

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.

- 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

Additional comments: /
Commentaires supplémentaires:

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

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

AN ADIAN MANUFACTURER

AND INDUSTRIAL WORLD

DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION



Vol. 52.

TORONTO, MAY 18, 1906.

No. 10.

B. & W. PATENT WATER-TUBE BOILERS

Specially designed for the **RAPID, ECONOMICAL and SAFE** Generation of Steam up to the highest pressures.

Over 5,000,000. H.P. in use.

BABCOCK & WILCOX,

LIMITED

HEAD OFFICE FOR CANADA:

NEW YORK LIFE BLDG., MONTREAL.

BRANCH—114 King St. West, - TORONTO.

"REDSTONE" HIGH PRESSURE SHEET PACKING

MAKES PERFECT JOINTS.

Does not blow out and requires no following up.

Try a sample lot and be convinced of its merits.

MANUFACTURED SOLELY BY

The Gutta Percha & Rubber Mfg. Co.
of TORONTO, LIMITED

Head Offices—47 Yonge Street,
TORONTO, CANADA

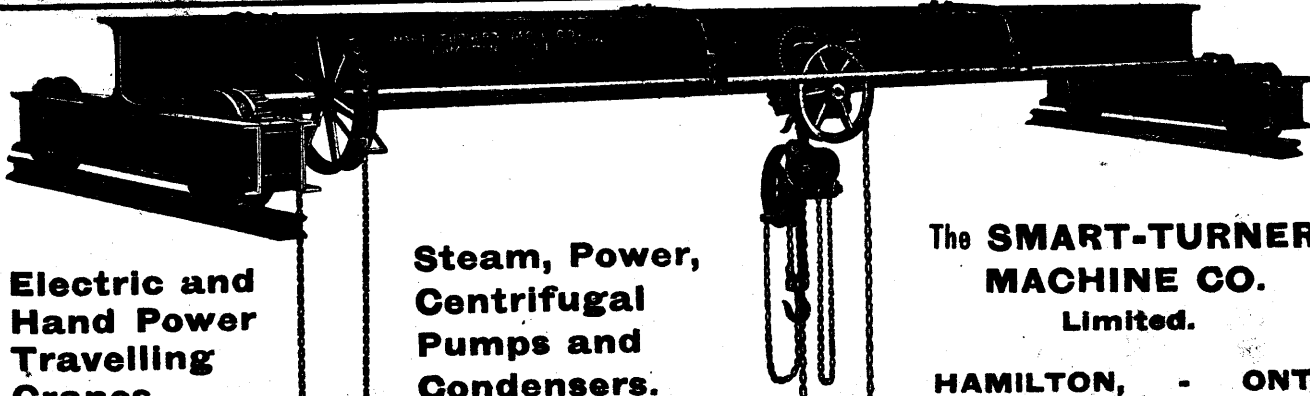
BRANCHES—Montreal, Winnipeg, Vancouver.

THE Queen's Run Fire Brick

CO.

HIGHEST GRADE
SHAPES A SPECIALTY

LOCK HAVEN, PENN.



Electric and Hand Power Travelling Cranes.

Steam, Power, Centrifugal Pumps and Condensers.

The **SMART-TURNER MACHINE CO.**
Limited.

HAMILTON, - ONT.

MALLEABLE IRON CASTINGS

CAPACITY 3,000 TONS

McKinnon Dash & Metal Works Co.,

LIMITED

ST. CATHARINES, - ONT.

MAPLE LEAF
STITCHED COTTON DUCK
BELTING
DOMINION BELTING CO. LTD.
HAMILTON CANADA

"CARRON" PIG IRON

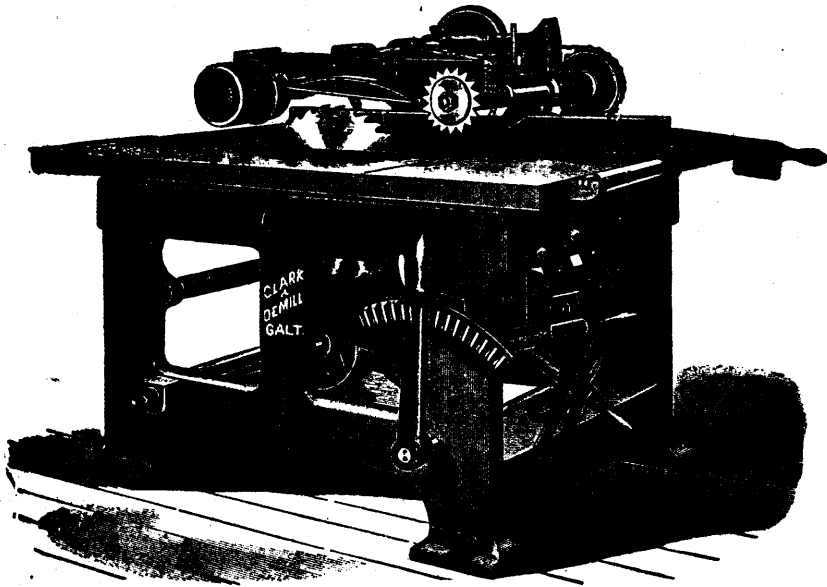
Oldest and Best Scotch Make.

More Popular Than Ever.

A. C. LESLIE & CO.,

MONTREAL

High Grade Wood Working Machinery



...Our No. 24 Variable Self-feed Rip Saw. A simple, substantial saw, designed for heavy work in Planing Mills, Furniture and Sash and Door Factories.

We aim to Lead in the Manufacture of New and Improved Wood Working Machinery

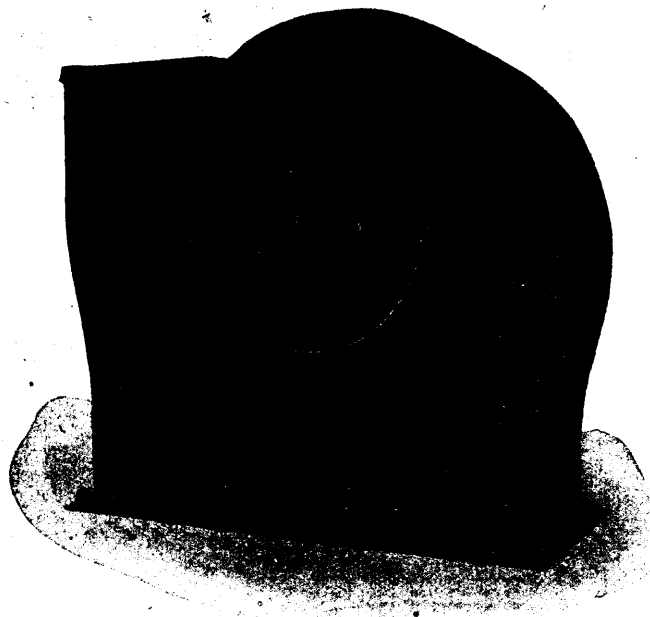
WRITE FOR CATALOGUE AND PRICES

CLARK-DEMILL CO.,
LIMITED

(Successors to Clark & Demill,) Hespeler, Ont.
Galt, Ont.

Western Representatives

The WATEROUS ENGINE WORKS CO., LIMITED, Winnipeg, Man.
Agents for Manitoba, Saskatchewan and Alberta.



HOT BLAST HEATING

MECHANICAL DRAFT

DRYING SYSTEMS OF ALL KINDS
FOR DRYING ANY MATERIAL

SHAVINGS EXHAUST SYSTEMS
INSTALLED COMPLETE

Dry Kiln Trucks and Wheels, Lumber Dryers,
Brick Dryers, Steel Brick Cars,
Transfer Cars, Turntables, Etc.

Stationary and Portable Forges, Cupola Blowers, Exhaust Fans, Planing Mill Exhausters
Dust and Shavings Collectors, and Steam Specialties, such as Back Pressure
Valves, Oil Separators, Exhaust Heads, Etc.

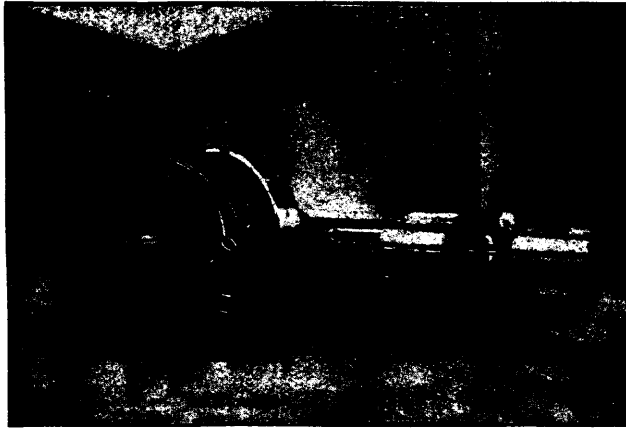
VERTICAL AND HORIZONTAL STEAM ENGINES

SHELDONS, LIMITED

Engineers and Manufacturers

GALT, ONT.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



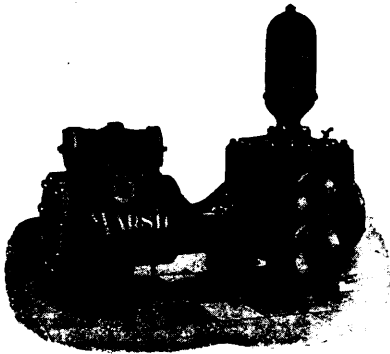
IDEAL ENGINES

Perfection in High Speed Engine Design,
Noiseless Running, Perfect Lubrication,
Accessibility, Economy.

The **GOLDIE & McCULLOCH Co., Limited**
Galt - Ontario - Canada

WE MAKE Wheelock Engines, Corliss Engines, Ideal Engines, Boilers,
Pumps, Flour Mill Machinery, Oat Meal Mill Machinery, Oat
Meal Steam Pan Kilns, Wood Working Machinery, Iron Pulleys,
Wood Rim Split Pulleys, Shafting, Hangers, Gearing, Friction
Clutch Pulleys, Friction Clutch Couplings, etc., Safes, Vaults
and Vault Doors.

SIMPLEX NOT DUPLEX
"To be Simple is to be Great."



MARSH AND AMERICAN STEAM AND POWER PUMPS

ECONOMY IN OPERATION UNEQUALLED.

FOR EVERY SERVICE.

AMERICAN STEAM PUMP CO., - Battle Creek, Michigan, U.S.A.

Write for Catalogue 14 C.

THE A. R. WILLIAMS MACHINERY CO., LIMITED, TORONTO.
WILLIAMS & WILSON, - MONTREAL.

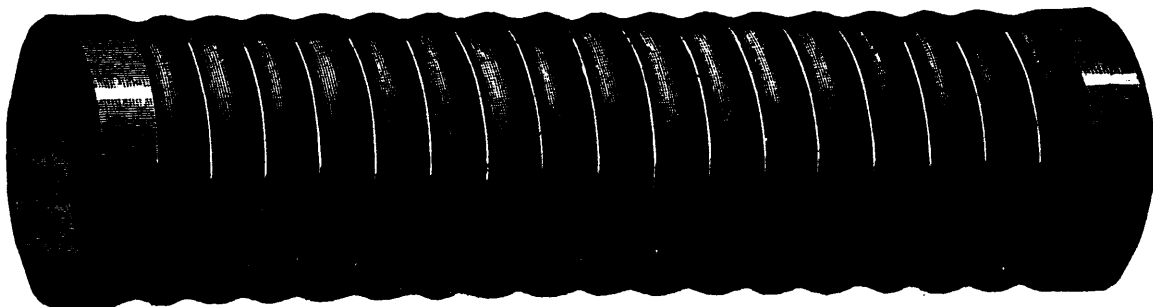
MORISON Suspension Furnaces

For Land and Marine Boilers

With Plain Ends or Flanged to any required shape.

Uniform Thickness, Easily Cleaned, Unexcelled for
Strength, Unsurpassed for Steaming Capacity.

The universally satisfactory record of "THE MORISON" proclaims it the best furnace made.



MANUFACTURED BY

THE CONTINENTAL IRON WORKS, WEST AND CALVER STS.,
BOROUGH OF BROOKLYN,
Near 10th and 23rd Street Ferries. **New York**
Sole Canadian Agent—**MR. GEORGE HOLLAND, M. C. Soc. C. E., P. O. Box 529, MONTREAL**

THE ALGOMA STEEL CO., Limited

SAULT STE. MARIE, ONT.

is now booking orders for

STEEL RAILS

For delivery during the Season of 1906.

Parties intending purchasing will find it to their interests to let us have their specifications at an early date so as to ensure desired deliveries.

DRUMMOND, McCALL & CO.,

General Sales Agents.

OFFICE:
Canada Life Building, MONTREAL.

CANADA IRON FURNACE CO., Limited

Montreal, Radnor and Three Rivers

Manufacturers of the well-known

**"C.I.F." Three Rivers
Charcoal**

Suitable for Car Wheels, Cylinders and Fine Castings, where the utmost strength is required.

Pig Iron

UNSURPASSED IN STRENGTH BY SWEDISH, RUSSIAN OR AMERICAN CHARCOAL IRON.

Offices: Canada Life Insurance Building, MONTREAL.

Our Cold Rolled Strip Steel is the product of a mill where especial care is exercised towards getting a high grade Steel for stamping, drawing or blanking purposes.

Write us for samples, prices, etc.

**THE
BOURNE-FULLER CO.
IRON, STEEL,
PIG IRON,
COKE.
Cleveland, Ohio.**

Pittsburgh Office,

1126 Frick Bldg.

NOVA SCOTIA STEEL and COAL CO.

MANUFACTURERS OF

LIMITED

BRIGHT COMPRESSED STEEL SHAFTING

FROM $\frac{1}{2}$ 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

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

..HEAVY FORGINGS A SPECIALTY..

"SCOTIA" PIG IRON for Foundry Use

Works—TRENTON, N.S., and SYDNEY MINES, N.S.

Head Office—NEW GLASGOW, NOVA SCOTIA.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

NICKEL

THE CANADIAN COPPER COMPANY.

NICKEL FOR NICKEL STEEL

THE ORFORD COPPER COMPANY.

WRITE US FOR PARTICULARS AND PRICES.

General Offices: 43 Exchange Place, NEW YORK.

UNION DRAWN STEEL CO., LIMITED

**COLD DIE-ROLLED
STEEL AND IRON**



True to Size and Highly Polished.

**For Shafting, Piston Rods
Screw Steel and
Roller Bearing Rods**

ROUNDS, SQUARES, FLATS AND HEXAGONS.

ASK US FOR PRICES.

Office and Works: HAMILTON, CANADA.

B. GREENING WIRE CO.
(LIMITED)
WIRE MANUFACTURERS
& METAL PERFORATORS
**HAMILTON
& MONTREAL.**

Wire Screens

for every class of material.

PERFORATED METAL
Of Steel, Copper, Brass, Zinc for all purposes.

Special attention given to Miners' requirements.

The B. GREENING WIRE CO., Limited
Hamilton, Ont.
Montreal, Que.

On One Condition

**WILL I UNTIE
YOUR HANDS**

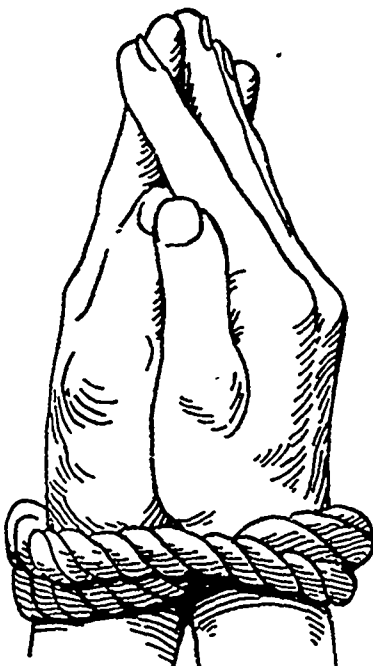
Never send your Orders
for **BABBIT METAL**
to any concern except the

**SYRACUSE SMELTING
WORKS**

The Best on Earth

MONTREAL, NEW YORK
and Branches

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



THE NICHOLS CHEMICAL COMPANY OF CANADA, LIMITED

Head Office—222 ST. JAMES ST., MONTREAL.

