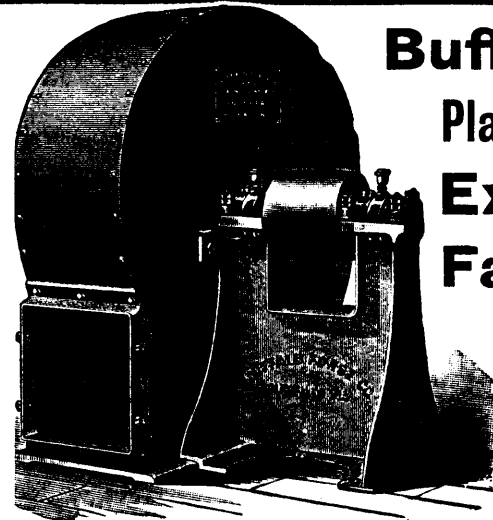
### BLAST HEATING SYSTEM FOR LARGE BUILDINGS

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 Planing Mill Exhaust Fans

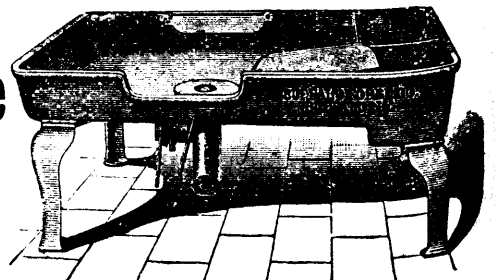
EFFICIENCY  
UNEQUALLED  
DURABILITY  
UNSURPASSED  
SMOOTH  
RUNNING  
INCOMPARABLE

THE LARGEST

## Forge

IN THE WORLD

Thirty-Eight other Designs of Portable and Stationary Types.



### BUFFALO LUMBER DRY KILNS

Blowers, Blacksmiths' Tools, etc.

Sold in—Toronto, Ont., by H. W. Petrie.

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

Montreal, Que., by Canadian Machinery Agency.

Chicago Store, 22 and 24 West Randolph Street

New York Office—26 Cortland Street.

There about 1,200,000 freight cars in the United States; on a single track they would make a string running from New York to the home of the future president of the United States. These freight cars are valued at \$600,000,000.

Speaking of the benefit of the protective policy as applied to Canadian industries, the Boston Advertiser says: "An instance is furnished in the annual statement of the Canadian Cotton Goods Mills Co., which has just been made public. This is one of the largest industrial concerns in the Dominion, and its report shows that its profits for the year were \$253,000. Most of this has, however, been used in improving the property and machinery of the company, so that no dividend has been declared. The report also states that in the past four years the company has expended \$550,000 in new machinery. The same state of things has existed in a large portion of the industries of Canada and has necessarily resulted in a great increase in the number of hands employed in them, and in the volume of the wages paid."

The excellent opportunities, says the New York Shipping List, for the investment of large capital in the cultivation of sugar beets in the Western States and manufacture of sugar, so as to be independent of Cuba and other foreign sources of supply, have borne fruit. An immense enterprise of this character is about to be undertaken by Claus Spreckels, of San Francisco, assisted by New York capitalists, who placed \$10,000,000 at his command. Thousands of acres in the San Joaquin and Sacramento valleys of California, which have been devoted to the culture of wheat, barley and oats, were pur-

chased by Mr. Spreckels a few weeks since for the exclusive growth of sugar beets, and we understand that seed has already been planted on most of the land for this season. Mr. Spreckels is now on his way to France and Germany to inspect the factories there, and upon his return he promises to erect one of the largest plants in the world to absorb the supply of beets, which will be taken care of in the meantime by other sugar houses on the Pacific coast. The aim is to send regularly to the States on the Atlantic coast raw beet sugar to the value, at least, of \$50,000,000, in addition to supplying all the consumption on the Pacific coast, which has been increased by the advance in the fruit industry.

Rumor has it that a revolution in the iron trade is impending in the shape of "ductile cast iron." This is iron made by a new process that will, it is said, combine all the good points of both steel and iron. This new iron offers endless possibilities. Will it be used for black plates instead of steel? Will it settle the endless galvanized iron vs. galvanized steel question?—American Artisan.

The "Kreuz Zeitung" says that Austria proposes to create an international union to protect the central European grain producers against American competition. This proposal is made in view of probable aggressive economic legislation on the part of the United States.

"Within the last twelve months several experiments have been made by German firms to replace animal power by electrical power in agricultural operations," says the Philadelphia Record. "The German Government have now joined the ranks of the experimenters, and are carrying out some extensive trials of electric plows at the Sillium

estate, near the Upper Hartz. Some information has been furnished by an electrical manufacturing company, of Berlin, who have also made experiments with electric plowing apparatus. The power required for this machine was eleven kilowatts when ploughing a width of twenty-four inches, and a depth of fourteen inches, at the rate of eight yards per minute. The area ploughed in a ten-hours' working day at this rate would be seven and one-half acres. The apparatus is so arranged that parallel to the motor car there runs at the other side of the field a car carrying the other end of a wire rope. The plough is hauled along this rope to and fro, and both cars are slowly moved on. The greatest difficulty seems to lie in fixing and moving the pulley car. The pressure employed is that of the usual trolley wad standard, namely, 500 volts."

One of the important occurrences in the woolen manufacturing industry is the expiration of the patent upon the Bramwell feed, which must eventually be followed by a large reduction of price, and the general construction of these machines by other builders. Several firms in the United States are now making these machines.

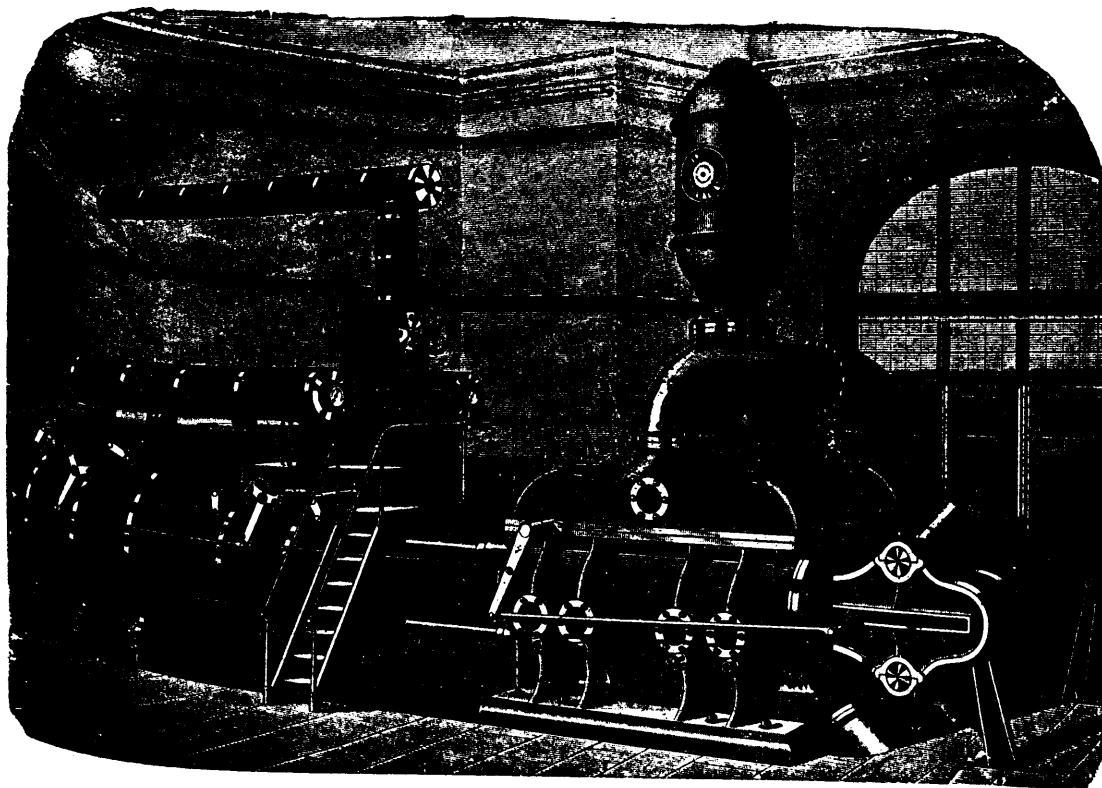
**TAKE YOUR VACATION NOW.**

Go to picturesque Mackinac Island via the D. & C. (Coast Line). It only costs \$13.50 from Detroit, \$15.50 from Toledo, \$18.00 from Cleveland for the round trip, including meals and berths. Tickets good for 60 days, bicycles carried free. One thousand miles of lake and river riding on new modern steel steamers for the above rates. Send 2c. for illustrated pamphlets. Address, A. A. SCHANTZ, G.P.A., Detroit.

# 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

## 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, belting, 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, alkalies, 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.

It is said that the Cataract Power Company, Hamilton, which made an offer to the city to pump the water from the Beach has purchased the Morning Star grist mill at Decew's Falls for \$14,000. On the site of mill the company will erect a central power station, getting its power, of which there is abundance, from Decew's Falls.

The New Brunswick Cold Storage Company, St. John, N.B. is being incorporated with a capital stock of \$300,000.

The Georgian Bay Lumber Company's mill at Port Severn, Ont., was fired by lightning and completely destroyed on the 16th instant. Loss \$50,000.

Mr. Geo. McAllister, Bloomingdale, Ont., has bought the Guelph heading and stave mill, Guelph, Ont.

The Port Hope Preserving and Canning Company will shortly commence the erection of an addition to their factory.

Messrs W. Bailey & Co., broom manufacturers, Kingston, Ont., are negotiating with other cities with a view to transferring their business from that city. The factory employs 50 hands who draw in annual wages \$12,000.

The McClary Manufacturing Co., London, Ont., has been awarded the contract for putting in two furnaces at the Strathroy public schools.

T. Bergeron & Co., St. Louis de Mile End, Quebec, have formed a partnership for the manufacture of boots and shoes.

St. Hyacinthe, Que., purposes spending \$30,000 on a waterworks system.

The Standard Fibre Lining Co., Ltd., Morriton, Ont., is applying for incorporation to carry on business as manufacturers of fibre lining pulp and paper. Capital stock is \$40,000.

The valuation roll of Victoria, B.C., has risen, according to the Western World, from \$5,178,000 in 1876, to \$23,067,402 in 1896.

The town of Wellington, B.C., has under consideration the construction of a waterworks system.

The city engineer of Windsor, Ont., has been instructed to prepare plans, etc., for a system of sewers in the southwest part of the city, to cost about \$8,000.

Tenders for the construction of reservoir, valve well and gate house in connection with the water works are invited by J. N. Armstrong, town clerk of North Sydney, N.S.

Messrs. E. H. Thomas & Co., manufacturers of brooms, Norwich, Ont., are enlarging their buildings and putting in a 20 h.p. engine and boiler.

Work has been commenced on the consumptive sanitarium at Gravenhurst. There will be required for it an electric light plant with a capacity of 400 lights, and a steam plant to supply power for same and for operating laundry machinery, ventilators, etc.

The Klock Lumber Co., Klock's Mills, Ont., intend rebuilding on a large scale to replace the mill recently burned at Aylmer, Ont.

The Channo Mining Company, Vancouver, B.C., is being incorporated with a capital stock of \$1,000,000.

# 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.

Messrs. J. Cawthorpe & Son's mills at Ridgetown, Ont., were destroyed by fire August 17th. Loss \$18,000. The mills had been only recently refitted with new machinery at a large expense.

For the third time this year a raft, containing 6,000 cords of pulp wood, was towed from Georgian Bay to Wisconsin, through the Straits of Mackinaw recently.

The West Wellington Coal Company, Vancouver, B.C., is being incorporated with a capital stock of \$500,000.

The following foreign companies have been organized to do business in British Columbia:—The Noble Five Consolidated Mining Company, Spokane, Wash., capital stock, \$1,200,000; British Northwest Gold Mining Company, Seattle, Wash., capital \$5,000,000; Eastern Star Gold Mining Company, Spokane, Wash., capital stock, \$500,000; and Rob Roy Gold Mining Company, Spokane, Wash., capital stock, \$500,000.

In a very short time now the Grand Trunk will commence the work of removing the cars from Toronto to London. Tenders for the new building to be erected at the latter point will be opened next week and the contracts let at once. The Grand Trunk architects have been on the ground for several days past, and the work on the buildings is to be rushed, so that they may be ready for occupation in November. The employees at Bradford, such of them as are to be transferred, will also be removed to London at the same time the Toronto employees go.

Word comes from the Bothwell (Ont.) oil wells that of the ten recent tests made all have been successful. Two of them are over three hundred barrels. Never in the history of oil testing have such results been obtained. The total yield daily is nearly 1,000 barrels. Mr. Hiram Walker will erect a refinery.—Free Press.

# 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

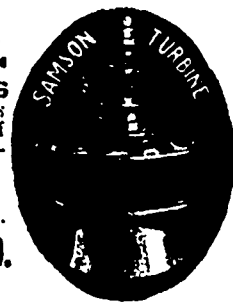
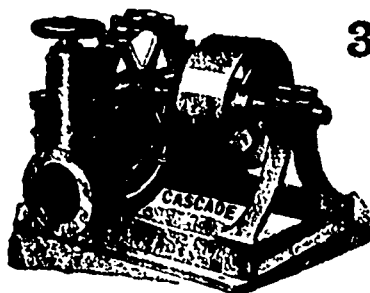
Adapted to all Heads from

## 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.



## 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.

**S**ITUATION 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.

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

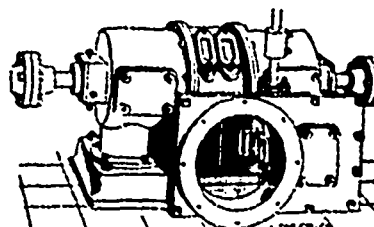
**M**ACHINE LATHE, 18 in. swing, 8 foot bed; also a No. 2 or No. 3 Miel's Power Press or one of equal size. Toronto Electrical Works 37 Adelaide St. West, Toronto.

# Burnham's

NEW IMPROVED  
STANDARD TURBINE

**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.

...ADDRESSES...

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

John McLeod's tannery, Kingston, Ont., was destroyed by fire Aug. 14th. Loss \$20,000.

The Maritime Cold Storage Company, St. John, N.B., is being incorporated with a capital stock of \$90,000.

The work of re-building the Gananoque Wheel Works will be proceeded with at once. Material is now being placed on the ground.

J. Walshaw's woollen mills, dry house and saw mill at Bolton, Ont., were destroyed by fire August 11th. Loss, \$25,000.

The Hawkesbury Milling Company's oat meal mill and kiln at Hawkesbury, Ont., were destroyed by fire August 15th.

The Guelph Norway Iron and Steel Company, Guelph, Ont., at a late meeting of the shareholders decided to issue \$25,000 of first preference stock, the company to guarantee six per cent. interest thereon.

The Montreal Terra Cotta and Lumber Company's factory at Maisonneuve, Que., has been damaged by fire.

Pepin, Villeneuve & Company's saw mill at St. Jerome, Que., was destroyed by fire recently.

Over eight million feet of lumber was cleared from St. John, N.B., for British ports during the week ending August 15th, and six cargoes from various maritime ports for South America.

The first regular annual meeting of the Manitoba and Northwest Millers Association will be held at Brandon, Manitoba, on September 1st.

The Edmonton Milling Co., Edmonton, N.W.T., are building a new elevator.

Mr. Carson, of Miami, Man., has recently built an elevator at Rosebank, Man., with a capacity of 40,000 bushels.

The Northern Elevator Co. are building a new elevator at Delcaw, Man.

The Ogilvie Milling Co. will erect in Winnipeg at once a large building at their mill which will cover about one-third of an acre of ground, requiring some 300,000 feet of lumber. This building will be for storage purposes. The company propose erecting a barrel factory at an early date as an addition to the plant in Winnipeg.

The Lake of the Woods Milling Co., Montreal, will erect three elevators in Manitoba this season, one at Boissevain, another at Neepawa, and a third not yet selected.