Works—CAPELTON, P.Q.

MANUFACTURERS OF HIGHEST QUALITY CHEMICALS

Sulphuric, Muriatic and Nitric Acids, Glauber's Salt, Salt Cake, Mixed Acid for
DYNAMITE MAKERS, Etc.

AGENTS FOR STAR and TRIANGLE BRANDS

BLUE VITRIOL.

PUREST AND STRONGEST

PAPER MAKERS' ALUM.

Address all Correspondence to the Head Office, - MONTREAL.

NORTHERN ALUMINUM CO., LIMITED

Shawinigan Falls, P.Q.

Business Office Pittsburgh, Pa.

ALUMINUM

INGOTS—SHEETS—TUBING, ETC.

Aluminum Stamped, Cast, Spun Articles of any Description to Order.

ALUMINUM WIRE and CABLES (BARE OR INSULATED) for Electrical Conductors.

THE PETER HAY KNIFE CO., Limited

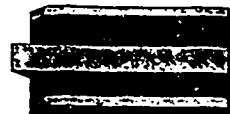
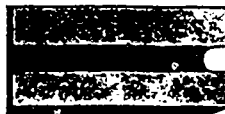


GALT, ONT.

Manufacturers of

MACHINE KNIVES

For WOOD-WORKING,
PAPER CUTTING and LEATHER SPLITTING
MACHINES,



Quality Warranted.

Send for Price List.

SHEAR BLADES,

BARK and RAG KNIVES,

Etc., Etc., Etc.

The Jenckes Machine Co., Limited

Mining Machinery; Pulp Mill Machinery;
Steam and Water Power Plants.

Catalogues and Estimates on request. Correspondence Invited.

EXECUTIVE OFFICE—60 Lansdowne St., SHERBROOKE, QUE.

Sales Offices: TORONTO, ROSSLAND
HALIFAX, VANCOUVER

Plants: SHERBROOKE, Quebec
ST. CATHARINES, Ont.

Canada Chemical Manufacturing Company, Limited

London,

MANUFACTURERS OF

Canada

ACIDS and CHEMICALS

CANADIAN SALES AGENTS FOR

THE BAKER & ADAMSON CHEMICAL CO.
EASTON, PENNA.

THE THOMSEN CHEMICAL CO.
BALTIMORE, MD.

Chemically Pure Acids Technical Chemicals

Offices and Works
LONDON.

Sales Office
McKinnon Building, TORONTO.

Warehouses
TORONTO and MONTREAL

CASSELLA COLOR COMPANY

(American Branch of Leopold Cassella & Co.)

ARTIFICIAL

DYESTUFFS

New York, 182-184 Front Street.

Boston, 68 Essex Street.

Philadelphia, 126-128 South Front St.

Providence, 64 Exchange Place.

Atlanta, 47 North Pryor Street.

Montreal, 86-88 Youville Square.

ANILINES

St. Denis Dyestuff and Chemical Co.,

(A. POIRRIER), of Paris, France.

Manufacturers of

Aniline Colors, Aniline Oil and Salt, Archil Extracts
Cudbear, Cachou de Laval, Thiocatechines, etc.

A Complete Assorted Stock of the above always on hand.

W. T. Benson & Co.,

Sole Agents for Canada.

164 St. James St., MONTREAL

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.
Skillful Manufacture.
Sharpness, Durability, and
Uniformity of Grain.

Manufacturers

JOHN OAKEY & SONS, Limited

Wellington Mills, Westminster Bridge Road, London, England.

Enquiries should be addressed to

JOHN FORMAN, 708 Craig St., Montreal.

THE IMPERIAL OIL COMPANY, Limited

Highest Awards at the World's Fair, Chicago, upon

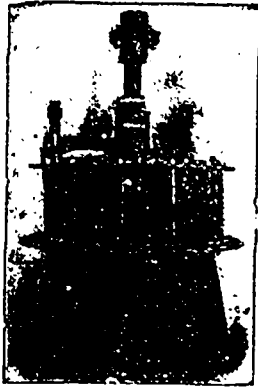
Lubricating, Water White Illuminating Oils, Paraffine Wax, Etc.

We manufacture all grades of oils, greases, soap stocks, candles, wool stocks, leather and tanners' oils, fuel gas, machinery, cylinder oils, &c. And solicit opportunity to compete against any oil on the market. Write for prices and samples.

Refineries at SARNIA and PETROLIA, CANADA. Merchandising Branches at:

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. MONTON, N.B. STRATFORD, ONT. KINGSTON, ONT. WINDSOR, ONT.

The Samson Turbine



Can be adapted to all water power requirements, and will give the very best results under all conditions.

It is a very strong and durable wheel, and is unequalled for ease of regulation.

Develops more power per inch of diameter than any other wheel, and costs less to install per horse power developed.

Our catalogue tells all about it—send for a copy.

THE WM. HAMILTON MFG. CO., Limited
350 Reid St. - Peterborough, Ont.

JAS. H. MILNES & CO.

WHOLESALE DEALERS IN

Best Grades of **STEAM COALS.**
Best Grades of **BLACKSMITHS' COALS.**
Best Grades of **FOUNDRY COKES.**

Shipments made direct from Mines to any point in Canada. Write for quotations.

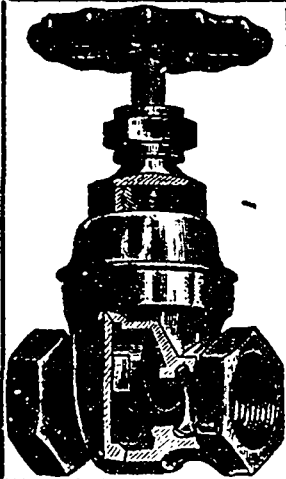
Head Office: 79 KING STREET EAST
Docks: Esplanade, Foot of Yonge
TORONTO.

STANDARD TELEPHONES

For Sale—**\$5.00 each**
Slightly used, but in good order.

Apply to

SALES DEPARTMENT
178 Mountain St. Montreal, Que.
Or to any Local Manager of the
BELL TELEPHONE COMPANY OF CANADA.



IF YOU WOULD SAVE MONEY

Pay a few cents more for a good Valve, and save Dollars in Steam-Fitter's bills.

Buy "KERR" Valves

and you will find a big saving during the year.

QUALITY COUNTS

THE KERR ENGINE CO., LIMITED
Manufacturers
WALKERVILLE, - ONT.

EXPANDED

The highest type of modern fireproof construction is Concrete reinforced with **EXPANDED METAL.**

FLOORS - - ROOFS - - WALLS

Write for Catalogue and Prices.

EXPANDED METAL AND FIREPROOFING CO., LIMITED

100 King Street West, **TORONTO.**

METAL

HOISTING ROPE
ELEVATOR ROPE
HAULAGE ROPE
LOGGING ROPE
GUY ROPE
ETC.

WIRE ROPE

ALL SIZES ANY LENGTH

CARRIED IN STOCK

DOMINION WIRE ROPE CO. LTD.
MONTREAL

FITTINGS OF ALL KINDS
BLOCKS
CLIPS
THIMBLES,
ETC.

WRITE FOR CATALOGUE
IT WILL INTEREST YOU

H. T. WILSON, Manager.

R. J. SINCLAIR, Sales Agent.

THOS. CHRISTIE, Canadian Sales Agent.

THE H. T. WILSON COAL COMPANY

1321-1322 Majestic Building, - DETROIT, MICH.

"Red Jacket" Coal

MINED IN WEST VIRGINIA.

The Best Bituminous Coal for Steam and Domestic Purposes.

Has a tough and blocky structure.
Smallest percentage of fine coal.
Low in ash and sulphur and no clinkers.
Not subject to spontaneous combustion.
Nothing better for malleable iron works.
One of the strongest steam coals.

RED JACKET

COMPARATIVE HEAT UNITS PER POUND OF COAL.

Anthracite—See "Steam," published by Babcock & Wilcox Co., 13,985.
"RED JACKET"—Determined by 60 weeks' test at Cincinnati Edison Plant, in 1901-2, the daily use of the coal tested being two hundred tons, 13,600.

BOILER TEST OF THE CINCINNATI EDISON CO., OF CINCINNATI.

Water apparently evaporated under actual conditions per pound of coal, 10 1/4 lbs.
Equivalent evaporated from and at 212 degrees per pound of combustible pounds, 12133.

We also handle Pocohontas Coke. Correspondence solicited.

ELK FIRE BRICK CO.

ST. MARY'S, PA.

Best Fire Brick for Any Purpose.

There are none "just as good."

Albert Manufacturing Co.

MANUFACTURERS OF THE WELL-KNOWN

"Hammer Brand" **Calcined Plaster**

AND

PATENT ROCK WALL PLASTER.

HILLSBOROUGH, N.B., CANADA.

DUNBAR FIRE BRICK CO.

Manufacturers of High Grade FIRE CLAY and SILICA BRICK for Heating and Malleable Iron Furnaces, Glass Works, Cement Works—also Bee Hive and By-Product Coke Ovens, Brick and shapes of all kinds.

Pittsburgh Office: 1504 Arrott Building.

Office and Works: Dunbar, Pa.

MONTREAL PIPE FOUNDRY CO., LIMITED

SUCCESSORS TO

DRUMMOND-McCALL PIPE FOUNDRY CO. (Limited)

Manufacturers of

"Specials," Hydrants, Valves, Etc.

Offices: . . . Canada Life Building, MONTREAL

"Beech Creek" FIRE BRICK

STRICTLY HIGH GRADE

MADE ONLY BY

PENNSYLVANIA FIRE BRICK CO.,

BEECH CREEK, PA., U.S.A.

Special Mixtures for use in Rolling Mills, Malleable Iron Works, Steel Works, Blast Furnaces, Glass Tanks, Cement Kilns, Locomotive Blocks, and all High Grade Uses.

Difficult Shapes a Specialty.

Send for Catalogue and Prices.

BRANDS: BEECH CREEK, BEECH CREEK ROOF, BEECH CREEK BUNG.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

PROFESSIONAL DIRECTORY.

Patent Attorneys, Mechanical and Electrical Engineers, Hydraulic and Constructing Engineers, Chemical and Mining Experts, Etc., Etc.

C. H. VOGEL

A. M. Can. Soc. C.E. ENGINEER
 OTTAWA, CAN.
 Surveys, Plans, Specifications and Supervision
WATER POWER
 PAPER, PULP and SULPHITE FIBRE MILLS

K. L. AITKEN

Consulting Electrical Engineer.

161 Bay Street, TORONTO.

Long Distance Phones (Office, Main 1482.
 Res., North 2239.

T. A. MORRISON & CO.

202 St. James Street MONTREAL
 Contractors' Plant, New and Second-hand.
 Steel Jaw Stone Crushers, all sizes.
 Sturtevant Roll Jaw and Rotary Fino Crushers.
 Balanced and Centrifugal Rolls, Emory Mills,
 Steam Road Rollers, Bidders and Engines,
 Rock Drills, Concrete Stone,
 Bridge and Building Limestone, Bricks, etc., etc.

C. J. FENSOM, B. A. Sc.

Consulting Engineer

ABERDEEN CHAMBERS, - TORONTO
 Phones (Office, - - M. 1623
 Residence, N. 2367

Machinery Designed, Supervised, Inspected and
 Contracted for. Tests, Reports, Electric Light
 Plants, Power Plants, Pumping Plants.

PATENTS PROMPTLY SECURED

We solicit the business of Manufacturers,
 Engineers and others who realize the advisability
 of having their Patent business transacted
 by Experts. Preliminary advice free. Charges
 moderate. Our Inventor's Adviser sent upon re-
 quest. Marion & Marion, Reg'd., New York Life
 Bldg., Montreal; and Washington, D.C., U.S.A

RODERICK J. PARKE

A.M. AMER. INST. E.E.
 A.M. CAN. SOC. C.E.

CONSULTING ENGINEER

Janes Building, TORONTO
 Long Distance Telephone.

TO MANUFACTURERS:— Advice and speci-
 fications covering Industrial Applications of Elec-
 tricity—Lighting—Power Transmission—
 Factory Power Distribution— Steam
 Plants.

TESTS—REPORTS—VALUATIONS.

The Howe-Keller Co.
 CLEVELAND, O.

FIRE BRICK SILICA FIRE CLAY
 ALUMINITE
 SILICA CEMENT

MAGNESITE BURNT MAGNESITE

Our factories are the most complete in the
 country Located in Pennsylvania, Ohio, and
 Kentucky—and controlling the largest known
 bodies of Refractory materials for different work.
 Operated by experienced managers. We manu-
 facture material for all heat work—second to
 none.

Capacity over 200,000 Brick and Special Shapes
 per day. Write for catalogue.

Keystone Engineering Co.

Limited

118 Bay Street, TORONTO, CAN.

Consulting and Contracting Electrical Engineers.
 Complete Power Plants Designed and Equipped.
 National Electric Code Standard Wiring.
 Advisory Reports, Repairs, Alterations, Etc.
 Phone, Main 3021.

ROBERT W. HUNT & CO.

Bureau of Inspection, Tests and Consultation.

66 Broadway, New York; 1121 The Rookery,
 CHICAGO; Monongahela Bank Bldg., PITTSBURGH;
 Norfolk House, Cannon St., E.C. LONDON.
 Inspection of Rails and Fastenings, Cars, Loco-
 motives, Pipe, etc.; Bridges, Buildings and other
 Structures. Chemical and Physical Laboratories.
 Reports and estimates on properties and processes.

JOHN J. GARTSHORE

88 Front St. W., Toronto.

Rails and SUPPLIES,

New and Secondhand.

For RAILWAYS, TRAMWAYS, Etc.
 Old material bought and sold.



Mfrs. of Set, Cap and Special
 Screws, Studs, Finished Nuts, etc.

WM. BARBEK & BROS.

Georgetown, Ont.

Manufacturers of.....

Book and Fine Papers.

THE.....

Toronto Paper Manufacturing Co.,
 Cornwall, Ont.

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

R. SPENCE & CO.

HAMILTON, ONT.

FILE and RASP MANUFACTURERS
 AND RE-CUTTERS.

A trial order solicited. Write for terms.
 C. P. MOORE, PROPRIETOR.

Dominion Oil Cloth Co.

LIMITED

Manufacturers of **Oilcloths** of Every Description.

Floor Oil-Cloth, Table Oil-Cloth,
 Carriage Oil-Cloth, Enamelled
 Oil-Cloth, Stair Oil-Cloth, etc.

OFFICE AND WORKS:

Cor. St. Catherine and Parthenais Streets
 MONTREAL, Que.

Established 1873. Telephone Main 1889.

THOMAS HEYS & SON

CHARLES H. HEYS, Manager.

CHEMICAL and MINING EXPERTS.
 Analyses of all commercial products, etc. Plans
 and reports on mines and mining locations.
 114 Bay Street, TORONTO, ONT.



Draughting and
 Designing of
 Special
 Machinery
 Industrial Plants

14 Leader Lane
 Phone, Main 6085
 TORONTO, ONT.

H. D. PETRIE

Barrister, Solicitor, Rotary

Spectator Building,
 HAMILTON, ONT.

Companies Incorporated.
 Commercial Law and Collections.

S. DILLON - MILLS

MINING EXPERT

Mining Properties examined and developed,
 reports furnished. Twenty years experi-
 ence in Furnace and Mining Work.

638 HURON STREET. - - TORONTO

PATENTS

TRADE MARKS, Etc.

HANBURY A. BUDDEN
 NEW YORK LIFE BUILDING,
 MONTREAL.

W. H. STOREY & SON, Limited, - Aton, Ont.

Manufacturers of... **FINE GLOVES and HITTERS**

In every variety and style, Moccasins

F. W. HORE & SON, Limited, HAMILTON, ONT.

Manufacturers of
CARRIAGE, WAGGON, AND SLEIGH WOOD WORK.

Sprinkler Leakage Insurance

is indemnity paid for losses sus-
 tained by the accidental dis-
 charge of water from installed
 Sprinkler Systems.

Are you insured against
 Sprinkler Leakage Damages?

The
**Canadian Casualty
 and Boiler
 Insurance Company**

TORONTO

Insures Sprinklers, Boilers, Elevators and all
 Personal and Property Risks.