The Fredericton (N.B.) Gleaner, July 30th says:—"Of the lumber cut on the headwaters last year, some 17,500,000 was hung up. Mr. Dickey has a large quantity hung up. The estimate is 5,000,000; Kilburn and McIntosh for 4,000,000; Stetson for 4,000,000; Nobles for 3,000,000, and Cunliffe for 1,500,000. This makes 132,500,000 cut on the headwaters last year. Nothing can be done with the stranded logs until next spring. On the Tobique waters there are 6,000,000 stranded logs, which will have to remain where they are until next year. Of this amount, Mr. R. A. Estey has 2,000,000, Upham 2,000,000, A. J. Beveridge, 1,000,000, and D. Fraser & Sons 1,000,000. The water in the river has fallen so much of late that 4,000,000 of the corporation drive have been hung up near Grand Falls, and cannot be gotten into the booms until a rise of water, which some of the lumbermen look for in August."

**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 Fool-caps, Account, Envelope and Lithographic Papers, etc.

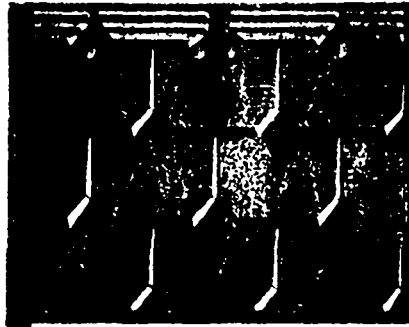
**C. G. ELRICK & CO.**

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**

Shanateles Falls

NEW YORK

BUSINESS ESTABLISHED IN 1832

**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 woollen and flour mills, Jewellers, shoes, breweries, dairies, platers, foundries, and all machinery work; old rollers refilled.

**Frank Wehrle & Co.,**

Brush Manufacturers,

134 Bay St., Toronto.

**BROWN & CO.**

Manufacturers of

Square and Hexagon

**HOT PRESSED NUTS**

PARIS, - ONT.

**Firstbrook Bros.**

Dovetail and Packing Boxes

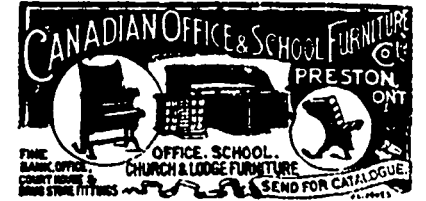
Pop-Pins, Slide Blocks and Cross Arms, Wood

Printers, Etc.

Cigar Boxes, Shipping Cases,

TORONTO, ONTARIO.

Write for Prices



**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

**SMITH WOOL-STOCK CO.**

219 FRONT STREET EAST, TORONTO

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

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

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

HAMILTON, ONT.

Manufacturers of . . .

**WHEELS, Wheel Materials, Shafts, etc**

**BREWERS**

**COPPER**

**WORK**

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

—THE—

**BOOTH COPPER CO.**

LIMITED.

TORONTO, ONT.

Established 1854.

The largest raft of square timber that has sailed down the Ottawa for some years arrived at Ottawa, August 10th. It belonged to Mr. William Mackay, and was composed of 2,248 pieces of white pine of excellent quality. It was cut on the Amable Dufond limit. It took thirty men to bring it down the river.

During the past week Messrs. Jones & McRae's (Charlottetown, P.E.I.) fruit canning depot has been running full blast night and day, and yet they cannot overtake their work. An immense quantity of fruit is pouring in from all parts of the province. The way is evidently being paved for developing one of the most extensive and profitable industries in which the Island can engage.—Patron of Industry, Charlottetown, P.E.I.

Messrs William C. Wilson & Co., Toronto, inform us that they have just received from the Peerless Rubber Co. of New York, one ton Rainbow Sheet and a quarter ton of Eclipse Gasket Packing. This is the second consignment this firm has received within the last four months making a total of 4,000 lbs. of Rainbow Sheet and 1,000 lbs. of the famous Eclipse Gasket. They are in a position to fill orders of any quantity.

Messrs. Samuel Rogers & Company, Toronto, and branches at various towns in Ontario, the Rogers & Morris Oil Company, Ottawa, Messrs. Fairbank, Rogers & Company, Petrolia, Ont., Hamilton Oil Works, Hamilton, Ont., and Rogers, Robertson & Company, Montreal, have all been united into one concern under the style of the Queen City Oil Company. The business will be enlarged, and its interests considerably extended.

The Lozier Manufacturing Company, Toronto, is being incorporated to take over the business of H. A. Lozier & Company bicycle manufacturers, Toronto Junction, Ont., and to manufacture in addition, motor vehicles, tubing, typewriters, etc. Capital stock \$500,000.

United States consul James B. Taney writes the Department of State, Washington from Belfast, Ireland, that the Canadians are making great efforts to introduce household and office furniture in all parts of the Kingdom. One agent of an Ontario firm, within a week, took orders for about \$5,000 worth of furniture in Belfast and in Dublin for about \$10,000 worth.

The boiler in A. W. Billingham's saw-mill at North Forks of Old Man's River, 40 miles from McLeod, N.W.T., exploded on Aug. 15th, killing three men and wrecking the mill.

The following are some of the motors installed by the Kay Electric Mfg. Co. during the last month: Messrs. Buntin & Reid, Toronto, 4 h.p. motor; Central Press Agency Co., Toronto, one electrotyping dynamo; Linden Creamery Co., Toronto, one 5 h.p. motor; Wehrle Brush Co., Toronto, one 5 h.p. motor; Mr. Hutchison, wood yard, Toronto, 10 h.p. motor; Steel-Clad Bath & Metal Co., Toronto, one electroplating dynamo and 1 h.p. 4-pole motor; Mr. A. Moore, Toronto, one 2 h.p. motor; Mr. Woods, printer, Toronto, one 2 h.p. motor; Kemp Mfg. Co., Toronto, two 6 h.p. motors; McLean Publishing Co., Toronto, one 6 h.p. motor; Mr. B. Lindman, Toronto, one 2 h.p. motor; Mr. H. R. Cudron, St. Catharines, one 3 h.p. motor; Mr. G. C. Hinton, Victoria, B.C., one 3 h.p. motor and 6 h.p. motor.

The Bondholder Mining Company, Vancouver, B.C., capital stock, \$1,000,000; the Rainy Day Gold Mining Company, Rossland, B.C., capital stock \$600,000, and the Alhambra Gold and Copper Mining Company, Victoria, B.C., capital stock of \$600,000 are being incorporated.

The Huron and Ontario Electric Railway Company are slowly but steadily completing arrangements for the construction of the road. According to the act of incorporation, the capital stock of the company is to be two million dollars. Mr. N. McNamara, of Walkerton, is president, Dr. Rollston, of Shelburne, vice-president, and Mr. A. McK. Cameron, of Meaford, secretary. The road will extend from Port Perry to Kincardine, with two branches, one running north from Priceville, through Meaford, Owen Sound, Tiverton, etc., around to Kincardine, and the other extending from Walkerton through Mildmay, Teeswater, and Lucknow to Godorich, with a connection between Lucknow and Kincardine through Ripley. The entire length of the road will be something over 300 miles, and motive power for its operation will be supplied from stations at Eugenia, Glen Roden, Southampton and Thompsonville. The company is authorized to issue bonds to the extent of \$10,000 per mile for construction purposes, and \$6,000 additional for each mile double-tracked. At a meeting of the shareholders held in Toronto recently an offer for construction was received from a New York firm. It was stated that most of the municipalities interested had passed resolutions adopting the by-laws and agreements with the company. A survey of the route is now being made by engineers. This will occupy about two months, after which track-laying will be proceeded with.

# 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.



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

Highest Efficiency

Best Regulation

Slow Speed

Least Attention

No Collector

No Moving Wire

No Exposed Parts

No Compounding



The Pacific Coast Portland Cement Company, Vancouver, B.C., is being incorporated with a capital stock of \$500,000 to take over the cement works of the Canadian Pacific Railway, and other works.

The Port Arthur Pulp-Timber Company, Port Arthur, Ont., is being incorporated with a capital stock of \$200,000, to manufacture and deal in timber, to construct electric light and power works, etc.

The Chaudiere Machine and Foundry Company's works at Ottawa were damaged by fire, August 15th, to the extent of \$8,000.

The Manitoba creameries have just begun their shipment of butter to China and Japan, and they are likely to build up a big and profitable trade.

A vote taken on the 17th instant at Huntsville, Ont., on a by-law for water-works and electric light resulted in its adoption.

The machinery of the new acetylene gas works Merritt, Ont., was started August 17th, and the first calcium carbide ever produced in this country was made. In compliance with a request from the Bureau of Mines Mr. Wilson, the inventor of the new gas will make an exhibition at the Industrial Fair, showing lamps lit by the gas.

Messrs. Leitch & Turnbull, Hamilton, Ont., have been awarded the following contracts:—one electric passenger elevator for new Bank of Toronto Building, London, Ont.; twin elevators for Maritime Sulphite Fibre Company, Chatham, N.B.; hydraulic passenger elevator for the Welland House, St. Catharines, Ont.; two elevators (belt power) for the Cobban Mfg. Company, Toronto, Ont.; factory elevator for the Tudhope Carriage Company, Orillia, Ont.; one electric elevator for T. B. Greening, wholesale merchants, Hamilton, Ont.; three Hale hydraulic elevators for the Kingston and Toronto In-

sane Asylums; one elevator for Parson Produce Company, Winnipeg, Man.; one electric elevator for Crompton Corset Company, Toronto, Ont.

At the next meeting of the finance committee of the Winnipeg City Council a request of the Union Shoe and Leather Company for exemption from taxation for twenty years on their industry will be considered. The company propose to extend their business by erecting a new factory at a cost of \$10,000 and equip it with machinery, etc., which will cost \$20,000 more. The industry will employ steadily from fifty to sixty workmen which is a much larger number than are now employed.—Winnipeg Commercial.

Capitalists in Chicago are joining with Chatham (Ont.) capitalists in the erection of a monster cold storage warehouse in the latter city.

The Toronto Steel Clad Bath and Metal Company, Toronto, are now manufacturing cast iron enamelled baths. They have been since May last building and completing the furnace and plant for this work, and are now turning out enamelled baths as good as any in the United States or England. They are the first to make this kind of bath in Canada.

The Diamond Machine and Tool Company, Toronto, have taken Mr. R. N. Sterling, of Hamilton, into the company. Mr. Sterling has put \$10,000 into the business, and the company will put in some new machinery, and go into the manufacture of bicycle fittings and parts. They will also make the Diamond bicycle for the trade.

The new Moncton (N.B.) electric street railway was opened for traffic on the 12th instant.

The Chatham (Ont.) City Council will engage an expert to examine the vicinity for natural gas.

Stanley Bros.' shingle mill at North Clarendon, Que., was recently destroyed by fire.

Messrs. Goldie & McCulloch, Galt, have been awarded the contract for putting in a new steam pump for the Galt waterworks.

The London (Ont.) City Council has approved the scheme for the construction of a sewage farm, and the ratepayers will vote on the question on September 2nd.

The Canadian Rand Drill Company, Sackville, Que., are supplying the compressor plant for the Georgia Mine, Roseland, B.C., and also that for the Slocan Star Mine, Nelson, B.C.

Messrs. James & Reid, Perth, Ont., have commenced the manufacture of bicycles.

Mr. Walter Williams, Buckingham, Que., is transforming a pulp mill into a chemical factory.

Japan's Diet voted \$45,000,000 for the construction of railroads, telegraphs and cables at its last session, and \$97,000,000 for the construction and purchase of war materials and ships. Since January, 1895, \$600,000,000 has been invested by Japanese in banks, railroads and other companies.

The Mica Boiler Covering Company were awarded the contract for covering the boilers and steam pipes for the new steamer "Corona," the pipes in four of the Toronto schools, and for two boilers at Lachine, the property of the Wedell Dredging Company of Trenton, Ont.

The Lamont Glass Company, of New Glasgow, N.S., manufacturers of glass chimneys, fruit jars, bottles, etc., have doubled their works during the past two years, and now employ seventy hands, with a pay-roll of \$500 a week. They contemplate going into the manufacture of electric light bulbs and shades.

R. C. Jamieson. A. T. Higginson.  
**R. C. JAMIESON & CO.**  
 Manufacturers of  
**VARNISHES AND JAPANS** | Importers of Oils, Paints, Colors,  
 SPIRITS, Shellacs, Rosins, Glues, Gold Leaf, Bronze, etc.  
 Office—13 ST. JOHN STREET  
 Factory and Warehouse—23 to 29 ST. THOMAS ST., | MONTREAL

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


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

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

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

**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. Chambers**  
**DESIGNER & 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**

# The Wellington Mills

LONDON, ENGLAND

## Genuine Emery

Oakey's Flexible Twilled Emery Cloth.  
Oakey's Flint Paper and Glass Paper.  
Oakey's Emery Paper, Black Lead, Etc.

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

Manufacturers ...

**JOHN OAKEY & SONS, Ltd.**

WELLINGTON MILLS

Westminster Bridge Road, London, Eng.

Inquiries should be addressed to

**JOHN FORMAN**

650 Craig St., Montreal

Rhodes, Curry & Co., Amherst, N.S., are turning out a number of open cars for the Moncton electric street railway.

The Rathlum Company, Deseronto, Ont., are building twenty-five cars for the Inter-colonial Railway.

Messrs. W. H. Storey & Son, glove manufacturers, Acton, Ont., have created a department for the manufacture of traveling bags.

The Wm. Hamilton Manufacturing Company are now at work on a large order for the Sault Ste. Marie Pulp and Paper Company, being eighteen sets of gearing for their pulp mills. The company turned out an order for twenty-five sets of these gears last year, and the order this year is simply one given to complete the equipment of the large pulp mills as originally planned. The Wm. Hamilton Company are also building a complete saw mill that goes to British Columbia, and another complete mill that goes to Manu, N.B.

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

Major George Stewart's planing mill at Courtright, Ont., was fired by lightning and destroyed on Aug. 8th. Loss over \$2,000.

Ross Bros.' mills at Buckingham, Que., were destroyed by fire Aug. 6th. Loss over \$50,000.

A sash and door factory is being built at Halleybury, Man.

L. McConnell's new saw mill at Nottawasaga River was recently destroyed by fire. Loss \$5,000.

Chatham, Ont., will spend \$30,000 for waterworks improvements.

Truro, N.S., will spend \$7,000 in the construction of a waterworks system.

The town of Woodstock, N.B., has voted \$10,000 for completion of its sewerage.

The town council of Amherst, N.S., is anxious to correspond with capitalists wishing to promote a grist mill and a wooler mill in that town.

The railways and canals department has prepared plans for the enlargement of the Galops Canal at Iroquois. The work will cost about \$1,750,000.

The St. John Rolling Mills and Bolt Works Company, St. John, N.B., is being incorporated with a capital stock of \$50,000.

Thackeray & Rollin's sash and door factory, Pembroke, Ont., was damaged by fire August 8th.

The Capital Cash Register Company, Ottawa, Ont., is being incorporated with a capital stock of \$15,000 to manufacture cash registers.

The Benjamin Manufacturing Company, Yarker, Ont., is being incorporated with a capital stock of \$20,000 to manufacture vehicle wheels and carriage material.

The Self-Loading Car Company, Montreal, is being incorporated.

The Winnipeg Rubber Company, Winnipeg, Man., has been incorporated.

The Kingsville (Ont.) woollen mills have again resumed work, after a suspension of several months.

News comes from Bothwell, Ont., that the town is full of strangers anxious to invest in oil lands. All the wells are pumping large quantities of oil, and many new ones are being drilled. It is reported that a well on the Goodyear farm will flow more than 200 barrels a day.

The city engineer of Victoria, B.C., has been instructed to prepare plans for re-building the Point Ellice bridge. The estimated cost is \$20,000.

Kalso, B.C., purposes installing a waterworks system to cost \$31,000.

The Brantford (Ont.) Electric Light Company propose putting in new machinery to cost \$25,000.

T. Downs, Colbourg, Ont., will build a brewery at that place.

James King, Sarnia, Ont., will re-build his flour mills burned sometime ago.

The McNulty Mill Company of Manheim, Penn., offer to locate a flour mill machinery manufactory, employing one hundred and fifty men, and a roller flour mill of 1,000 barrels' capacity, at total outlay of \$300,000, for a free site, exemption from taxes for ten years, and \$30,000 cash bonus.

## PACKARD INCANDESCENT LAMPS

# Packard Transformers

Scheeffer Recording Watt Meters

HOMER COMMUTATORS

Packard Hospital for all kinds of Electrical Repair Work.  
Expert Information Given Free.