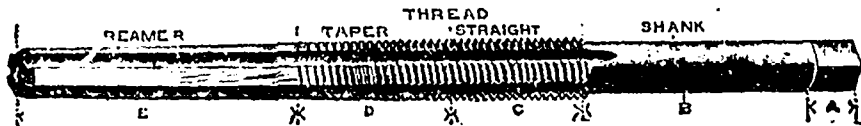
A. G. C. DINNICK, Managing Director.

Head Office:
 22-24 ADELAIDE ST. E. and 55 VICTORIA ST.
 Phone Main 400.



WE MANUFACTURE
STAY BOLT TAPS, all diameters and lengths up to 94 inches.
SPINDLE STAY BOLT TAPS and **TAPS for Screw Machines**, and **TAPS for all uses**.
Regular and Full Mounted Reece and Derby Plates, Bicycle and Machinists' Plates, etc., etc.

BUTTERFIELD & CO.,
Rock Island, Que.



Canadian White Company, Limited

SOVEREIGN BANK BUILDING, - MONTREAL, CANADA

ENGINEERS and CONTRACTORS

- FOR -

Steam and Electric Railroads; Electric Light and Power Plants; Building Construction;
Water and Gas Works; Docks, Harbor Works, etc., etc.

WINNIPEG OFFICE: Bank of British North America Building

CORRESPONDENTS

J. G. WHITE & COMPANY, INC.,
New York City.

J. G. WHITE & COMPANY, LIMITED
London, England.

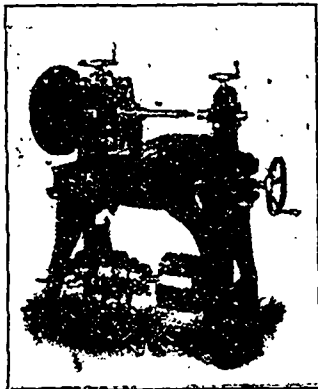
WARING-WHITE BUILDING CO.,
London, England.

STRENGTH

POWER

RIGIDITY

PRACTICAL



NEW MODEL No. 7—Plain Horizontal Miller

This machine is built to meet the increasing demand for a powerful miller for general manufacturing purposes, and embodies many improvements in power, stability and convenience. It is especially adapted to the manufacture of gun, sewing machine, typewriter and electrical work, bicycle and automobile parts. Write for catalogue. It will pay you.

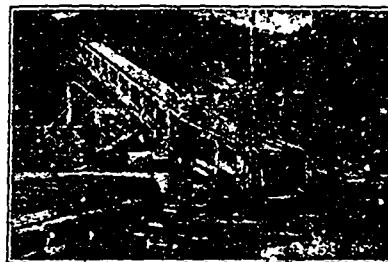
BECKER-BRAINARD MILLING MACHINE CO.,
HYDE PARK, MASS., U.S.A.

Branch Office: THE BOURSE, - - PHILADELPHIA, PA.

A. R. WILLIAMS MACHINERY CO., - Toronto, Can.
Canadian Agents.

JEFFREY APRON CONVEYER

With Reversible Drive Connections Permits Carrier to Run in Either Direction



For Handling

Grain, Cotton Bales, Barrels and General Merchandise

OTHER ELEVATING, CONVEYING SPECIALTIES

Illustrated in Chain Catalogue No. 72A. Mailed Free.

CORRESPONDENCE SOLICITED

THE JEFFREY MFG. COMPANY

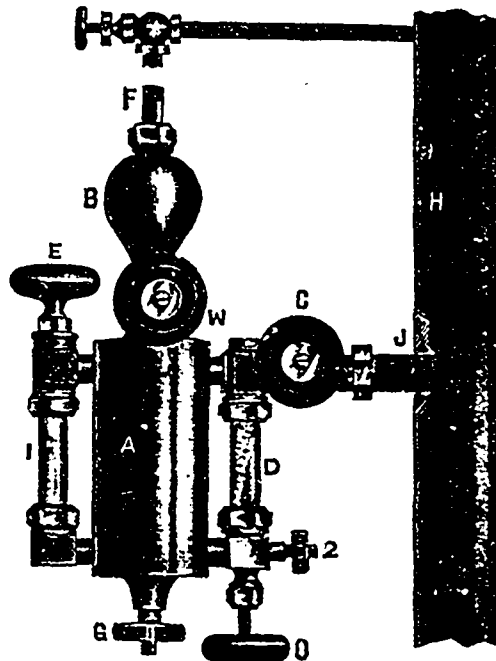
COLUMBUS, OHIO, U.S.A.

NEW YORK CHICAGO BOSTON ST. LOUIS DENVER

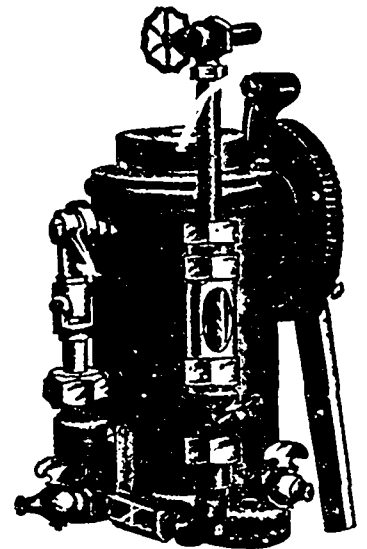
Toronto Agents—A. R. WILLIAMS MACHINERY CO.
Montreal " —WILLIAMS & WILSON.



IMPROVED T. J. C. INJECTOR
No. 2.



IMPROVED MICHIGAN LUBRICATOR.



THE IMPROVED HAMILTON
OIL PUMP
with and without Sight Feed.

THE HAMILTON BRASS MFG. CO., Limited
HAMILTON, - ONT.

CROCKER-WHEELER COMPANY



ALTERNATING CURRENT GENERATORS.

• Outputs—Belt Type, 25 K.V.A. up.

Engine Type, 75 K.V.A. up.

Canadian Representatives

THE PACKARD ELECTRIC CO., Limited

MONTREAL.

ST. CATHARINES.

WINNIPEG.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



FAN MOTORS

ALL STANDARD TYPES AND SIZES, IN ANY FINISH

LARGE STOCK

QUICK DELIVERY OF ORDERS PLACED AT ONCE.

Canadian General Electric Company, Limited

Head Office, TORONTO, ONT.

DISTRICT OFFICES— Montreal.

Hallfax.

Ottawa.

Winnipeg.

Vancouver.

Rosland.

THE EUGENE F. PHILLIPS ELECTRICAL WORKS

MONTREAL, - CANADA LIMITED

TORONTO STORE, 50 Adelaide Street West

Bare Copper Wire Weatherproof Wire

LONG DISTANCE PHONE 1108.

The Electrical Construction Company of London, Limited
32-40 Dundas St., London, Can.

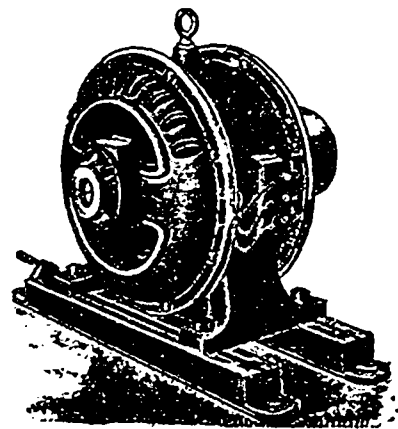
Perfection TYPE **DYNAMOS and MOTORS**

Multipolar or Bipolar, Direct-Connected or Belted.

OVER 1500 OF OUR MACHINES IN USE. We contract for complete installations, including wiring of factories. We repair machines of any make.

Descriptive matter and estimates furnished on application.

Branches at Vancouver, Winnipeg, Toronto, Montreal, Halifax



Induction Motors

of one, two and three phases.

HIGH POWER FACTOR and EFFICIENCY.

— ALSO —

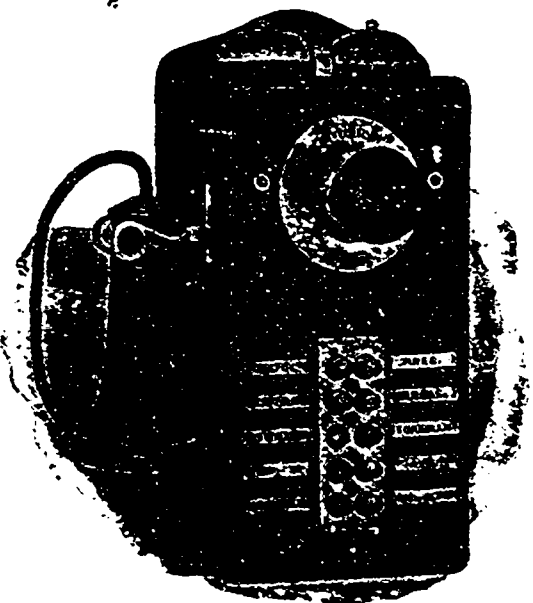
A. C. Generators

IN ALL SIZES.

**TORONTO & HAMILTON
ELECTRIC CO.**

99-103 McNab North. HAMILTON, ONT

TELEPHONES OF EVERY DESCRIPTION



Telephone and Line
Supplies

JOHN FORMAN

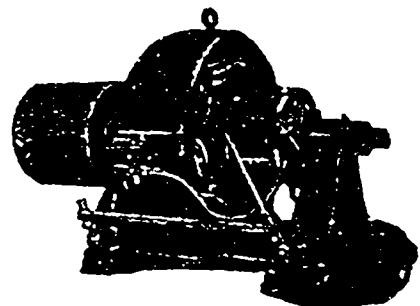
708 and 710 CRAIG ST.

MONTREAL, QUE.

The Jones & Moore

ELECTRIC CO., Limited

ELECTRICAL CONTRACTORS



DYNAMOS, TELEPHONES, SLOW
SPEED MOTORS, MOTORS, SUPPLIES,
DIRECT CONNECTED DYNAMOS.

We manufacture Direct Current Machinery in
all sizes and for any purpose.

**196 ADELAIDE WEST,
TORONTO.**

How Much of Your Power is Wasted ?

¶ During 1895-96 a series of experiments were conducted by Prof. C. H. Benjamin, of Cleveland, Ohio, to determine the ratio of the power required to drive shafting and belts, to the total power consumed, in 12 manufacturing plants on both light and heavy work. ¶ The results were as follows:

TABLES

Manufacturing Plant Number.	Total Horse-Power.	Horse-Power to drive Shafting.	Per Cent. to Drive Shafting.	Manufacturing Plant Number.	Total Horse-Power.	Horse-Power to Drive Shafting.	Per Cent. to Drive Shafting.
1.....	400	157	39.2	7.....	40.4	20.7	51.2
2.....	74	57	77	8.....	74.3	40	53.8
3.....	38.6	25.3	65.6	9.....	47.2	24.5	51.6
4.....	59.2	47.9	80.7	10.....	190	108	56.9
5.....	112	64	57	11.....	107	74.5	69.7
6.....	168	91	54.2	12.....	241	114	47.3
Average, heavy machine work,	62.3	Average, light machine work,	55.1

75 per cent. saving is what we guarantee on shaft friction.

Over 200 of the leading Canadian factories are equipped with Chapman Double Ball Bearings.

Send for Catalogues and Letters from Manufacturers who have them in use.

THE CHAPMAN DOUBLE BALL BEARING CO. OF CANADA, LIMITED

Office—89 Scott St., Factory—89 Pearl St., TORONTO.

To Reach Canadian Manufacturers.

If you want to sell machinery, power appurtenances, factory equipment, office specialties—anything the manufacturer uses—you should make your wants known.

HERE IS THE MEDIUM—THE OLDEST, THE MOST INFLUENTIAL PAPER GOING TO CANADIAN MANUFACTURERS.

Would you like this space for a year at less than \$10 (Ten Dollars) an issue!

We are ready to answer all questions about the Paper.

The Canadian Manufacturer

McKinnon Building, - - TORONTO



ESTABLISHED IN 1890.

PUBLISHED ON THE FIRST AND THIRD FRIDAYS OF EACH MONTH

The Canadian Manufacturer Publishing Co., Limited.

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

Cable address: "CANAMAN." Western Union Telegraphic Code used.

SUBSCRIPTIONS:

Canada and United States \$1.00 per year. All other Countries in Postal Union ten shillings sterling, including postage.

J. J. CASSIDEY, - - - Editor.
D. O. McKINNON, - - - Business Manager.

Classified Index Page 36
Index to Advertisers Page 45

THE METRIC SYSTEM.—5.

We are in receipt of the following letter from Mr. Edward Johnson, secretary of The Decimal Association of London, England. This association was established to promote the adoption of a decimal system of weights, measures and coinage in the United Kingdom.

"London, E.C., April 26, 1906.

"Editor THE CANADIAN MANUFACTURER, Toronto.

"Dear Sir:—On page 19 of your issue of March 2, you point out that the British Empire, with 356,000,000 people, numbers 4,000,000 more than all the first 34 metric countries put together. True, but 300,000,000 of the 356,000,000 are Hindus who know as little of the British measures as they do of the metric ones. Their most widespread measure, the gaz, is as near to the meter as to the yard, and they subdivide it in 8ths and 16ths, not in feet and inches. Their chief unit of weight, the seer, is legally equal to the kilogram. As for the remaining 56,000,000 of Britons and Colonials, all the scientists among them use the metric system to some extent, and a large proportion of those who are not scientists, but who take some interest in the matter are anxious to be allowed to use it. (At present the law does not forbid them, but the stronger tyranny of custom does, and can only be overcome by a combined organized attack). The estimate of \$1,000,000,000 as the cost of adopting the metric system in the United States should be compared with the estimate of £720,000 (\$3,600,000) or one three-hundredth the amount, made by the chief officer of the Public Control Department of the London County Council for the cost of adopting it in the British Isles. There is no record of any extensive scrapping of machinery in Germany in 1872, nor in any other country at the time of the adoption of the metric system. Possibly the most important scrapping would be that of inch gauges by engineers who at present have to use both inch and centimeter ones."

Whether the metric system would be a good thing for Canada, and whether the people of Canada could be brought to favor it, is open for discussion. Professor MacLennan, of the University of Toronto, has been employed by the Dominion Government to travel throughout

Canada, delivering lectures and endeavoring to induce the people to demand the compulsory and immediate adoption of the system, and it was to combat his arguments that our article was written. In that article it was stated that a strong argument in favor of the adoption of the metric system, as pointed out by Professor MacLennan in some of his lectures, is that there are but few non-metric countries, including the British Empire and the United States, with both of which Canada is most intimately connected, while about all other countries of the world have adopted the system; and if Canada is to keep up with the procession of nations, we must also adopt it. As shown by Professor McFarlane, in an article in Cassier's Magazine, there are 36 countries using the French metric system, the aggregate population of which is 445,296,000, while there are but three important countries which do not use the system. These are the British Empire with 356,000,000 population; United States with 76,000,000 and the Russian Empire with 135,000,000, a grand total of 567,000,000. The population of each of the 36 pro-metric countries mentioned by Mr. McFarlane was given, a study of the figures showing that none of the first four named were equal to the population of Liverpool; Lancashire has more inhabitants than any of the first 18; the total population of the first 24 is about equal to that of the United States, none of the first 25 equal the population within 50 miles of Manchester; the total population of the first 28 is equal to that of the Russian Empire, and the British Empire alone has 4,000,000 more people than the whole first 34. The population of the three empires which do not use the metric system—Great Britain, United States and Russia exceed by more than 120,000,000 inhabitants the population combined of all the pro-metric countries. Mr. Johnson criticises us by explaining that the Hindus in India know as little of the British measures as they do of the metric ones; that their most widely used measure, the gaz, is as near the metre as the yard, which they subdivide in eighths and sixteenths; (not in tenths).

We let the answer of the Decimal Association go for its value; but we hope that the "stronger tyranny" of long custom and common sense, and the established usage of the British people and of the English speaking people of the world, and of the nations that are not fore-sworn to a fad, prevent the obligatory adoption of it.

In the Dominion House of Commons a few days ago Hon. Mr. Templeman, Minister of Inland Revenue, mentioned that an educational campaign was being conducted throughout Canada in reference to the adoption of the metric system—that its adoption by Canada would depend a good deal on the time it might be adopted by Great Britain or the United States, or whether Canada would adopt it before then. We know that Professor MacLennan is now delivering lectures throughout the country on this subject which will cover a period of about two years, the expenses of which are being defrayed by the Dominion Government. The government have the right to indulge in such excursions, and to use the public money to defray the expenses of them, but there has never been any demand on the part of Canadian manufacturers,

or of any of the captains of Canadian industry, to stir up a matter that can, under no possible circumstances, result in other than evil and disaster if carried out as proposed by Professor MacLennan. When conspirators tunneled under the British House of Commons with a view to blow the whole concern, members, government and all to smithereens, with gun powder, which scheme was fortunately frustrated, the country became aroused to the enormity of the proposed outrage, and at this day te deums are yet sung in thankfulness at the deliverance. If to-day it should be discovered that dynamite was being deposited in the underground vaults of the Parliament building at Ottawa, with like object in view, similar excitement would follow; but we are now aware that efforts are being made to undermine every factory and industrial establishment in Canada, which, if carried out as proposed, would throw the whole country into a confusion that would have most disastrous effects upon its prosperity. There is no demand whatever, from any important class of the community for the government to engage in the chimerical enterprise in which it is engaged to disrupt and destroy the existing system of weights and measures under which Great Britain has always lived, and which both Canada and the United States have prospered and grown great ever since they obtained the prominent positions they now occupy on the map of the world. There are faddists in all countries who desire to paint the lilies and to gild the refined gold, but why not leave well enough alone. It may be that there are discrepancies and incongruities in our existing system—all human inventions are liable to such, but the metric system offers nothing better. Many countries have adopted it, but it is not exclusively observed by them, and even in the non-metric countries the use of it is permissible, then why make it compulsory. It is not in the interest of Canada that the government should indulge in propagating a fad.

"The nineteenth century was the century of the United States. the twentieth century will be Canada's century."—Sir Wilfrid Laurier.

TRANSMISSION OF ELECTRICAL POWER TO ONTARIO MUNICIPALITIES.

Hon. Adam Beck introduced in the Ontario Legislature a bill looking to the cheapening of electric power in the province which has become law and which will give great industrial impetus to the municipalities which avail themselves of the provisions of it.

The main feature of the bill is the appointment of a permanent commission to apportion the cost of transmitting electric current among the municipalities which decide to go into the scheme. The commission will negotiate with the development companies for a supply to meet the stated demands. If the companies are reasonable in their prices, contracts will be entered into on behalf of the municipalities, in case the prices are not satisfactory the commission will have power to erect a development plant or expropriate. The price of power at the point of development will be the same to all, no matter what amount of power may be used;

the cost of transmission will depend upon the amount and the distance.

The government will borrow money on the credit of the province to carry the scheme into execution. The cost will be adjusted by accountants and engineers in the employ of the commission, and a rate of 4 per cent. will be charged the municipalities for the capital outlay; then, in addition, the municipalities will pay sufficient to provide a sinking fund to retire the securities issued by the province in 30 years. The cost of maintenance will be paid directly to the commission by the municipalities.

The scheme does not apply to Niagara Falls district alone. Wherever there is a development the municipalities in the district may apply to the power commission, and the electric power will be supplied.

It was stated by Mr. Beck that current can be procured at Niagara at \$12 a horsepower. Mr. Beck also said a company of capitalists had promised to undertake a development and supply power at the figures mentioned in the first report of the hydro-electric commission. This means that power can be brought to Toronto and sold for \$17.

There are other features of the bill which are worthy of more than the mere stating. The commission may furnish power to railways or distributing companies, and whatever profits accrue will go towards lightening the burdens of the municipalities. For the purposes of this scheme the Conmee bill will not apply.

The commission is given power to regulate rates charged by municipal companies for electric light, power or heat.

These are the salient features of the bill. The opposition did not attempt to criticize the scheme adversely, but claimed that the government was "following in its footsteps." This claim is based upon an act passed by the Ross government in 1903, reserving a site at Niagara Falls for a development plant, and giving the municipalities power to erect a plant.

Following is a synopsis of the bill:—

Permanent commission of three, one a cabinet minister, to hold office during pleasure of government. Salaries to be fixed by the government.

Commission may appoint engineers and accountants; salaries to be paid out of moneys voted by the legislature.

Municipality may apply to commission for plans and estimates of cost of furnishing power, but the province shall not incur any liability to any municipality for errors or omissions in report.

Council may submit by-law to electors, authorizing the corporation to enter into contract with the commission, subject to approval of the government.

After such approval commission may proceed to deliver power to the corporation, to be used and distributed upon terms and rates prescribed by commission.

Commission may enter into contracts with railways or distributing companies. Net profit to be applied in payment of cost of maintaining works. Commission may contract with railway companies for use of right of way for power line.

Commee Act does not apply to any municipality receiving power from the commission, and it shall not be necessary for the council to fix any price to be offered to any light company unless the commission shall direct.

Commission may report to government designating lands, water privileges, works or plants which should be purchased, leased, expropriated or developed, or what quantity of product the commission requires.

The government may, upon recommendation of commission, authorize the commission to acquire lands and works; plant and property of transmission companies; and take power produced by companies.

Whenever the government shall direct, the commission shall have powers and shall proceed in the like manner as is provided in the case of the minister of public works, taking lands or property for the public uses of the province.

Cost of works shall be borne by the municipalities.

In addition to price payable by any municipality, it shall pay its proportion of the following charges:—

(a) Interest at 4 per cent. on moneys paid by commission on capital account; (b) Annual sum sufficient to form in 30 years a sinking fund for the retirement of the securities issued by the province; (c) Cost of operating, maintaining, repairing, renewing and insuring works.

Accountant of commission shall annually adjust amounts payable by the municipalities to the commission.

Government authorized to raise by loan on credit of province sums required for the purposes mentioned.

Commission to account to the government for all moneys received.

Complaints as to rates charged by light, heat and power companies, or that any municipality is making use of powers conferred for the purpose of granting bonuses by supplying power light or heat below cost, will be adjusted by the commission.

Municipality subject to penalty of \$100 for disobedience of order of commission.

Commission shall, when required by government, investigate water powers in the province.

The foreign trade of Canada has increased from \$224,420,485 to \$470,151,289 in ten years.

PRISON LABOR.

The Central Prison industries were recently discussed in the Ontario legislature on a motion made by the Provincial Secretary that the House ratify an agreement made on July 20 last, between the Inspector of Prisons and Public Charities and Taylor, Scott & Co., Toronto, for the manufacture of woodenware at the prison.

The contract is for five years, renewable for five years longer, and under it the government gives to the contractor the use of all buildings and yards used as a wood-working shop, the general railway facilities of the prison, all machinery then installed, and sufficient yard room for piling 500,000 feet of lumber. The government also

furnishes the convict labor to a minimum number of 80 men. The company is to provide fuel, oil and mill supplies and raw material, and the government is to replace worn-out machinery. A scale of prices to be paid by the contractor is fixed, the company guaranteeing that these will bring to the government a revenue of three cents an hour for each prisoner employed; if not, that amount is to be made up.

Mr. Preston expressed the opinion that the contract system was a bad one.

The Provincial Secretary explained that the manufacture of woodenware had been carried on for several years, entailing expensive machinery and great annual expense as well. In the purchase of lumber for material the government was open to be defrauded and the market for the finished goods was largely found within the province, thus coming into competition with free labor. The output of Taylor, Scott & Co. is marketed almost entirely outside Ontario. The loss to the province through operating this department had been \$16,000 in 1905.

Mr. Preston maintained that the contract system should be done away with, and argued that it was bad for the prisoners in that no proper supervision could be had over them.

"The question is whether the province is to continue to be the loser by government operation of these industries," suggested Mr. Hanna.

Mr. Graham declared it is an abhorrent idea that convicts should be farmed out as workmen to a contractor, as a horse might be farmed.

The contract was approved.

The manufacture of woodenware in Ontario by free labor is a large and valuable industry. So is the manufacture of brooms, binder twine and other articles, also carried on by prison labor in our prison institutions. The manufacture of prison-made goods is conducted for two reasons—first, to give healthy employment to convicts, and second, that the profit arising therefrom may contribute to the cost of their keep. From a humanitarian standpoint it is absolutely necessary that prisoners are not kept in idleness—that they perform some sort of healthful manual labor. The unfortunates in prison are well fed, properly clothed, and have medical attention when ill; in which respects they are infinitely better off than many who are not confined in prisons.

On the other hand, manufacturers who do not conduct their operations within prison walls with convict labor must, of course, invest wealth in factories, purchase machinery, pay taxes and insurance, face the competition of other manufacturers, and pay current rates of wages to their free operatives. The operatives, of course, being free, have to provide for themselves and those dependent upon them all the requirements of life—food, raiment, shelter, fuel, medical attendance, education of children and such recreation and amusement as may be within their means; and if any laying up for the inevitable rainy day and old age is done, it must come from wages earned by their own brawn and muscle.

We see, then, that both capital and free labor are very

adversely affected by the competition of convict labor. Time was, as is well known, that previous to the inauguration of the system of prison contract labor now observed in our prisons, a large number of the smaller industries were carried on in Toronto and elsewhere by free labor. But the competition has driven them out of business; and but too frequently the free men and women and their children find themselves in much distress and want of the necessaries of life, so fully enjoyed by convicts, and caused by that competition.

There are both federal and provincial laws forbidding the importation of prison-made goods, which, we regret to say, are not properly observed; and for the very reasons for the enactment of such laws, the sale of prison-made goods, produced in our own penal institutions, should not be allowed. They should not be allowed to be brought into competition in the community with the products of free labor. It is proper that as far as possible the needs of convicts should be produced by their own labor—shoes, clothing, hats, and foodstuffs; but such things should never be thrown on the market.

There are some occupations to which convict labor might—nay, ought to be put. The severity of our winters demands the employment of them indoors—within prison walls—but they might—should be made to break stone, dig ditches and in other ways be made useful in improving highways throughout the country. There are hundreds of miles of thoroughfare roads that ought to be improved, and it could be done to good advantage by the use of prison labor.

Canada's exports of manufactures in 1894-95 were \$8,859,602: in 1904-05 they were \$24,643,034.

PREFERENCE WITHOUT SACRIFICE.

The Standard, of London, England, says:—"The Canadian Industrial League, whose office is in Toronto, is doing very admirable work. It is busily engaged in teaching loyal Canada how and why Imperialism is the best policy. All the world knows that Canadians are to the backbone a loyal and patriotic people. They are also a shrewd people, enterprising and eminently successful in business. The Canadian Industrial League puts a business proposition before Canada, emblazons it upon stamps, pictures, and all sorts of clever pictorial devices. 'Keep your money in circulation at home,' says the League, 'by buying goods made in Canada. When you can't get what you want at home, buy within the British Empire.' This is 'Preference without sacrifice.' It is a golden message, pointing direct to British prosperity and the abolition of unemployment and distress. Substitute England, or Australia, South Africa, India, as the case may be, for Canada, and here is a golden rule for the men of every land within the Empire, a rule which, by profiting all, will profit each individual who owns allegiance to the British flag. One poet has already said: 'Show the way, Canada,' and another has feelingly replied: 'Show the way, England.' Here, not for the first time, we are having Canada showing a way to the Empire, a showing by means of which the Empire may profit greatly. We should like to see some of the Canadian Industrial League's clever stamps and hangers in circulation in this country and copies of them made for use in all parts of the Empire."

One of the most senseless and misleading expressions imaginable is that at the head of this article, "Preference without sacrifice." The Canadian Industrial League is a side issue of the Manufacturers' Association of a political character; and intended to do certain political work in which the Association do not care to engage. This work includes the teaching of Imperialism, loyalty and patriotism—sentiments in which the people of Canada do not need to be instructed. They abound in loyalty to the Crown and to Canada also. Why should the secret fund of the League be expended in putting business propositions before the people, emblazoning them upon stamps, and other devices, advising them to the effect that their money should be kept in circulation at home by buying goods made in Canada; and if they cannot obtain the goods at home, to purchase them only within the Empire? The people of Canada will not, at the suggestion of the League, play the part of the unfaithful steward who, when entrusted with a talent, makes it unprofitable by burying it in the earth. They prefer to profit by buying and selling to the best advantage wherever the opportunity offers. There are few if any members of the Association who, in manufacturing the products they have to sell, confine the purchase of their raw materials to those produced in Canada. The flour miller may confine his purchases of wheat to that grown in Canada, and the lumberman to timber grown within our own boundaries, but that is about the extent to which the advice is taken. The imports from foreign countries of raw materials to be consumed in our workshops and factories amounts to millions of dollars annually; materials which, in many items, can be produced neither in Canada nor elsewhere in the Empire.

Perhaps the idea that the League seeks to inculcate is that where an article is in demand, if it is made in Canada, it should have the preference over a similar article made elsewhere; and if it is not made in Canada, but imported from abroad, the choice should be of British instead of foreign make. In this utilitarian age people are inclined to purchase to the best advantage regardless of the country of origin of the desired article. As a matter of course if the article is as intrinsically good and at as low cost as a similar article brought from abroad, the choice would naturally be for the home-made goods. But it should possess the features of excellence, adaptability and cheapness. The argument is made that, usually, the cost of production in other countries is less than in Canada, owing to cheaper labor and cheaper money, but these are offset by the customs duties which, when of a protective character, is intended to and does equalize the status of the domestic and the foreign product. Therefore, except upon patriotic grounds, the Canadian consumer is under no obligation whatever to give the preference to Canadian products.

We are advised by the League that when we can't get what we want at home, that is, of home production, we should buy within the British Empire, which, is "preference without sacrifice." The same answer is obvious. Upon imported dutiable goods a deduction of one-third of the duty is allowed if from Great Britain,

but full duty is charged if the goods are from foreign countries. This presupposes that home producers cannot supply all the wants of the country, and that the deficiency must come from abroad. British manufacturers under free trade, and by virtue of their country being "Mistress of the Seas" commercially, are supposed to be able to compete successfully with the manufacturers of any other country, but are they? Canada does not think so, hence the preference; and we are constantly confronted with the fact that for some cause or other, the import of British goods into Canada does not maintain its relative value as compared with imports from some other countries. Why? Canada is a wealthy country and is a large consumer of articles produced in other countries; and for the sake of the Motherland and the inability of her manufacturers to successfully compete with the manufacturers of other countries, she has been favored in tariff matters to a most remarkable extent. But even with the assistance of the preference she does not maintain her relative position in the struggle for trade; and the League comes to the rescue by advising the people of Canada to always make their purchases within the Empire—that doing so it would be showing "preference without sacrifice."

What do these words mean? If they mean anything intelligible it is that to Canadian consumers British goods are cheaper by one-third the duty than the goods of any other country. The sacrifice of the Canadian treasury to the extent indicated is a sacrifice nevertheless, which fact the League seems to ignore. All that the most enthusiastic advocates of the policy of tariff protection to Canadian manufacturing industries asked for was that the tariff should be high enough to equalize the difference of cost of production in Canada and in other countries. Canadian manufacturers generally admit that the general tariff as it now is, is satisfactory for the purpose of protection. Like other human inventions there may be incongruities in it that should be corrected; but it is satisfactory to the country. For the sake of stimulating the consumption of British-made goods in Canada we are sacrificing a very large portion of our revenue, and that is certainly a large sacrifice for the preference; and the question naturally arises, if the general tariff less the preference affords sufficient protection to our manufacturing industries, and would produce sufficient revenue for the uses of the government, why impose the higher rate? If the general tariff is about the correct thing, why not impose it upon all imports?

The Daughters of the Empire, of Toronto, have decided to hold a "Made in Toronto" Fair during the week ending June 16. The proceeds of the fair will be devoted to the endowing of the children's ward of the Consumptives' Hospital, contributing to the Soldiers' Memorial Fund, and for carrying on the general work of the organization. Merchants and manufacturers are urged to assist the project by making an exhibit of their products.

Have you read the new department in this issue? Don't miss it.