**PACKARD ELECTRIC COMPANY, Ltd**

ST. CATHARINES, ONTARIO

# CANADA MACHINERY AGENCY

321 ST. JAMES STREET, MONTREAL

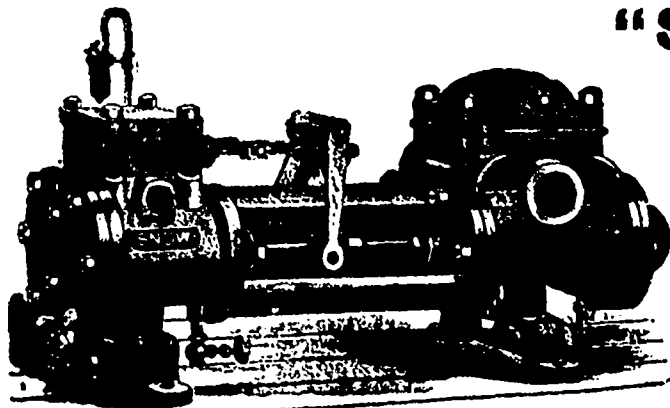
"SNOW"

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

The Lake Labelle Syndicate, Montreal, is being incorporated with a capital stock of \$10,000, to run flour and saw mills and other industries.

The Apohaqui machine shop and foundry, Apohaqui, N.B., were destroyed by fire August 11th.

The Ontario, Belmont and Northern Railway is about being completed from the Central Ontario Railway and the C.P.R. into Belmont iron mine, a distance of ten miles. On completion of this railway, to which the Ontario Government gave a bonus of \$20,000, and the Dominion another bonus of \$32,000. The Belmont mine will be worked by the American company who have leased it, and it is expected that from 100 to 200 tons of ore will be shipped daily. The ore is of the

highest grade, suited to make crucible tool steel, and is as free from phosphorous as the choicest Lake Superior ores.

**BUFFALO'S ELECTRIC SUPPLY.**

It is promised, as the result of a test made last Sunday, that electric power from Niagara Falls will be furnished to Buffalo manufacturers before November 1st, and at a price less by one half than power now costs in that city. Contracts for the work were to be let during the last week, the transmission line to be large enough for 20,000 horse-power. So much for the business side of the enterprise. The scientific side is of equal interest, as developments in that direction make possible the economic transmission of power

over long distances. The scientific triumph is Tesla's. The power will be transmitted to the Buffalo city line by overhead conductors. From the dynamo it will pass through a transformer which will give it a much higher voltage, and in that condition it can be safely and economically transmitted, to be transformed again at the Buffalo station to a direct current ready for use. The higher the voltage the less the loss. Some idea of the value of the new system can be had by comparison. The two-phase system transmits power so that there is a loss 400 times greater in the transmission of 500 volts than in the transmission of 10,000 volts. Nikola Tesla was at the Falls on Sunday and witnessed the successful test of his two-phase transformers. —Buffalo Express.

When Were  
Your

**BOILERS**

Last  
Inspected ?

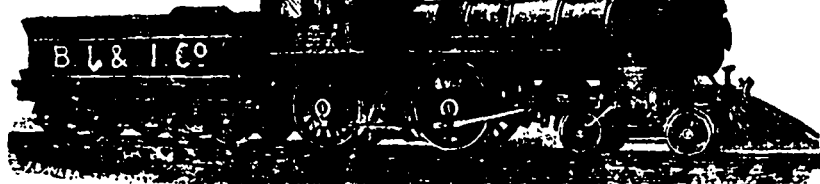
Consulting Engineers—  
**G. C. ROBB, Chief Engineer**  
**A. FRASER, Secretary-Treas.**

**JOHN L. BLAIKIE ESQ.**  
PRES.

**EW. RATHBUN ESQ.**  
VICE-PRES.



OF CANADA



Head Office,  
TORONTO

Are You  
Sure

THEY ARE

**SAFE**

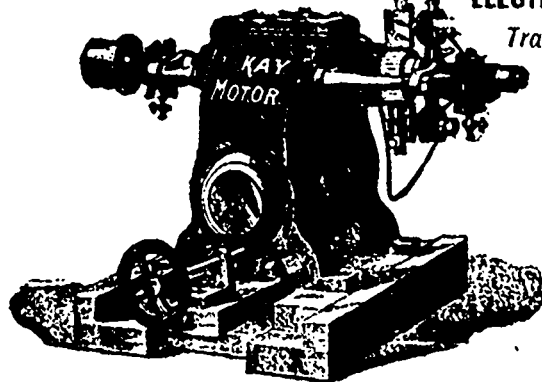
AND IN

Good  
Condition ?

**Kay Electric Manufacturing Co.**

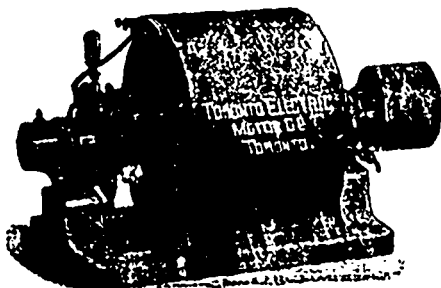
255 James St. W., Hamilton, Ont.

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.**

105, 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 price. Delivery made at New York, Montreal or Hamilton

**WRIGHT & DALLYN, Agents,**  
HAMILTON, ONTARIO.

**THE RE-CONSTRUCTION OF THE ROYAL ELECTRIC LIGHT CO.'S MONTREAL STATION.**

In reply to an inquiry we have received the following interesting account of the work of re-construction now being carried out in the Montreal station of the Royal Electric Company, under the direction of Mr. P. G. Gossler, the company's electrical engineer:

We are practically turning this station inside out, as you may judge from the following outline of work which we are now carrying out. We are replacing seventeen alternators by five 300 kilowatt, two-phase generators, doing away with all line shafting, belting the generators directly to three engines, which practically makes 600 kilowatt units on two of the engines; the many advantages to be gained by doing this are obvious.

We are building an entire new switchboard for serving light and power from the same two-phase circuits. This switchboard construction, we think, is as good as can be found. It consists of a white oak frame work, covered with a layer of asbestos; over the asbestos is a layer of mica and for mechanical protection the edges are protected

with angle fibre. Upon this board will be mounted the different instruments, switches, etc. This framework is mounted on an iron structure with slate base, the whole overlooking all of the generators and engine room.

We are rearranging all of our lines for two-phase work, and changing our present system of 1,000 volts to a 2,000 volt system. We are also replacing all of our transformers by modern transformers, making as many small secondary systems as possible. We have so far decreased our station leakage load, within the last three months, by about 200 amperes.

In connection with this we are making preparations to receive power from Chambly Falls, located fifteen miles from Montreal. This will allow of our present steam plant being used as spare capacity, also the present 300 kilowatt generators, which we are installing will, more than likely, be used as synchronous motors for operating our city lighting arc machines.

At Chambly Falls there will be wheels and generators installed for the generation of 20,000 horse-power, which will be transmitted to this city at a pressure of 10,000 volts.

**CANADIAN PATENTS.**

The following patents have been issued from the Canadian Patent Office, from May 28th. to June 12th 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.

52,460 Washing machine, A. L. Burke, Hamilton, Ont.

52,461 Folding wheel pedestal, C. T. Hartson, Eaton Rapids, Mich.

52,462 Spoon, E. F. Head, Rat Portage, Ont.

52,463 Tongue, A. B. McKay, London, Ont.

**FETHERSTONHAUGH & CO.**

PATENT BARRISTERS AND SOLICITORS

ELECTRICAL AND MECHANICAL EXPERTS AND DRAUGHTSMEN

Head Office: Canadian Bank of Commerce Bldg, Toronto, Ont.

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

Offices in Montreal Que., Ottawa, Ont., and Washington, D.C

**A. HARVEY, C.E.**

PATENT ATTORNEY

OTTAWA

CANADA.

Established 1881, 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."

**MICA BOILER and STEAM PIPE COVERING**

**WHAT IS THOUGHT OF IT!**

PENETANGUISHENK, March 14th, 1895.

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 tinery 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 covering.

Yours truly,  
(Sgd.) BREITHAAPT 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 of fuel. The covering was put on by our own men without any difficulty whatever.

Yours faithfully,  
(Sgd.) VANTUYL & FAIRBANK.

TORONTO, December 5, 1895.

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 sea-on'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 hesitation 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.