**MEETING OF THE SHAREHOLDERS
OF THE
CANADIAN MANUFACTURER PUBLISHING CO., Limited**

The Shareholders of the Canadian Manufacturer Publishing Co., Limited, are hereby notified that a General Meeting of the Company will be held on Monday, the 4th day of June, 1906, at the hour of 11 o'clock in the forenoon, at the Head Office of the Company, Room 408 McKinnon Building, corner Jordan and Melinda Streets, Toronto, for the purpose of receiving and considering a report from the Directors upon the affairs of the Company, to elect a Board of Directors for the ensuing year, and to consider, generally, such business of the Company as may be presented.

ARTA CASSIDEY,

Secretary.

Dated at Toronto this 4th day of May, A.D., 1906.

EDITORIAL NOTES.

A letter, strongly urging that the provincial government introduce legislation during the late session of the legislature in regard to the development of cheap electrical power at Niagara Falls, was addressed to Premier Whitney by the Toronto Board of Trade. The letter, which was signed on behalf of the Council of the Board by the president and the secretary, reads:—

"The Council of the Board of Trade of the city of Toronto is deeply impressed with the necessity of early action on the part of your government towards obtaining for the benefit of this province, cheap electrical power.

"So strong is this feeling that government development at Niagara Falls and distribution to municipalities is advocated, but any solution of this problem from absolute control of rates to expropriation would meet with approval, the rights created by the province in all cases being duly considered, as well as the welfare of the people.

"Your utterances on this subject have been noted with satisfaction, indicating as they do a determination to find a means of giving to the province what is so necessary to its industrial development and to the general comfort of its people. It is hoped, therefore, that there will be no delay, and it is respectfully urged that the session be not allowed to pass without such legislation as may be required to permit an early accomplishment of so desirable an object."

Over \$500,000,000 will be spent in railway extensions in Canada during the next five years.

The Liverpool Daily Post, commenting on Mr. Edward Porritt's "interesting and instructive story of Canada's tariff mood towards the United States," in the current number of the North American Review, says that Canada has thrown over Mr. Chamberlain. The Canadian Manufacturers' Association fought hard for him and for themselves more than for him. The tariff revision they asked is not to be the kind they desired nor the kind the United States would have welcomed, but it is going to have features that will commend it to British manufacturers and workmen."

It is past the comprehension of sensible men why the Canadian Manufacturers' Association should trouble themselves with Chamberlainism or any other phase of British politics. Why meddle? Sensible people in this country are not inclined to tolerate British interference in Canadian politics, and it is gross impertinence on the part of any in Canada to meddle in British politics.

An English paper writing on the subject of pencil wastage in the government departments, says:—"Many of those in the employ of the government could a tale unfold of wasted pencils. Pencils that are almost unused are thrown away wholesale because it is more economical to sacrifice the pencils themselves than the time and labor that would be involved in continually paring, so as to be able to write with them. The public has very little conception of the importance of a really good lead pencil as compared with a bad one, to those people whose business necessitates the constant use of a pencil in preference to a pen. Under certain circumstances a pencil is indispensable; business cannot be got through without it; and where this is the case, to provide a bad pencil—one the point of which is always breaking and the graphite of inferior quality, or the wooden case not true-grained—amounts, practically, to depriving the workman of his tools."

One of the greatest drawbacks in the use of lead pencils whatever their quality may be, is the necessity of sharpening them frequently without any really acceptable and efficient "sharpener" to do it with. A prominent manufacturer of pencils informs us that a pocket knife is the best tool he knows of for the purpose. Why don't some inventive genius produce a neat little "trick" with which a pencil may be quickly and satisfactorily sharpened without soiling the fingers?

Sir William MacGregor, governor of Newfoundland, of which province Labrador is a dependency, has recently issued a report of a scientific and official visit which he made to that remote seaboard last summer, and among other aspects of the subject he treats especially of the absence of crime in that region. Labrador, Sir William says, has a resident population of 10,000, of whom 3,500 are white, settled along its south coast. Many of the Indians are half-breeds, and there are 3,000 Eskimos scattered along the northern waterfront. In addition it is visited each summer by some 20,000 Newfoundlanders, who engage in fishing, which is the chief pursuit of these people. Yet there is no court nor jail, magistrate nor policeman, nor any other officer of the law on this 1,000 miles of seaboard, where all these people are wresting a subsistence from the ocean.

The Carnegie Steel Co. is now installing a 4,000 h.p. Westinghouse double-acting, horizontal gas engine, the largest in the world, for the operation of the steel rail manufacturing machinery at the Edgar Thomson steel works, near Braddock, Pa.

The introduction of a gas engine is a new departure

in the operation of mills, which will become popular on account of the advantages obtained. The gas engine will aid in the elimination of smoke about the mill, which is one feature in its favor, but beyond this, the gas engine can be operated by a mill product which is now going to waste in all the mills in the country. This is blast furnace gas, which is generated in the process of the manufacture of iron or steel, and was allowed to escape because it was not known that it could be utilized.

Over \$100,000,000 of United States capital has been invested in Canada in the last five years.

The Census Department at Ottawa is endeavoring to get complete statistics of the manufacturers of Canada for 1905, and to this end circulars containing the following list of questions have been sent out:—

- Name of class of works.
 - Year when established.
 - Months in operation in 1905.
 - Province where located.
 - City, town, or parish.
 - Name of present owner, firm or corporation.
 - Post-office address.
 - Value of lands, buildings and plant.
 - Working capital.
 - Officers, clerks, etc.
 - Total salaries of officers, etc., in year.
 - Managers, foremen, etc., with total salaries in year.
 - Average of male operatives, with total wages in year.
 - Average of female operatives, with total wages in year.
 - Kind or class of product.
- The enquiries if generally answered should prove of great value.

Canada buys more machinery and metals from the United States than any other single country in the world.

Alluding to the metric system, Prof. C. P. Walker, of the department of mechanical engineering of the University of Kansas, who has been investigating the subject has published a paper in regard to it in which he says:—"Anyone who calmly considers the matter knows that a man can divide by the eye and by judgment into halves, quarters, eighths, etc., far better than into tenths. The number ten has but two divisions, two and five, the latter an odd number. Ten is thus less easily subdivided than either eight or twelve. The advantage of the tens in calculations in scientific work does not offset the inborn ability of man to divide into halves. This feature of the unit is all important when work is done from dimensions, and dimensions not taken from work. This is the crux of the whole matter, and the choice of systems follows the difference between the methods of the men who measure and calculate for figured results and the men who use figures only as guides in making things."

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.

The Iroquois Cobalt Silver Mining Co., Haileybury, Ont., have been incorporated with a capital of \$100,000, to carry on a mining, milling and reduction business. The provisional directors include C. A. Richardson, H. D. Graham and G. A. Bagshaw, Haileybury, Ont.

The Collingwood Furniture Co., Collingwood, Ont., have increased their capital from \$90,000 to \$150,000.

The Silver Cliff Mining Co., Ottawa, have been incorporated with a capital of \$2,000,000, to carry on a mining, milling and reduction business. The provisional directors include W. D. Gregory, H. F. Gooderham and H. N. Barry, Toronto.

The Green Rock Mining Co., Sault Ste. Marie, Ont., have been incorporated with a capital of \$600,000, to carry on a mining, milling and reduction business. The provisional directors include J. B. Kelly, R. Chadwick, Sault Ste. Marie, Mich., and R. Henry, Sault Ste. Marie, Ont.

The Eureka Silver Mining Co., New Liskeard, Ont., have been incorporated with a capital of \$100,000, to carry on a mining, milling and reduction business. The provisional directors include B. Field, E. M. Goodman and R. Herron, New Liskeard, Ont.

The Silver Wonder Mining Co., Toronto, have been incorporated with a capital of \$300,000, to carry on a mining, milling and reduction business. The provisional directors include L. MacKay, A. T. Struthers and W. H. Syms, Toronto.

Messrs. Findlay Bros. Co., Carleton Place, Ont., have been incorporated with a capital of \$200,000, to manufacture stoves, furnaces, etc. The provisional directors include D. Findlay, W. Findlay and J. K. Findlay, Carleton Place, Ont.

The Silver Ledge, Limited, Toronto, have been incorporated with a capital of \$20,000, to carry on a mining, milling and reduction business. The provisional directors include J. A. Montgomery, E. J. Lynch and A. Scott, Toronto.

The Haileybury Supply Co., Haileybury, Ont., have been incorporated with a capital of \$50,000, to carry on a warehousing and distributing business. The provisional directors include A. Yates, New Liskeard, Ont., H. C. Dunbar and F. A. Day, Haileybury, Ont.

The Buffalo Mines, Limited, Toronto, have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include A. M. Macdonell, T. H. Barton and A. C. McMaster, Toronto.

The Permanent Ink Co., Hamilton, Ont., have been incorporated with a capital of \$40,000, to manufacture ink, mucilage, carbon, etc. The provisional directors include W. Marshall, R. A. Lucas and F. W. Watson, Hamilton, Ont.

The Silver Crown Mining Co., North Bay, Ont., have been incorporated with a capital

of \$500,000, to carry on a mining, milling and reduction business. The provisional directors include R. Handley, J. J. Connolly and C. J. Murphy, Renfrew, Ont.

The Commercial Gas Co., Windsor, Ont., have been incorporated with a capital of \$40,000, to manufacture gas, heat, light, etc. The provisional directors include C. L. Meyer, Windsor, Ont., N. P. Hickey and G. A. Brown, Leamington, Ont.

The Steep Rock Development Co., Fort Frances, Ont., have been incorporated with a capital of \$150,000, to carry on a mining, milling and reduction business. The provisional directors include D. C. McKenzie, A. Mills and G. Webster, Fort Frances, Ont.

L. Duhamel, Limited, Ottawa, have been incorporated with a capital of \$50,000, to manufacture carriages, wagons, etc. The provisional directors include A. W. Pennock, A. J. Forward and J. P. McLaren, Ottawa.

The Detroit & Cobalt Development Co., Windsor, Ont., have been incorporated with a capital of \$25,000, to carry on a mining, milling and reduction business. The provisional directors include J. L. Ernest, C. H. Gowman and W. H. Lehman, Detroit, Mich.

Messrs. Spilling Bros., Toronto, have been incorporated with a capital of \$40,000, to manufacture cigars, etc. The provisional directors include P. J. Mulqueen, D. W. Kennedy and L. Solman, Toronto.

The Montreal River Silver Syndicate, Toronto, have been incorporated with a capital of \$200,000, to carry on a mining, milling and reduction business. The provisional directors include W. H. Wylie, Almonte, Ont., W. J. Aikens, Dunnville, Ont., and C. E. Calvert, Toronto.

The Glen Lake Mining Co., Toronto, have been incorporated with a capital of \$500,000, to carry on a mining, milling and reduction business. The provisional directors include A. M. Macdonell, G. R. Geary and T. H. Barton, Toronto.

The National Brass & Mfg. Co., Toronto, have been incorporated with a capital of \$100,000, to manufacture brass, copper, etc. The provisional directors include C. D. Ferguson, J. Gray and E. J. Saunders, Toronto.

The Automobile Co., Hamilton, Ont., have been incorporated with a capital of \$40,000, to manufacture automobiles, motor boats, etc. The provisional directors include W. R. Moore, H. H. Hodgson and J. J. Scott, Hamilton, Ont.

The Kerr Co., Toronto Junction, Ont., have been incorporated with a capital of \$40,000, to manufacture piano and organ keys, reeds, etc. The provisional directors include J. E. Kerr, W. A. McMaster and D. R. Boucher, Toronto Junction.

Messrs. Wickson, Gregg & Chapman, Toronto, have been awarded the contract for the erection of the Carnegie Library, at Toronto, which will cost about \$260,000.

The Taylor-Forbes Co., Guelph, Ont., will erect an addition to their plant, 100x50 feet.

The Cobden Milling Co., Cobden, Ont., is being organized to carry on a milling business at that place.

The John Campbell Milling Co., St. Thomas, Ont., propose erecting a grain elevator at Port Stanley, Ont.

A town hall will be built at Eganville, Ont.

The Grand Trunk Railway Co. will erect a new station at Creemore, Ont.

The S. F. Bowser Co. have purchased a lot 125x100 feet on Fraser Avenue, Toronto, on which they will erect their new factory for the manufacture of oil and gasoline tanks and similar commodities. The price paid for the lot was about \$2,000. Considerable new machinery and power equipment will be needed for this factory. W. R. House is local representative of the company.

The Manitoba Frost Wire Fence Co. have purchased 161 feet of frontage on Nenu Street, Winnipeg, Man., and in a few weeks' time work will be commenced on a factory 100x70 feet. H. L. Frost, president of the company, was in Winnipeg last week.

In the "Want Ad." column of this issue, John Dick, Limited, Toronto, offers for sale the premises at Streetsville, Ont., formerly owned by the Streetsville Woolen Mill Co. This plant, which was recently purchased by Mr. Dick, has besides the mill a water power of nearly 200 h.p., and twenty-eight dwelling houses. The owner would finance a good proposition to utilize the entire property.

The Journal Printing Co., St. Thomas, Ont., have been incorporated with a capital of \$50,000, to carry on a printing and publishing business. The provisional directors include J. S. Robertson, A. A. Moore and P. Pavey, St. Thomas, Ont.

The Waterloo Furniture Co., Waterloo, Ont., have been incorporated with a capital of \$100,000, to manufacture furniture, mattresses, etc. The provisional directors include L. S. Weber, J. M. Walker and O. Weber, Berlin, Ont.

The Gilpin Cobalt Silver Mining Co., Toronto, have been incorporated with a capital of \$500,000, to carry on a mining, milling and reduction business. The provisional directors include A. A. Danieci, R. F. Wilton and G. T. Veale, Toronto.

The Walterhouse-Johnston Lime Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture lime, brick, stone, etc. The provisional directors include D. Walterhouse, J. R. Roaf and J. Walterhouse, Toronto.

The Beaver Silver Cobalt Mining Co., New Liskeard, Ont., have been incorporated with a capital of \$500,000, to carry on a mining, milling and reduction business. The provisional directors include A. Devine, Cobalt, Ont., L. Vineberg and D. S. Friedman, Montreal.

The Sudbury Cobalt Mining Co., Sudbury, Ont., have been incorporated with a capital of \$300,000, to carry on a mining, milling and reduction business. The provisional directors include J. T. O'Connor, D. M. Morin, N. T. Hillary, Sudbury, Ont.

Messrs. Henry K. Wampole & Co., Perth, Ont., have been incorporated with a capital of \$500,000, to manufacture wares, merchandise, etc. The provisional directors include H. K. Wampole, S. R. Campbell,

Philadelphia, Pa., and H. W. Brick, Perth, Ont.

The Newbigging Cabinet Co., Hamilton, Ont., have been incorporated with a capital of \$40,000, to manufacture furniture, office fittings, etc. The provisional directors include R. P. Newbigging, J. Butterfield and H. T. Cowing, Hamilton, Ont.

The Mount Albert Telephone Co., Mount Albert, Ont., have been incorporated with a capital of \$10,000, to carry on the business of a telephone company. The provisional directors include T. Graham, township of Uxbridge, Ont., and W. D. Stokes, township of Scott, Ont.

The Findlay Mining Co., Windsor, Ont., have been incorporated with a capital of \$20,000, to carry on a mining, milling and reduction business. The provisional directors include L. H. Broadwater, J. G. Kimmell, and T. McManus, Findlay, Ohio.

The two mills of the Hedley-Shaw Milling Co., at St. Catharines and Thorold, Ont., have a combined capacity of 5,000 barrels a week.

The Hamilton Rolling Mills, Hamilton, Ont., are being supplied with natural gas. The Ontario Pipe Line Co. having put in a six-inch feed pipe in each of the furnaces, eight one-inch pipes feed the burners and there are eight other auxiliary pipes of one inch each.

The congregation of Queen's Avenue Methodist church, New Westminster, Ont., will erect an addition to their church at a cost of about \$2,500.

The Bowmanville Foundry, Bowmanville, Ont., will erect a three story addition to their works.

W. H. Matthews, Trenton, Ont., will erect a barrel factory at Colborne, Ont.

The Belleville Fruit & Vinegar Co., Belleville, Ont., have been organized to manufacture jams, cider, vinegar, etc. The directors include R. J. Graham and Sir Mackenzie Bowell, Belleville, Ont.