- 52,464 Shaft support for vehicles, S. R. Peters, Sterling, and M. M. Favor, Gardner, both in Mass.
- 52,465 Box making machine, The Diamond Match Co., Chicago, Ill.
- 52,466 Box cover making machine, The Diamond Match Co., Chicago, Ill.
- 52,467 Box filling machine, The Diamond Match Co., Chicago, Ill.
- 52,468 Belt adjuster, The Diamond Match Co., Chicago, Ill.
- 52,469 Match making machine, The Diamond Match Co., Chicago, Ill.
- 52,470 Advertising cabinet, C. H. Tobbots, Boston, and M. J. Sauter, Greenfield, both in Mass.
- 52,471 Vehicle seat, B. J. McGrann, Grand View, Pa.
- 52,472 Sewer trap, J. Ellis, Detroit, Mich.
- 52,473 Non-refillable bottle, W. T. Merri-man, Jackson, Mich.
- 52,474 Printing press paper feeding machine, G. F. Leigor and L. Benedict, both of Chicago, Ill.
- 52,475 Electric water gauge, H. Biermann, Breslau, Prussia.
- 52,476 Crank motion, W. J. Devers, F. H. Lewis and C. E. Hamlin, all of Scranton, Pa.
- 52,477 Pneumatic tire, The Self-Healing Pneumatic Tire Co., New York.
- 52,478 Drive gear for bicycles, J. G. S. Clark and Susan Fleming, both of Toronto.
- 52,479 Dental plugger, J. R. Jones, and J. F. O'Connor, both of Ontonagon, Mich.
- 52,480 Bottle, M. J. Nolan, New York.
- 52,481 Swinging sash for windows, H. Selk, Neumunster, Holstien, Prussia, Germany.
- 52,482 Autoharp, J. S. Back and G. L. Orme, both of Ottawa, Ont.
- 52,483 Wheel rim and tire, T. B. Jeffrey, Chicago, Ill.
- 52,484 Hand power rock drilling machine, R. P. Ellmore, Chicago, Ill.
- 52,485 Device for oiling carriages and other vehicles, A. S. Geiger and S. Irwin, both of Waterloo, Ont.
- 52,486 Cycle skate, S. Martin, Toronto, Ont.
- 52,487 Sulky plough, W. H. Perrin, Mer-ricksville, Ont.

**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 35 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.

**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.**

**ALGOMA IRON WORKS**  
 SAULT STE. MARIE, ONT.

**Engineers**  
**Founders**  
 AND  
**Machinists**

**PULP AND PAPER MILL**  
 AND  
**MINING MACHINERY**

**DESIGNED, CONSTRUCTED and REPAIRED**

**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, \$18; 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

J. A. SCHANTZ, S. P. A., DETROIT, MICH.  
 The Detroit and Cleveland Steam Nav. Co.

**KERR**  
**WATER MOTORS**

1/8 TO 20 HORSE POWER.



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

RELIABLE 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.

**THOMAS PINK**  
 PEMBROKE, ONT.

**Pink Peaveys, Handles, Cant Hooks**

Split Maple Handles  
 Duck Bill Cant Hooks  
 Cast Steel Skidding Tongs  
 Duck and Round Bill Peaveys.  
 Car Load or Dozen Lots

- |   |   |  |
|---|---|--|
| 52,488 Bottle, R. S. Seaman, Brooklyn.  | 52,506 Driving gear for foot propelled vehicles, S. J. Henderson, Woodstock.                                    | 52,523 Door mat, F. H. Donath, Vienna, Austria.  |
| 52,489 Composition for blackening and dressing leather, D. Z. Woods and W. P. McClay, both of Wurtsborough. | 52,507 Means for regulating motors, C. G. deLaval, Stockholm, Sweden.   | 52,524 Swage for dental plates, J. C. Parker, Grand Rapids, Mich.                                      |
| 52,490 Harvesting machine, M. E. Hunter, S. G. Tenny and W. E. Hoyt, all of Williamstown, Mass.             | 52,508 Differential pressure reducing apparatus, C. G. P. de Laval, Stockholm, Sweden.                          | 52,525 Surgical splint, E. A. Tracy, Boston.   |
| 52,491 Hand truck, H. York and G. E. Slaughter, both of Colton, Cal.  | 52,509 Process of and machine for soldering metallic boxes, Otto Asche, Paris, France.                          | 52,526 Straight knitting machine, J. Bennor, Macon, Georgia.   |
| 52,492 Device for lifting involids, D. H. Shutters, Greenwood, Ind.   | 52,510 Macerators and prossers for fruit, O. E. Davidson, Nashville, Tenn.                                      | 52,527 Screwing and boring hand tool, L. Silcott, Mount Vernon, Ohio.                                  |
| 52,493 Fire escape, T. Lemond, Detroit.   | 52,511 Method of refrigeration, C. J. S. Lambert, Paris, France.  | 52,528 Wood indenting mechanism, W. W. Grier, Hulton, Pa.  |
| 52,494 Thro throw switch for railroads, J. P. Hasty, Superior, Neb.   | 52,512 Wrapper for newspapers, etc., and machine for making the same, B. Williams, Chicago, Ill.                | 52,529 Bagasse alter, A. H. Wright, Stratford, Ont.  |
| 52,495 Apparatus for raising sunken ships, F. Findt and J. C. Davis, both of Saratoga, Wyoming.             | 52,513 Camera, A. C. Kemper, Chicago, Ill.  | 52,530 Vegetable peeler and corer, E. Chorrore, Hamilton, Ont.   |
| 52,496 Ball bearing fifth wheel, F. A. Taylor, Mansfield, Ohio.   | 52,514 Process of production of alkaline chlorates by electrolysis, C. Kollner, Vienna, Lower Austria, Hungary. | 52,531 Bottle stopper, J. H. Stone, Toronto.   |
| 52,497 Valve, The Redway Mfg. Co., New York.  | 52,515 Water closet bowl, The Smith & Anthony Co., Boston, Mass.  | 52,532 Rotary hydraulic motor, S. J. Tut-hill, Ashland, Oregon.  |
| 52,498 Loom reed, The Compton Loom Works, Worcester, Mass.  | 52,516 Egg and packing separator, A. W. McFarland and J. P. Hird, both of West Bend, Iowa.                      | 52,533 Machine for making cigarettes, H. Bilgram, Philadelphia, Pa.                                    |
| 52,499 Closet seat and cover, F. C. High, San Francisco, Cal.   | 52,517 Can carrier and box filling machine, G. A. Farini, London, Eng.  | 52,534 Machine for making cigarettes, J. A. Bonsack, Philadelphia, Pa.                                 |
| 52,500 Water gauge, B. Long, H. Reidel and I. Decker, all of Green Castle, Pa.                              | 52,518 Bicycle lantern, C. M. Bump, Bay City, Mich.   | 52,535 Material to be known as fabricoid, J. C. Nichol, Montreal.                                      |
| 52,501 Diving apparatus, H. Schon and A. Lutz, both of Allegheny, Pa.                                       | 52,519 Box, J. A. Christian, Montreal, Que.   | 52,536 Coal mining machine, J. W. Harrison, Ypsilanti, Mich.   |
| 52,502 Saw, G. T. Redfield, Glen Haven, N.Y.  | 52,520 Electrolysis of metallic salts, C. Kellner, Vienna, Austria.   | 52,537 Nut lock, C. C. Grant, St. Thomas, Ont.   |
| 52,503 Rubber tire for vehicle wheels, J. G. Rodgers, Springfield, Ohio.                                    | 52,521 Water accumulator, C. Coda, Neccchia, Italy.   | 52,538 Automatic electric apparatus for controlling and operating elevators, T. L. Kay, Hamilton, Ont. |
| 52,504 Truck brace, C. J. Redifer, Munson Station, Pa.  | 52,522 Beer jug, H. Reissing, Berlin, Germany.  | 52,539 Driving gear for cycles, P. J. Smith and G. Sanger, both of Yarmouth, N.S.                      |
| 52,505 Animal feed box and manger, Don L. Richmond, Wheeler, Ind.   |   | 52,540 Merry-go-round, A. H. Sanders and F. J. Potter, both of Yarmouth, N.S.                          |

**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. TROTTER, 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 LUCAS, 377 Spadina Ave., Toronto, Ont.**  
Correspondence Solicited.