The Canadian General Electric Co., Peterborough, Ont., will erect an addition to their works at a cost of about \$400,000.

The ratepayers of Elora, Ont., have voted favorably on a by-law to grant A. Parker a loan of \$3,500 and exemption from taxation for ten years, to erect an establishment for the manufacture of furniture.

Messrs. Hunt & Boyd, London, Ont., have purchased a foundry at Hensall, Ont., and will manufacture radiators and plumbers' supplies.

The congregation of St. Anne's Episcopal Church, Toronto, will erect a new church at a cost of about \$35,000.

The Norton Mfg. Co., Hamilton, Ont., will erect an addition to their factory at a cost of about \$5,000.

Messrs. Copley, Noyes & Randall, clothiers, Hamilton, Ont., will erect a new warehouse.

The General Supply Co., of Canada, Ottawa, have been incorporated with a capital of \$20,000, to manufacture machinery, iron, steel, etc. The provisional directors include J. W. Smith, G. B. Greene, jr., and C. J. R. Bethune, Ottawa.

The Monterey Waterworks & Sewer Co., Toronto, have been incorporated with a cap-

ital of \$2,000,000, to construct systems of waterworks, drainage, sewerage, etc. The provisional directors include J. S. Lovell, W. Bain and E. W. McNeill, Toronto.

The Standard Bolt & Screw Co., Toronto, will erect a factory.

Messrs. J. Radigan & Co., Hamilton, Ont., tinware manufacturers, will erect a new factory there.

The Canadian Westinghouse Co., Hamilton, Ont., have secured several important contracts recently, among which the more interesting are as follows:—One for supplying the Provincial Light, Heat & Power Co. with apparatus to be used in the development of another large water power plant near Montreal. The initial installation will consist of three 3,750 k.w., revolving field, alternating current, water wheel driven generators of 4,000 volts, three phase, 7,200 alternations; also twelve 2,500 k.w., 44,000 volts, oil, insulated, water cooled transformers. This new power station will be used for supplying additional power to the Montreal Light, Heat & Power Co. at Montreal. The step-up transformers will be wound for 4,000 to 44,000 volts, and the lowering from 40,000 to 12,500 volts. The transmission line is about 40 miles in length. Another is for the Northern Electric & Mfg. Co., Montreal, for a 300 k.w., Westinghouse-Parsons turbo generator unit, to be installed alongside of one of the same capacity now in service. The generator is a 220 volt, three phase, 7,200 alternation machine, operating at 3,600 revolutions per minute, and will be of the latest enclosed type, while the turbine will operate at 150 pounds steam pressure with 100 degrees superheat. Their present turbine is operating part of the year condensing and through the winter non-condensing, the exhaust steam being used during the winter for heating purposes. It was the splendid operation of this steam turbine generating unit which led the company to order the one about to be installed.

The Yukon Consolidated Co. have placed a contract for the following:—Three 100 h.p. 3-phase, 60 cycle, 400 volt, type F motors; three 15 h.p., 3-phase, 60 cycle, 400 volt, type F motors; three 50 h.p., 850 revolutions per minute, 3-phase, 60 cycles, 400 volt, constant speed induction motors; three 30 h.p. motors; three 20 h.p., 1,120 revolutions per minute motors; three 15 h.p. 850 revolutions per minute motors; three 7½ h.p., 1,700 revolutions per minute motors; nine 75 k.w., oil insulated, self cooling transformers; two 625 k.w., 3-phase, 60 cycle, 2,200 volts, 415 revolutions per minute, A.C. generators, and two 17 k.w., type S exciters for same; one 4 panel switchboard for controlling the above; four 250 k.w., oil insulated oil cooled transformers and four 200 k.w. transformers, same type.

The Packard Electric Co., St. Catharines, Ont., who are Canadian representatives for The Jandus Electric Co., Cleveland, Ohio, manufacturers of enclosed arc lamps, have been successful in securing the series arc lamp contract from the St. John Railway Co., St. John, N.B., consisting of 250 figure 80, series A.C., 7.5 ampere lamps, 5-50 light C.C. regulators, 5 standard 50 light switchboard panels with open circuit protectors, and 5-33 K.V.A. transformers. Mr. George C. Rough, sales manager of the company closed the contract. The Packard Co. were also successful, through their Western man-

ager, Mr. G. A. Powell, in securing a similar contract for a 200 light equipment from the city of Winnipeg, Man.

The McGregor Eanwell Fence Co., Walkerville, Ont., have been awarded the contract to supply the Canadian Pacific Railway Co. with the fencing required this year.

A public library will be erected at Perth, Ont., at a cost of about \$10,000.

The premises of Messrs. J. M. Lowes Co., Toronto, were damaged by fire recently. Loss about \$6,000.

The station of the Canadian Pacific Railway Co., Orangeville, Ont., was destroyed by fire May 3. Loss about \$2,000.

The Public school, Cainsville, Ont., was destroyed by fire May 7. Loss about \$1,200.

A new station will be erected at London, Ont., by the Grand Trunk Railway Co. at a cost of about \$1,250,000.

The Cockshutt Plow Co., Brantford, Ont., will erect an addition to their factory.

A company will be formed at Brantford, Ont., for the manufacture of sand-lime brick. W. D. Schultz, Brantford, has been appointed manager. The building and machinery will cost about \$40,000.

The Canada Carriage Co., Brockville, Ont., will erect an addition to their plant at a cost of about \$20,000.

The premises of the Queen City Plate Glass & Mirror Co., Toronto, were damaged by fire May 5.

A new company will be formed at Toronto, for the manufacture of white lead. Geo. E. Kingsley, Toronto, is interested.

A large smelter and refinery will be erected at Cobalt, Ont., at a cost of about \$600,000. The projectors are represented by E. J. H. Pauley, Toronto.

The Eagle Spinning Co., Hamilton, Ont., will erect a new factory, 139x103 feet.

The ratepayers of Fort William, Ont., will vote on a by-law authorizing the Canadian Iron & Foundry Co., Montreal, to erect a plant at a cost of about \$125,000 there.

The Hudson Bay Extended, Toronto, have been incorporated with a capital of \$50,000, to carry on a mining, milling and reduction business. The provisional directors include J. W. McDonald, A. E. J. Blackman and T. L. Brown, Toronto.

The Rapid Tool Co., Peterborough, Ont., have been incorporated with a capital of \$40,000, to manufacture tools, hardware, etc. The provisional directors include W. Quinn, W. Duncan and W. S. Davidson, Toronto.

The furniture factory of Messrs. J. A. Cline Co., Stratford, Ont., was damaged by fire May 4. Loss about \$2,000.

The jam factory of E. D. Smith, Winona, Ont., will be removed to Beamsville, Ont., where a factory 200x58 feet will be erected.

The Riley-Ramsay Co., Port Arthur, Ont., have been incorporated with a capital of \$40,000, to manufacture goods, wares, merchandise, etc. The provisional directors include R. S. Ramsay, W. P. Riley and H. Keefer, Port Arthur, Ont.

The Roofers' Supply Co., Toronto, have been incorporated with a capital of \$200,000, to manufacture roofers' supplies, etc. The provisional directors include A. Dods, T. B. Rennie and H. Williams, Toronto.

The McKinley-Darragh-Savage Mines of Cobalt, Toronto, have been incorporated with a capital of \$2,500,000, to carry on a mining, milling and reduction business. The provisional directors include G. W. Spence, A. M. Duncan and A. A. Rogers, Toronto.

The Cobalt & Hudson Bay Development Co., Haileybury, Ont., have been incorporated with a capital of \$100,000, to carry on a exploring, prospecting and developing business. The provisional directors include J. E. Day, J. M. Ferguson and J. J. O'Sullivan, Toronto.

Messrs. Rutledge & Jackson, Fort William, Ont., have been incorporated with a capital of \$100,000, to manufacture goods, wares, merchandise, etc. The provisional directors include C. H. Jackson, A. E. Rutledge, Fort William, and H. T. Jackson, Port Arthur, Ont.

The Cobalt Chartered Co., Haileybury, Ont., have been incorporated with a capital of \$350,000, to carry on a mining, milling and reduction business. The provisional directors include F. Law, E. E. Belcourt, Montreal, and J. N. Rattey, Ottawa.

The Dominion Linen Mfg. Co., Toronto, have been incorporated with a capital of \$200,000, to manufacture linen, etc. The provisional directors include G. B. Strathy, J. W. Bain and A. Bicknell, Toronto.

The Carbolite Carbolineum Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture carbolineum, wood preservatives, etc. The provisional directors include C. W. Laker, G. H. Kilmer and W. H. Irving, Toronto.

The Windsor Dredging Co., Windsor, Ont., have been incorporated with a capital of \$40,000, to manufacture dredges, tugs, boats, etc. The provisional directors include A. Peitler, W. J. McKee and H. W. Allan, Windsor, Ont.

The Amalgamated Petroleum Producers, Belleville, Ont., have been incorporated with a capital of \$40,000, to manufacture gas, petroleum, etc. The provisional directors include C. Brown, London, Ont., D.C. Ross, Strathroy, Ont., and W. N. Ponton, Belleville, Ont.

The J. W. Young Co., Toronto, have been incorporated with a capital of \$100,000, to carry on an oil refining and reduction business. The provisional directors include J. W. Young, G. A. Young, Toronto, and T. Maloney, Ottawa.

The Mining & Lands Development Co., Toronto, have been incorporated with a capital of \$40,000, to carry on a mining, milling and reduction business. The provisional directors include W. A. Preston, Fort Frances, Ont., J. C. McLachlan and W. T. Martin, Toronto.

Messrs. G. Duthie & Sons, Toronto, have been incorporated with a capital of \$40,000, to manufacture sheet metal, roofers' and builders' supplies, etc. The provisional directors include G. Duthie, J. B. Duthie and R. R. Duthie, Toronto.

The steamers "Bermudian," "Trinidad," and "Panama," of the Quebec Steamship Co., are to be ventilated by special Sturtevant fans driven by direct-connected engines furnished by the B. F. Sturtevant Co., Boston, Mass.

The Montreal Reduction & Smelting Co. of Canada, Montreal, have been incorporated

with a capital of \$2,000,000, to carry on a mining, milling and reduction business. The charter members include J. B. Emile, B. Burland and L. J. Cartier, Montreal.

Messrs. Walter Blue & Co., Sherbrooke, Que., have been incorporated with a capital of \$250,000, to manufacture clothing, merchandise, etc. The charter members include J. Blue, St. Francis, Que., A. W. Blue and J. S. Mitchell, Sherbrooke, Que.

E. M. Renouf, Limited, Montreal, have been incorporated with a capital of \$50,000, to carry on a printing and publishing business. The charter members include E. M. Renouf, J. G. Oliver and T. L. H. Saunderson, Montreal.

Messrs. Jenkins Bros., Montreal, have been incorporated with a capital of \$200,000, to manufacture lubricators, injectors, machinery, etc. The charter members include A. B. Jenkins, West Orange, N.J., A. E. Brady, Brooklyn, N.Y., and W. R. Stavert, Montreal.

The Montreal Rolling Mills Co., Montreal, will erect a storehouse at a cost of about \$60,000.

The Toilet Supply Co., Montreal, will erect a building at a cost of about \$40,000.

Messrs. Mark Fisher, Sons & Co., Montreal, are erecting a ten story warehouse there.

Messrs. D. C. Brosseau & Cie., Montreal, have been incorporated with a capital of \$190,000, to manufacture tobaccos, spices, pickles, etc. The charter members include D. C. Brosseau, C. Beauvais, and L. G. Jarret, Montreal.

The Regina Shoe Co., Montreal, have been incorporated with a capital of \$49,900, to manufacture boots, shoes, leather, etc. The charter members include H. Martineau, R. LaSalle and S. Parker, Montreal.

The Standard Paint Co., of Canada, Montreal, have been incorporated with a capital of \$150,000, to manufacture paints, varnishes, paper, etc. The charter members include D. W. Lockerby, A. R. Oughtred and E. G. Place, Montreal.

The Montreal Light, Heat & Power Co., Montreal, will erect a power house at Soulanges, Que., at a cost of about \$1,000,000.

The Natural History Society, Montreal, will erect a new museum.

The Hotel Regina, St. Anne de Beaupre, Que., was destroyed by fire May 10. Loss about \$25,000.

The grist and planing mills of P. Leblanc, Napierville, Que., were destroyed by fire May 13. Loss about \$4,000.

The dry goods store of Messrs. Ethier & Co., Montreal, was destroyed by fire May 9. Loss about \$40,000.

The American Locomotive & Machine Co. will erect an addition to their works at Longue Point, Que., at a cost of about \$1,000,000.

The Nova Scotia Land Co., Halifax, N.S., have been incorporated with a capital of \$200,000, to carry on a constructing business, etc. The provisional directors include R. V. Sinclair, W. H. Middleton and C. T. Moffat, Ottawa, Ont.

The Camaguay Tramway Co., Halifax, N.S., have been incorporated with a capital of \$200,000, to manufacture tramways, carriages, automobiles, etc. The provisional directors include A. F. May, A. Macfarlane and C. T. Moffat, Ottawa.

The Stanfields, Limited, Truro, N.S., have been incorporated with a capital of \$750,000, to manufacture yarn, underwear, etc. The provisional directors include J. Stanfield, F. Stanfield and G. L. Fisher, Truro, N.S.

The Camaguay Electric Co., Halifax, N.S., have been incorporated with a capital of \$350,000, to carry on the business of an electric light, heat and power company. The provisional directors include R. V. Sinclair, A. F. May and C. T. Moffat, Ottawa.

Messrs. L. Higgins & Co., Moncton, N.B., will erect a shoe factory at Yarmouth, N.S.

The Logan Tanning Co., Pictou, N.S., are improving the steam plant at their tannery at that place, and will install a 150 h.p. Robb-Armstrong Corliss engine.

Halifax business men have shown their enterprise in a three days' tour of Nova Scotia, calling at the important towns and meeting the representative business men in each. There were sixty in the party.

The McDonald, Dure Lumber Co., Winnipeg, Man., have been incorporated with a capital of \$100,000, to manufacture lumber, timber, etc. The provisional directors include C. Dure, Winnipeg, Man., J. A. McDonald and A. D. Stephens, Crookston, Minn.

Messrs. Merrick, Anderson Co., Winnipeg, Man., have been incorporated with a capital of \$500,000, to carry on the business of manufacturers' agents, brokers, etc. The provisional directors include G. A. Merrick, T. A. Anderson and G. Smart, Winnipeg, Man.

The Western Banner Pub. Co., Winnipeg, Man., have been incorporated with a capital of \$5,000, to carry on a printing and publishing business. The provisional directors include R. A. C. Manning, T. J. Noble and D. Wesley Griffith, Winnipeg, Man.

The Dominion Radiator Co., Toronto, intend to open a branch warehouse at Winnipeg, Man.

Messrs. Beattie & Co., Swan River, Man., will erect an office building at that place.

The Meisell Mfg. Co., Port Huron, Mich., will erect an establishment at Winnipeg, Man., for the manufacture of flour milling machinery.

The Grand Trunk Pacific Railway Co. will lay out extensive yards at Portage la Prairie, Man.

The Pacific Coal Co., Bankhead, Alta., have ordered two 150 h.p. boilers from the Robb Engineering Co., Amherst, N.S.

The Winnipeg Paint & Glass Co., Winnipeg, Man., will erect a warehouse at Calgary, Alta.

The Western Hardware Co., Regina, Assa., will erect a warehouse, 80x40 feet, at a cost of about \$6,000.

A waterworks system will be installed at Indian Head, Assa.

Plans are being prepared for the installation of a waterworks system at Edmonton, Alta., to cost about \$115,000.

The Farmers Elevator Co., Manor, Sask., will erect an elevator with a capacity of 36,000 bushels at that place.

A new government building will be erected at Edmonton, Alta., at a cost of about \$400,000.

The Canadian Pacific Railway Co.'s new lake steamer, *Kuskanook*, was launched a few days ago at Nelson, B.C.

The British Columbia Copper Co., Greenwood, B.C., will erect an addition to their plant at that place.