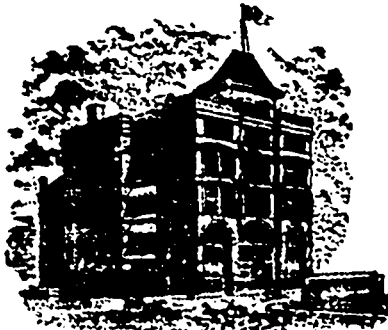
- |   |   |   |
|---|---|---|
| 52,541 Oar, O. I. Bergeron, St. Gregoire, Que.  | 52,554 Method of and apparatus for sharpening and making rock drills, etc., T. H. Bradbury, Johannesburg, South African Republic. | 52,568 Stump extractor, M. A. Kennedy, Montreal, Que.   |
| 52,542 Cash register, L. E. Allen, Detroit  | 52,555 Method of and apparatus for treating and annealing sheet metal, W. E. Harris, Niles, Ohio.                                 | 52,569 Switch, W. D. Murphy, Boston   |
| 52,543 Hair straightener, Ada Harris, Indianapolis, Ind.  | 52,556 Skirt binding, J. J. Westgate, Montreal.   | 52,570 Presser and stretcher for trousers, R. B. Colley, St. Heliers Jersey, Channel Islands. |
| 52,544 Adjustable splint, J. H. Rankin, Versailles, Mo.   | 52,557 Tapping attachment, F. A. Errington, Edgewater, N.Y.   | 52,571 Electric light fixture, F. A. Chapman, Philadelphia, Pa.                               |
| 52,545 Umbrella fixture, H. D. Sabin, Montpelier, Vt.   | 52,558 Pipe cleaning device, I. B. Sturges, Portland, Oregon.   | 52,572 Process of preparing a beverage, A. Bernstein, Berlin, Germany.                        |
| 52,546 Beer pump cleaner, J. J. Geiger, Clyde, Ohio.  | 52,559 Method of charging liquids with gas, J. Schneible, New York.   | 52,573 Fire brick, E. New, Hamilton, Ont.   |
| 52,547 Compound of ingredients known as Caberfeidgh Bitters, J. Mackenzie, Sydney, N. S.                        | 52,560 Cork shaving machine, J. Hughes, Cleveland, Ohio.  | 52,574 Pipe thimble, D. A. Brislin, St. Louis.  |
| 52,548 Reversible water filter, J. Archer, sr. Quebec.  | 52,561 Motor propelled velocipede, A. Wolfmuller, Munich, Germany.  | 52,575 Collar button, C. A. Knobel, New York.   |
| 52,549 Chemical fire extinguisher, T. J. Vail, Hartford, Conn.  | 52,562 Grass carrier for lawn mowers, R. F. Krause, Chicago, Ill.   | 52,576 Tile flue etc., H. J. McKnight, Shelburne Falls, Mass.                                 |
| 52,550 Oil can, H. C. Terry, Philadelphia, Pa.  | 52,563 Skirt facing, DeL. Macdonald and A. C. Macdonald, both of Montreal.  | 52,577 Cork Screw, R. A. Brown, New York.   |
| 52,551 Rasp, The Shaw Electric Rasp Co., Detroit, Mich.   | 52,565 Electric switch, H. B. Whitehead, Memphis, Tenn.   | 52,578 Horse shoe, D. A. Davidson, Kingston, Ont.   |
| 52,552 Machine for straightening and polishing shafts, tubes, etc., P. Medart and W. Medart, both of St. Louis. | 52,566 Method of making bicycles, S. Palmer, Jamestown, N.Y.  | 52,579 Pneumatic tire, R. E. Sparks, Kingston, Ont.   |
| 52,553 Display apparatus, H. F. Zimmerlin and G. C. Zimmerlin both of Lyons, N. Y.                              | 52,567 Apparatus for preventing railway accidents, H. Biermann, Breslau, Silesia, Germany.  | 52,580 Spring bed, W. R. Boisvert, Levis, Que.  |

## 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.

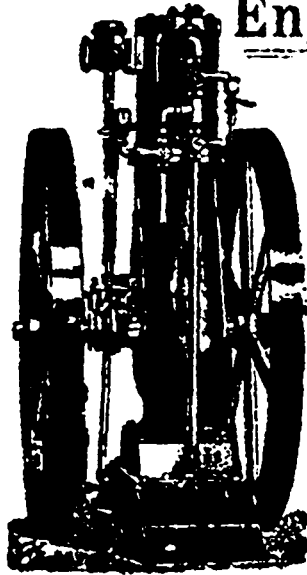


Corner of Front and Simcoe Streets,  
Opposite Entrance to Union Station  
**TORONTO**

CHARLES A. CAMPBELL, Proprietor

## THE ELECTRICAL GAS OR GASOLINE...

### Engine

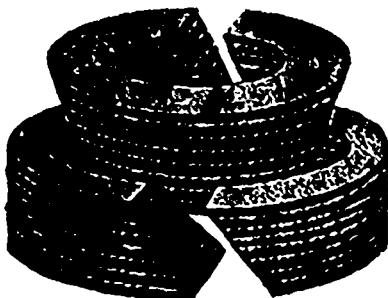


WRITE FOR PRICES AND TESTIMONIALS

**J. R. BAIRD**

WOODSTOCK, - - - ONTARIO

## 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

## METAL STAMPS

SOAP DIES, AND BRASS SIGN MANUFACTURERS

**PATTERSON & HEWARD**

40 WELLINGTON ST. WEST, TORONTO

### ...MANUFACTURERS...

Seeking Locations  
Communicate with

**JAMES MORE, Town Clerk  
DUNDAS, ONT.**

Liberal Inducements—Good Location  
Desirable Buildings

WRITE TO THE

**PRYON MANUFACTURING COMPANY**  
OF SHERBROOKE, QUE.

— FOR —

**WORSTED KNITTING**

— AND —

**FINGERING YARN.**

Montreal Office:—409 Board of Trade Building.

Toronto Office:—33 Melinda Street.

## George White Fraser

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

**CONSULTING ELECTRICAL ENGINEER**

Electric Railways and Electric Light Construction Superintended.