The owners of the Centre Star mine, Rossland, B.C., have purchased from the Canadian Westinghouse Co., Hamilton, Ont., a 650 h.p. type CCL induction motor, 180 r.p.m., 2,000 volts, 3-phase, 7,200 alternations including switchboard and lightning arresters.

The Kootenay Engineering Works, Nelson, B.C., have been awarded the contract for the construction of an aerial tramway about 6,000 feet in length for the Salmo section of the Nelson mining division.

T. A. Fee, Vancouver, B.C., will erect a ten story business block at that place.

It is stated that valuable deposits of marble have been discovered at Chilliwack, B.C.

The premises of the Kelowna Sawmill Co., Kelowna, B.C., were destroyed by fire recently.

According to a Hamilton, Ont., despatch lately published in the *Toronto Globe*, "arrangements have been completed for the location in the Hoepfner Refining Co.'s buildings at Hamilton of the first silver refinery in Canada." Hamilton is a little astray on this point. The first lead, silver and gold refining on a commercial scale in Canada was done at the Canadian Smelting Works, Trail, British Columbia, at which works the first refined lead was produced in January, 1892, the silver refinery at Trail was built in 1903, and the first consignment of refined silver and refined gold was shipped from Trail in October of that year. Doubtless a silver refinery at Hamilton would find plenty of material in Cobalt ores for the extraction and refining of silver, but whether it be established soon or late, the credit and distinction of having established and maintained in operation the first silver refinery in Canada must remain with British Columbia, in which province the Canadian Smelting Works is producing an average of about \$15,000 worth (gross value) of metal daily, of which \$4,000 is silver, representing a production of that metal alone at the rate of nearly \$1,500,000 per year, with a prospect of a larger production following an increase of the capacity of the refinery now contemplated.—B.C. Mining Record.

The West Kootenay Power & Light Co., Bonnington Falls, B.C., have purchased a 6x4 and 8x6 centrifugal pump from the Canada Foundry Co., Toronto.

The Canadian Smelting Works, Trail, B.C., are installing three oil-insulated Westinghouse transformers, each having a capacity of 1,250 k.w.; also one Waldwin-Westinghouse electric locomotive, class 4-2-8-C., 500 volts.

The Canadian Westinghouse Co., Hamilton, Ont., have contracted with the Canadian Rand Drill Co., Sherbrooke, Que., for one 200 h.p. type CCL induction motor, 3-phase, 2,000 volts, 7,200 alternations, to be used in connection with the new air compressor the Canadian Rand Drill Co. are supplying to the British Columbia Copper Co., Greenwood, B.C.

The Dominion Copper Co., Greenwood, B.C., have ordered from the Canadian West-

inghouse Co., Hamilton, Ont., two 100 h.p. CCL motors, 2,000 volts.

FINANCIAL.

The Sterling Bank of Canada has opened a branch at Uxbridge, Ont.

Messrs. W. F. Haskins & Co., private bankers, Dunnville, Ont., have given up business.

The Sovereign Bank has opened a branch at Essex, Ont.

The Bank of Toronto has opened branches at Merritton, Ont., and at Lynden, Ont.

The Home Bank of Canada has opened three new branches in Ontario, at St. Thomas, Brownsville, and Shedden, Ont.

The Northern Bank has opened a branch at Binscarth, Man.

The Union Bank of Canada has opened a branch at Roblin, Man.

The Sterling Bank of Canada has opened a branch at Cookstown, Ont.

The Northern Bank of Winnipeg is opening a branch at Victoria, B.C.

The Bank of Montreal will erect a building at Lake Megantic, Que.

The Metropolitan Bank, the Sterling Bank and the Merchants' Bank are erecting branches in Parkdale, Toronto.

The Imperial Bank of Canada is opening a branch in Quebec City.

The Traders' Bank of Canada have opened at Edmonton, Alta.

The Traders Bank of Canada have opened a branch at Brownsville, Ont.

PUBLICATIONS.

The publishers of *The Canadian Manufacturer* solicit in advance, if possible, catalogues, circulars, and other industrial publications issued by manufacturers. We wish to review such literature, and bring the principal points to the attention of our readers.

The Bristol Co., Waterbury, Conn., have sent us their Bulletin No. 39 having reference to the steel belt lacing made by them. This lacing is described as being a perfect fastening for all kinds of belts, possessing maximum strength with a minimum amount of material. The bulletin enumerates some of the points of excellence possessed by this neat and simple appliance as follows:—Made of toughest cold rolled steel; three styles; over one hundred sizes; adapted to all styles and sizes of belts; makes smooth and elastic joints; quickly and easily applied; requires no special tools; noiseless in operation; runs smoothly, even on small pulleys; greatest strength with least material; is flexible; joint conforms to crowning of pulley; saves time; saves belts; saves money; mechanically perfect. The wedge-shaped points of these fasteners when driven through the belt force the fibres aside without cutting them, hence the ends of the belt are not weakened, as when holes are punched. Made in more than 100 sizes. Packed 100 inches in a box, assorted lengths, unless otherwise specified. (This means each box contains sufficient to lace 100 inches in

width of belt). When writing for samples, specify kind of belt, its width and thickness.

The Copeland-Chatterton Co., Limited, Toronto, have issued a dainty little booklet entitled "Business Epigrams." This consists of a collection of epigrams in crisp language and some few epigrams employed by the company to advertise their business. It is well illustrated by drawings which emphasize the vital points of each argument in a way that could not otherwise be done. A copy of this will be sent to any accountant or business man on request.

The Smart-Turner Machine Co., Hamilton, Ont., are sending out their catalogue No. 8, which is devoted to their steam and power pumps. In this only the standard pumps made by the firm are referred to and it has been condensed in every possible way, yet the information given should be sufficient to acquaint the reader with the wide range of standard pumps made by the Smart-Turner Co. Copies of this booklet will be sent on request, also full information regarding special pumps.

PERSONALS.

The annual meeting of the Canadian Institute, Toronto, was held May 5, when the following officers were elected:—President, Dr. Kennedy; curator, C. Armstrong; councillors, Messrs. A. P. Coleman, A. W. Brouse, W. H. Ellis, B. E. Walker, W. T. Drummond and J. Maughan.

Mr. Wm. Clegg, jr., who has been special agent of the Westinghouse Electric & Mfg. Co., in their St. Louis territory, has just received the appointment of acting manager of the St. Louis office. Mr. D. E. Webster, formerly manager of the office, has been transferred to a position in the Chicago sales office of the company. Mr. J. S. Tritel has been appointed acting manager of the new district office opened by the Westinghouse Co., in Kansas City, Mo. Mr. Tritel was formerly connected with the St. Louis office.

Messrs. Dodge & Day, engineers, Philadelphia, Pa., have been commissioned by the Kerr-Murray Mfg. Co., Fort Wayne, Ind., manufacturers of gas works machinery and gas holders, to design, erect and equip a new plant. The present factory is much too small for the requirements of their business and the Kerr-Murray Co. have secured a plot of 30 acres close to Fort Wayne. Preliminary work is about completed, and construction work will be started at once.

The delegates of the Ottawa Board of Trade to the Congress of Chambers of Commerce of the Empire, which meets in London, England, July 10 to 13, are:—Sir Sandford Fleming, N. A. Belcourt, M.P., Wm. Northwood, George F. Henderson, Peter Whelan, John Coates and George Kydd. All have signified their intention of attending.

The corner stone of the United Engineering Building, in New York City, which is to house the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, the American Institute of Mining Engineers and other societies of similar character, was laid on Tuesday, May 8, by Mrs. Andrew Carnegie.

Those elected to the Council of the Canadian Institute, Toronto, for 1906-07 are:— President, Mr. R. F. Stupart, first vice-president, Dr. J. J. Mackenzie; second vice-president, Dr. J. Galbraith; secretary, Mr. S. Dillon-Mills; treasurer, Mr. Wm. Scott; librarian, Dr. A. B. McCallum; editor, D. G. Kennedy; curator, Mr. C. Armstrong; councillors, Dr. A. P. Coleman, Mr. W. H. Brouse, Dr. D. H. Ellis, Mr. Thos. Maughan, Mr. B. E. Walker, Dr. A. T. Drummond.

The Ontario Gazette contains the announcement of the appointment of Mr. T. W. Gibson, Director of the Bureau of Mines, as Deputy Minister of Mines, and of the change in Mr. Aubrey White's title from Deputy Minister of Lands and Mines to Deputy Minister of Lands and Forests. These changes were arranged for in the Act passed this session. Hon. Frank Cochrane will hereafter be known as Minister of Lands, Forests and Mines.

The Dominion Belting Co., Montreal, have moved from the Merchants Bank Building to 72 St. Antoine St., where they intend carrying an assortment of belting for the benefit of the trade.

Sergeant-Major Nutter, of W. H. C. Mussen & Co., Montreal, had the honor of commanding the mounted escort on the occasion of Prince Arthur's visit to Montreal.

F. Johnston, manager of J. C. McLaren Belting Co., left Saturday on a trip of several weeks to visit the firm's different agencies between Montreal and Winnipeg, and to establish a branch office in the latter place.

MINERAL PRODUCTION OF CANADA.

The statistics of the mineral production of Canada for 1905, compiled by Mr. E. D. Inghall, with the assistance of Mr. J. McLeish, which forms a part of the Summary Report of the Geological Survey, has just appeared. Increased production is the dominant feature of the report. The value of the total mineral production for the year amounts to \$68,574,707, against \$60,343,165 for the year previous, an increase of about 14 per cent. The increase applies to all products except petroleum, natural cement, and gold from the Yukon. In the last named case there has been a falling off in the output of placer gold amounting to more than \$2,000,000, the decline being attributable to lack of mining facilities for working at depths and not to exhaustion of the ore deposits.

The following are the percentage ratios of the principal minerals:

Coal	25.77	per cent.
Gold	21.14	"
Nickel	11.02	"
Copper	10.83	"
Asbestos	2.19	"
Petroleum	1.24	"
Brick, Stone and Lime	8.62	"
Silver	5.26	"
Lead	3.84	"
Cement	2.81	"
Pig Iron from Canadian Ores	1.53	"

All the coal mining districts show an increase, the aggregate of the whole being about \$1,000,000, or 6 per cent. Approximately 60 per cent. of the coal mined in Canada comes from Nova Scotia, 20 per cent. from British Columbia, 20 per cent. from Alberta, Saskatchewan and the Yukon Territory. It has

the largest output, according to value, of any single mineral mined in Canada, and added to the metals, makes up 80 per cent. of the total production.

The output of silver has increased \$1,558,862, or more than 50 per cent. over the previous year. This is due to the large development of silver mining at Cobalt. The extraordinary richness of the cobalt ore, and the comparatively small amount of development necessary, as well as the low cost of mining are important features of this mining camp. Carloads of ore, reported at from \$60,000, to \$100,000, in value, have not been unusual, says the report.

The newly discovered deposits at Windy Arm, Lake Tagish, on the boundary between British Columbia and the Yukon Territory, give promise of a further increase in the supply of silver during the present year.

The total amount of pig iron manufactured in Canada during 1905 was 527,932 tons, valued at \$6,492,972, as compared with 303,454 tons, valued at \$3,582,001, in 1904. Of this amount less than one sixth is yet made from Canadian ores. However, 116,779 tons of iron ore was exported from Canada during the year. The government bounty paid for pig manufactured from Canadian ores in 1905 amounted to \$1,900,206.

Aided by bounties to the amount of \$334,224, the output of lead increased during 1905 by nearly 50 per cent. or more than a million dollars. Over 90 per cent. of this output has been exported to foreign countries. The lead refinery, established two years ago at Trail, and the Corroding Works recently begun by the Carter White Lead Co. at Montreal, will however, eventually lead to the manufacturing in Canada of nearly three-fourths of the amount at present produced.

The nickel production of the year amounted to 13,876,315 pounds, valued at \$7,550,526, as compared with 10,547,883 pounds, value \$4,219,153, in 1904. Some of the ores from the Cobalt district contained nickel varying in amount from 4 per cent. to 7 per cent., but these have not yet been smelted and hence are not included in this output.

The copper production of Canada has increased during the past year by more than four and a half million pounds. This with the increased price of that metal, has given an increase in value of more than \$2,000,000. The copper production has increased in each of the provinces in which copper mining is carried on, namely, British Columbia, Ontario and Quebec. The output of the mines of the Boundary District alone is estimated to have increased by \$1,000,000 during the past year.

Concerning zinc, the report says:—The zinc ores of British Columbia, which were formerly regarded as merely detrimental constituents of the combined lead and zinc sulphuret ores of the province, have for some time been the subject of great interest on account of the demand which has recently arisen for ores of this metal. Already attention has been turned toward utilizing the zinc blende associated with the argentiferous galena of the various camps in East and West Kootenay. Mill practice has been altered at some of the mines already operating so as to give a satisfactory separate zinc product, and attention is also being turned toward the opening up of various claims where the large proportion of blende present has formerly debarred profitable work. The Daily News, of Nelson, B.C., estimates a production for the

province of over 13,000 tons with an average content of 42 per cent. of this metal.

The recently erected smelter at Frank in Southern Alberta, owned by the Canadian Metal Co., will insure the utilization of much of the ore in the country. The production of zinc ores in this province is likely to increase very largely in the future should the active demand continue, as their existence in quantity is already known at very many places.

The whole question of supply and utilization of those ores is now under investigation by a commission instituted by the Federal government. The natural rock cement production has declined markedly during the past year, while that of Portland cement has greatly increased. There is now manufactured about 1,346,548 barrels, but 718,275 barrels are yet imported. The present value in Portland cement is about \$1.30 per barrel. There are nine factories operating in Ontario, two in Quebec, one in Nova Scotia, and one in British Columbia. The list of exports indicate that there are expected from Canada, in the raw state, over \$5,000,000 worth of copper, \$1,386,115 worth of asbestos and \$2,777,218 worth of silver in the ore.

ELECTRIC INDUSTRIES ARE NOT PRO-METRIC.

The campaign of the metric system advocates, as at present conducted in America in connection with the iniquitous Littauer compulsory Metric Bill is, in many respects, one of perversion of facts. One instance of many is afforded by the wider impression which it is sought to create that the several electric industries are pro-metric. So insistently has this statement been made that many otherwise well-informed persons have blindly accepted it as fact, when really it has been hitherto comparatively harmless fiction. But it is time that the truth be told and hammered home. None of the representative builders of electric machinery in either Great Britain or America use the metric system in their shops. Generators, and motors and all the manifold details connected with electric plant equipment are built on the English system of units. The workshop of the electric manufacturer, like the shop of the machine tool builder, or of the boiler maker, the shipbuilder or the railway, works with the foot rule, not the metric scale. As one of the largest electrical instrument makers puts it, "to use the metric system in our mechanical work, would involve us in almost inextricable confusion and annoyance." If it pleases the pure scientist and the laboratory worker to avail themselves of the foreign system, there is none to hinder them; but it is foolishness to accept them as exponents of the manufacturing end, where the problem is to turn out machinery that will do work and make money.

In the case of one single firm, in England, by the way, who tried the metric system, it is said that during the first year of its introduction they swore by it; in the years following they swore at it. And this latter would be done by every producer of things into the making of which measurements enter; and not only by the producer, by the user too, whose repair parts for many more years to come than can now be safely guessed at, would be things of nerve-racking confusion.—From Cassier's Magazine for May.

PINTSCH SUCTION GAS PLANTS.

No development in science or engineering in recent years has been more interesting or more full of import to manufacturers than the evolution of the gas engine and of the suction gas plant. While the latter has not been brought to the point of perfection in Canada, which is true of the products of British and German makers, the recognition of their economy and servability have been so general that there is already a considerable demand for both the gas plants and the engines.

Those familiar with the evolution of suction gas plants have long been familiar with the name of Julius Pintsch, Berlin. This firm have already installed in various parts of the globe plants furnishing all the way from 4 to 2,000 h.p., using as fuel coke, anthracite and bituminous coal.

To the lay mind the presumption is natural that the use of producer gas plants and gas engines in the one plant entails complicated equipment which only an expert can keep in greatest efficiency. A close examination of such a plant, however, would readily disabuse one of this fear. As the construction is simple and as no loss or leakage of gas is possible in the Pintsch suction gas plant the attendance necessary is of the cheapest, simplest kind.