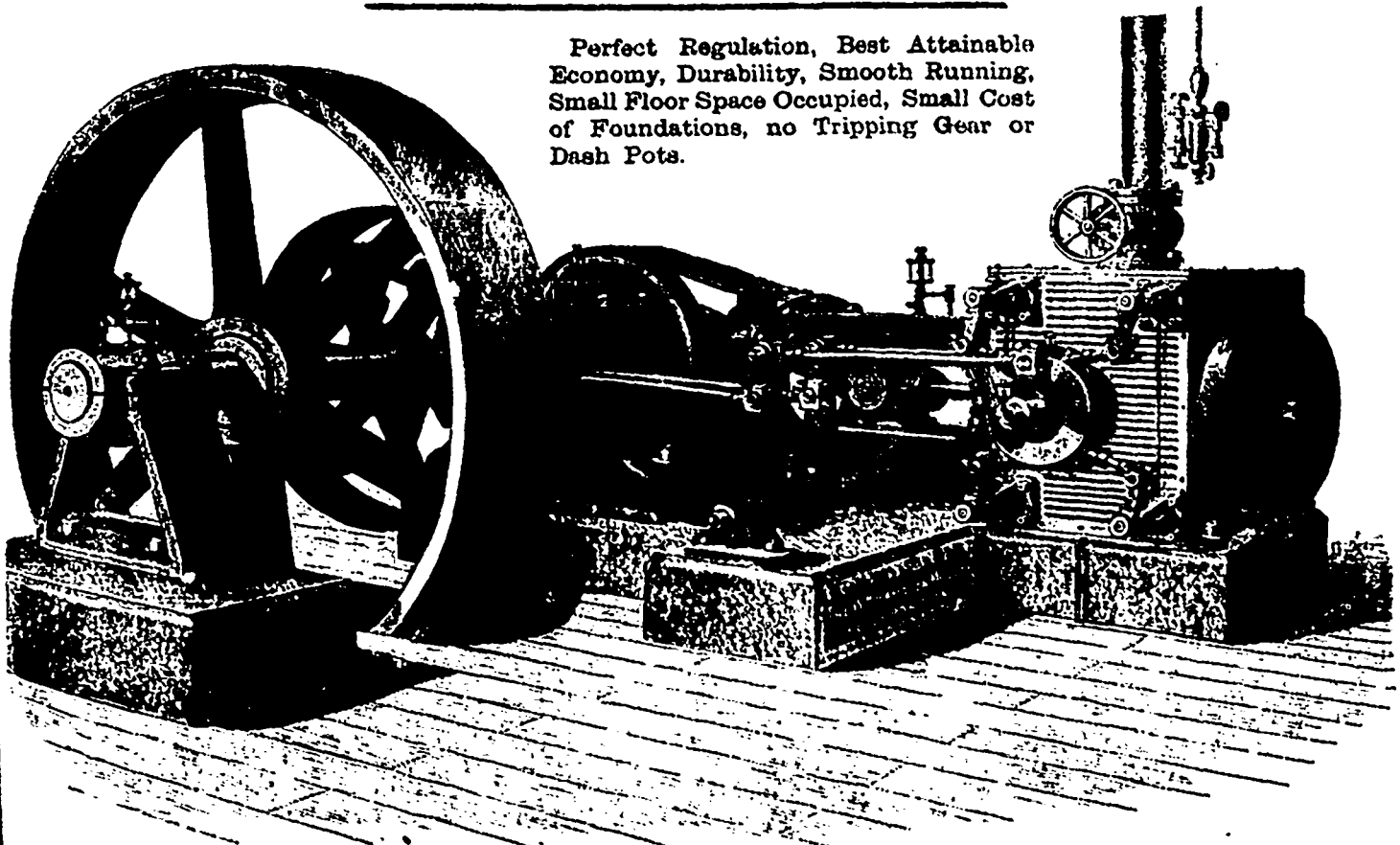
**18 IMPERIAL LOAN BUILDING  
TORONTO**

52,581 Basting colander, E. C. Johnson, Folkestone; Marrickville, New South Wales.	52,595 Process of producing basic carbonate of lead, O. Hamilton, The Under-shore, Northfleet, Kent, England.	52,609 Crushing and grinding mill, W. H. Coward, Hastings Villa, Bexley Road, Eng.
52,582 Fence post, W. J. Sleep, Birmingham, Alabama.	52,596 Friction clutch, T. H. Worrall, Laconia, N.H.	52,610 Grooving saw, C. Baar, Grand Rapids.
52,583 Guards for the horns of cattle, J. L. Straw, Seward, Ill.	52,597 Corn harvester, W. W. Smith, Frichton, Ind.	52,611 Apparatus for concentrating, grading and classifying crushed ore and other matters, W. H. Coward, Hastings Villa, Bexley Road, England.
52,584 Pipe coupling, G. H. Meakins, Hamilton, Ont.	52,598 Carpenter's bench, E. M. Brown, Greenbank, W. Va.	52,612 Bicycle gear, W. Hale, Malton, Ont.
52,585 Railroad car, G. T. Tribe, Worcester, Mass.	52,599 Bicycle support, G. Woolley, Goulburn, New South Wales.	52,613 Car coupler attachment, H. S. Bryan, Two Harbors, Minn.
52,586 Pillow block and support, P. W. Power, Pittsfield, Mass.	52,600 Circular saw machine, C. E. Turnock, Liverpool, England.	52,614 Trunk lock, R. T. Shelley, New Haven, Conn.
52,587 Harness attachment, O. B. Reid, Charlotte, Vt.	52,601 Bicycle chain, F. K. Patric, Jersey City Heights, New Jersey.	52,615 Hydrocarbon burner, G. Smith, Jersey City, N.J.
52,588 Pneumatic tire, B. P. Alexander, and D. W. Alexander, both of Toronto.	52,602 Spring roller, E. Broberg, Minneapolis, Minn.	52,616 Power hammer, G. Smith, Jersey City, N.J.
52,589 Bicycle, G. J. Lunn, Montreal.	52,603 Bicycle crate, H. G. Streat, New York.	52,617 Fountain pen, A. W. Askew, Altoona, E. S. Herman and G. A. Werner, both of Harrisburg, all of Pa.
52,590 Work table, Lottie Cox, Blue Springs Nebraska.	52,604 Velocipede chain, J. Hollis, Ilkeston, England.	52,618 Animal poke, J. E. Fletcher, Brockville, Ont.
52,591 Foot Rest, R. D. Brown, Gardner, Mass.	52,605 Welting strip, F. W. Merrick, Boston, Mass.	52,619 Machine for drilling holes in the boards or stocks of brushes, etc., G. Shaw and T. Shaw and J. P. Ditchfield, all of Warre, St Ashton-under-Lyne, Eng.
52,592 Lap board, Sophia M. Rivers, New York.	52,606 Heating system, J. C. Febiger, jr. New Orleans, La.	52,620 Telephone switch board, I. Anderson, Saginaw, Mich.
52,593 Planter, D. H. Moore and C. J. Abbott, both of Greenville, Mich.	52,607 Saw vise, H. C. Hawkins, Blind River, Algoma.	
52,594 Skate, S. L. Schwartz, New York.	52,608 Steam generator, E. D. Meier, St. Louis.	

# 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 SHAFTING**FROM  $\frac{3}{4}$  TO 5 INCHES IN DIAMETER. GUARANTEED STRAIGHT AND TRUE TO WITHIN  $\frac{1}{16}$  OF AN INCH.**Spring, Reeled 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                                      Head Office:  
BRIDGEVILLE, N.S.                      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

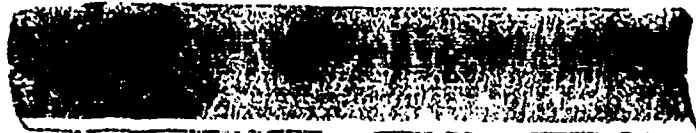
**W. H. LAW** - - ENGINEER AND MANAGING DIRECTOR.

# Galt Machine Knife Works



Stave Cutter Knives

PLANING . . .  
MACHINE . . .  
KNIVES . . .



Stave Jointer Knives

SEND FOR PRICE LIST.....  
ALL WORK WARRANTED



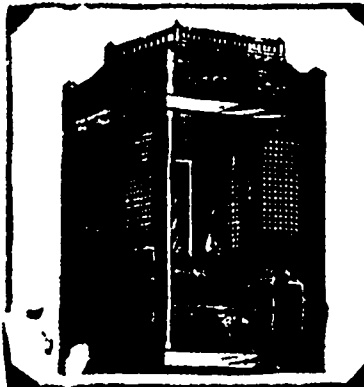
Moulding,  
Tenoning,  
Mitreing

SHINGLE . . .  
JOINTER . . .

AND OTHER IRREGULAR SHAPES.

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

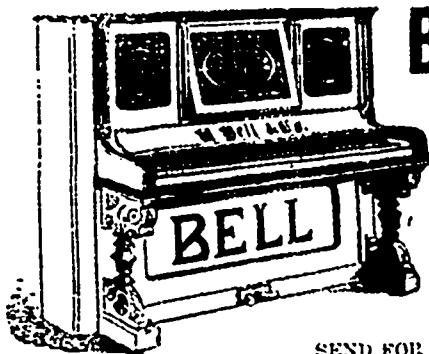
**PETER HAY, - GALT, ONT.**



# ELEVATORS

FENSOM ELEVATOR  
WORKS  
52-54-56 DUKE ST  
TORONTO.

ELECTRIC HYDRAULIC  
STEAM & HAND-POWER  
PASSENGER & GOODS  
ELEVATORS. DUMB WAITERS



## 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 Kepp 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 LARGEST

THE SAFEST  
THE CHEAPEST

Canadian Life Insurance Company is

The CANADA LIFE ASSURANCE CO.

CAPITAL AND FUNDS OVER \$13,000,000

WRITE FOR PROSPECTUS

A. C. RAMSAY,  
President.

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

JAMES A. CANTLIE & CO.

MONTREAL AND TORONTO.

General Merchants and  
Manufacturers' Agents

CANADIAN TWEEDS, FLANNELS, DRESS GOODS  
KNITTED UNDERWEAR, BLANKETS, Etc.

Representing in Canada:

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

Also....  
ALONZO KNOPS,  
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  
 30 St. François 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 FINISHED 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

00000

**WILLIAM H. FROST**

PROPRIETOR.

**SMITH'S FALLS**

ONTARIO, CANADA.

ADVERTISED BY 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. James St.  
 Quebec Branch . . .  
 264 St. Joseph St.