A suction gas plant consists of a producer, an evaporator, a seal and cleaning pot, a scrubber, a purifier and a governor.

The producer is a wrought iron cylinder, furnished with firebrick lining and non-conducting filling.

The suction action of the gas engine piston, drawing a mixture of air and steam through the fire, keeps it in a state of incandescence and generates a producer-gas of the desired calorific value, about 140 B.T.U. The amount of gas produced is always sufficient but never more than the gas engine requires for its work.

The producer is provided with a special charging hopper through which the fuel is fed when the apparatus is working, without any gas escaping.

Clinkers and ashes are removed from the producer while in operation, in consequence of the suction action of the gas engine piston. This is not possible with power-gas plants working under pressure.

The gas leaving the producer passes through the evaporator, where a portion of its heat is given up to the water, producing the necessary steam which, led under the grate, cools the same, and, mixed with air, passes up through the fire, producing a power gas. From the evaporator the gas passes through the seal and cleaning pot and scrubber in which it is cooled and where the main portion of dust is separated out.

The gas next enters a purifier where the remaining matter is extracted.

The gas leaving the purifier being clean and free from dust, an uninterrupted working of the engine over a long period is ensured, and the engine does not require cleaning until after several month's working.

The gas leaving the purifier is regulated by the patent governor, without this it is not possible to secure a proper generation of a

gas of uniform composition in a suction gas producer for running two or more engines at the same time from one producer.

Air from outside the building only is supplied to the producer during the working.

Anthracite is generally used in plants up to 80 b.h.p. Over 80 b.h.p. coke is preferable. Coke or bituminous coal is used for plants over 150 b.h.p.

The efficiency of such generators is not less than 80 per cent., the purity of the gas is excellent, the valves of the engine show no deposit, and can be left without cleaning for several months. The cleaning of the fire bars is done while working.

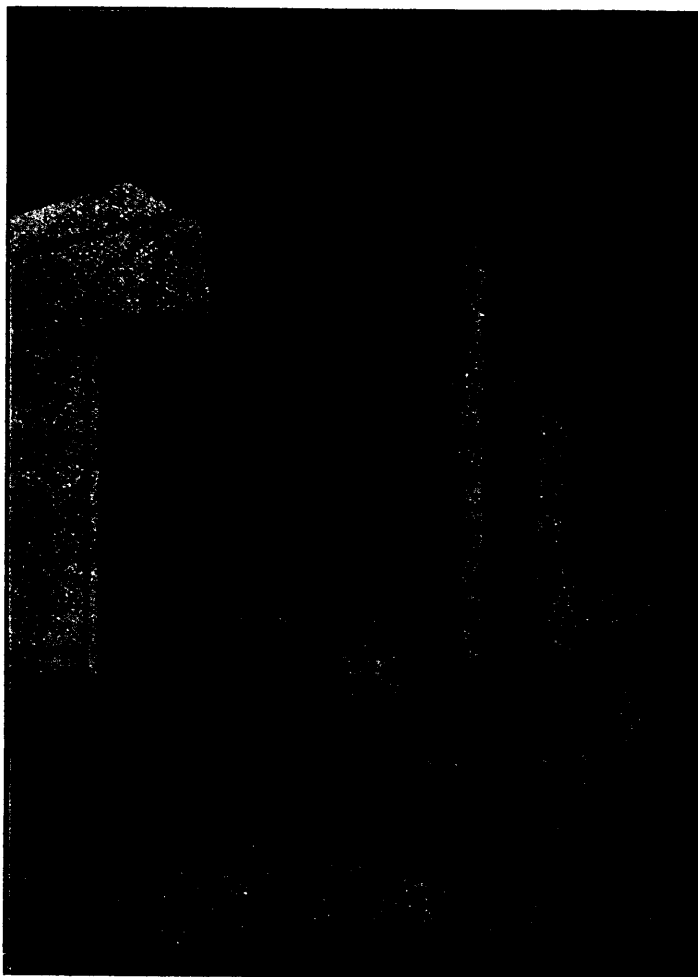
The Economic Power, Light & Heat Supply

on premises on which the Pintsch gas plants are installed. Gas engines can be used where no gas companies exist, yet, as no gas holder is required, the space occupied is small.

Small plants can be installed to great advantage. At the same time several manufacturers could unite in installing a producer and run separate engines from it.

Thousands of installations with a total capacity of about 150,000 b.h.p. have been constructed and all of these are working satisfactorily. The Pintsch suction gas is eminently adapted for gas engines on account of its smokeless combustion, while the valves and cylinders of gas engines remain cleaner with Pintsch suction than with coal gas. The construction of the gas engines used for the Pintsch system is the same as for coal gas.

The Pintsch suction gas plants are to be



A Pintsch installation.

Co., Limited, 40 York Street, Toronto, the sole licensees of Julius Pintsch, Berlin, guarantee the fuel consumption not to exceed one pound anthracite or one and a quarter pounds coke, or one and a half pounds bituminous coal per b.h.p. per hour. They point out in connection with their machine the following advantages: that as it makes no noise or smoke and that as no boiler is required installations could be made within any factory or even under a dwelling house. The fact that there is no danger from fire or explosion is attested by the fact that the insurance companies make no increase in rates

made in Canada. The engineer of the Pintsch company in Berlin is to visit Canada in June to direct the construction of the manufacturing plant and to bring over six sample suction plants of various sizes.

The Economic Power, Light & Heat Supply Co. will give personal attention to the erection of plants, thus insuring their correct installation. This firm would like readers of THE CANADIAN MANUFACTURER to correspond with them regarding plants of any size. This firm are also the Canadian agents for the National Gas Engine Co., of England, whose engines will be described in a later issue.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Canada as an Office Appliance Market.

By WALTER F. MULLEN, OF THE L. E. WATERMAN CO., NEW YORK.

At the present time almost every one of the trade papers, and particularly the publications devoted to the interests of office appliances and business systems, are running articles on "Export Trade"—all of them interesting and by well known authorities; but unfortunately none of these contributions seem to deal to any extent with the enormous possibilities that exist in Canada, and certainly the Dominion is a land of such possibilities as are undreamed of by even Canadians themselves.

Some few American manufacturers are doing business in Canada in a businesslike way, but they are the exception rather than the rule. The knowledge that there is a duty to contend with, and, in certain provinces, a commercial travellers' tax to be paid, seems to deter others from giving more than a cursory consideration to that country.

This is very wrong and there can be no greater mistake. Canada as a field cannot be excelled. An idea of the opportunities that exist there for the sale of American goods may be gathered from the fact that within the past few years, almost 250,000 people have gone into Canada from this country alone. Over \$100,000,000 American capital were invested there last year, and the indications are that it will go greatly over that amount this year.

Branch factories of such concerns as Armour & Co., the International Harvester Co., the Westinghouse Co., and the Singer Sewing Machine Co., and the big cereal companies have been established there, and the people of that great and growing country are hungry for the latest and best in office appliances. Canada on a per capita basis, is the richest country in the world.

ITS PHENOMENAL GROWTH.

Do not make the mistake of thinking that the building of a business in Canada is not worth while, because, although the population is only about 6,000,000 as compared with perhaps 85,000,000 in this country, and the total volume of trade here is vastly larger than it is there, it should be known that the development of the Dominion has been much greater, proportionately, than the United States.

Without going into lengthy statistics, it might be stated that the per capita increase of the foreign trade of both countries shows a balance decidedly in Canada's favor. The growth in 105 years is \$79.87 per head for Canada, as compared with \$1.20 per head in the United States. It seems almost incredible, but it is so, and nothing is surer than the fact that Canada has only within the last few years started in on her real era of prosperity, and this century will be Canada's century.

Her relative percentage of growth of trade in the last seven years has been 107 per cent., as compared with 47 per cent. in the United States, 38 per cent. in Germany, 25 per cent. in Great Britain and 21 per cent. in France.

Her volume of trade has doubled in eight short years.

Perhaps the most startling revelation to salesmen of high priced typewriters or adding machines is the statement that at the present time Canada, per head of population, is the richest country in the world. According to

the latest statistics the wealth of Canada figures at about \$1,200 per head, as compared with \$1,050 in England and \$875 in the United States.

The quest of business in Canada is not attended by any of the many disadvantages of distant export trade. The people are the same, the language is the same and no special method of packing or crating is necessary. It is as easy as doing business here, only you must start right.

THE RIGHT START.

A few of the concerns in the stationery and office supply world have gone into Canada in the right way. They have opened branches there and they are doing business on the ground.

The Globe-Wernicke Co., of Cincinnati, for instance, first had Canadian representatives; later they organized a Canadian company and now they manufacture in Canada.

The Yawman & Erbe Co., or Office Specialty Co., as it is known there, have at Newmarket, Ont., a plant that rivals the one at Rochester, New York.

The Denison Mfg. Co., of New York, have representatives constantly on the ground with headquarters in the territory.

The L. E. Waterman Co., of New York, manufacturers of Waterman's Ideal Fountain Pen, have become the L. E. Waterman Co., of Canada, Limited.

Many other large concerns might be mentioned but these are sufficiently well known to the trade to show that the most progressive concerns consider the field fertile enough to locate there at considerable initial expense.

It is obvious, however, that this is not possible for all who have a line of goods to sell, but it shows that careful consideration has been given to the Canadian field by these concerns, with the result that they can see it coming and they will be there when the bell rings. It also goes to illustrate the fact that the manufacturer or jobber who tries for a permanent and growing business in Canada cannot hope to accomplish it successfully by sending a travelling salesman over there once or twice a year, and then entrusting the shipment of goods sold by that salesman to a shipping and billing department that will, by its unfamiliarity with the requirements of Canadian trade, in the matter of triplicate invoicing, etc., only irritate the dealer to whom the goods are sold. Therefore, make some little special study of the conditions, give it your personal attention for a while or give it to somebody who will take an interest in it and then watch for results.

THE CANADIAN TARIFF.

Here is where you want to post yourself thoroughly. If similar goods to yours are manufactured in Canada, don't quote an "export" price that is lower than your lowest price in the country; if you do the goods will cost your customers more than they would otherwise, because of the "Dumping Clause." The "Export Price" scheme has been overworked by some manufacturers, with the result that now the duty is assessed on not only the bona-fide American selling price, but where there is a difference shown such "difference" is added to the duty and goes

to the Government; so you might as well keep it, because your customer won't get it anyway.

Remember this, though—"the other fellow" has the tariff against him too, and it is also enforced against the product of every other country in the world. You are therefore on an equal footing with everybody else, with the small exception of a preferential rebate in favor of goods of British manufacture. This small rebate of one-third the duty assessed should easily be offset by the overnight deliveries, the lower transportation charges and the advantages of similar methods of packing, because in the main Canadian ways are our ways, in spite of all that may be said or supposed to the contrary.

LOCAL REPRESENTATION.

A thoroughly posted local representative constantly on the ground should—if he knows his business as he ought to—be able to make suggestions that would place his principals on this side of the border in a position to displace competitors who are not so represented. There are many little things about the tariff that cannot be learned on this side. Advertising matter for instance, is assessed at the rate of fifteen cents per pound. Suppose, for argument's sake, that as a manufacturer of pencils you wanted to send samples of your latest style copying pencil to a selected Canadian list; what would you do? Mail them all in separate envelopes with a circular, etc.? Try it; you'll find that all your samples will be gathered together at different ports of entry and you'll very likely have to pay fifteen cents a pound on pencil, circular, envelope and all. Possibly you may even have to pay duty on the pencil separately. Now if you knew this beforehand, you would very likely have sent these samples through in bulk (as samples at a nominal value) and had them mailed from there, perhaps at lower postage rates as is sometimes the case.

THE MISTAKE OF EXCLUSIVE CONTROL.

Don't mortgage your entire prospects of further business in Canada by giving the first dealer who asks for it the exclusive representation of your produce—Canada is not a city; it is a country, fifty thousand square miles larger than the United States and Mexico put together. No greater mistake than this could possibly be made, because if you are selling an article that appeals to the stationery trade and you turn it over to some one stationery jobber, you antagonize every jobber in the line and confine your prospects of business to the customers of the one particular concern controlling your goods.

If you turn it over to a retailer, no jobber will buy from him, no opposition retailer will, and your prospects of increased business will be confined to the consuming trade dealing with that particular retailer. Nevertheless, this is too common a mistake.

COMMERCIAL TRAVELLERS' TAX.

It seems obvious, therefore, that the best way to begin doing business in Canada with hope of permanent success would be through a Canadian resident representative, preferably located in the city of Montreal, because such residence on his part would overcome the necessity of paying the \$300 Province of Quebec Commercial Travellers' Tax and this representation in the principal city of the Dominion by a man who would not be a competitor of any other dealer would result in an acquisition of trade that would rapidly expand.

OFFICE METHODS AND APPLIANCES.

A Review of the Latest Suggestions in Office Systems and Supplies for Manufacturers.

A NEW DEPARTMENT.

With this issue we start the publication of a new department in the paper devoted to "the office" in manufacturing establishments.

Owing to the absence of any paper devoted exclusively to this line it has been impressed upon us that there is a general desire, on the part of both our readers and the manufacturers of office specialties that we should make a feature of this department of manufacturing.

It is beyond question that one of the great essentials to successful manufacturing, in view of the severe competition, is the adoption of such systems as will reduce to the minimum the cost of production, and the cost of distribution and will ensure the greatest effectiveness in both producing and selling staffs.

We intend to devote from eight to twelve pages in the second issue each month of THE CANADIAN MANUFACTURER to this department and trust that our readers will find it of great and growing value to them.

The manufacturers are the chief users of modern office specialties and as this paper through its twenty-six years of growing circulation among the manufacturers of Canada, has to-day an exceptional connection and influence with them, the paper should be an ideal one for the manufacturers of office appliances to advertise in to ensure for themselves the widest possible and the most desirable publicity in Canada.

It may be noted in this connection that the addition of this department will in no wise interfere with or lessen the attention paid to the regular editorial and news service of the paper.

THE ADDRESSING MACHINE.

A modern development which Canadian manufacturers are beginning to show some measure of appreciation of is the addressing machine.

In the course of business it is almost inevitable that the sales manager have a list of their customers or their prospective customers. With these he desires to get in touch at more or less regular intervals, possibly to send them a new catalogue, a booklet or a circular letter.

For such a purpose the common method of having the letters addressed each time by typewriter is so expensive that the purchase of a first-class addressing machine is not merely advisable but is a definite economy, a means to stop a leak and to cut down office expenses.

Moreover it prevents delays which are so frequent when one has to wait until the typewriter can find time from other duties to get a thousand or five thousand envelopes addressed.

The initial cost and the cost of operation of the different machines varies considerably as does also their suitability for various purposes. Some details regarding the machines offered on the Canadian market will be given later

BORROWING MONEY.

Never ask for a loan at your bank unless you are reasonably sure you can get the money. First establish your credit. The business man always knows to what extent he can depend on his bank and his bank knows to what extent they can depend on this self-same business man, says an exchange.

Of course, if yours is a collateral loan, then it is a different matter, and it is only a question of the value of the collateral and the banker's willingness to accommodate you. But the accommodation loan is an entirely different matter. For every dollar of their own capital the bank is probably loaning five that belong to their depositors and, you can depend on it, care and prudence is going to enter into every transaction.

Your credit must be established. This may have already been done by long acquaintance and association, particularly if you are an old depositor at the bank. The financial statement, properly verified, along with satisfactory references, is also frequently relied upon as a basis of credit. The mercantile agencies are likewise relied upon, and last, but not least, the banker will survey the application as a moral risk and exercise his own faculties for separating the wheat from the chaff.

If you are entitled to the loan, you will probably get it, but, unless you are very well known, the money will not be handed over until after you have been investigated. Prudent and conservative banks do business no other way. Your credit must be established.

SOME LITTLE DESK "TRICKS."

Sometimes the little problems in an occupation are the ones that make the most trouble—probably because they are too small to be isolated and solved as more important questions would be. The following suggestions concerning the desk-worker's tools and equipment are guaranteed to be practical solutions of some of these little troubles—they are furnished by a correspondent.

Did you ever notice the difficulty in keeping pens in order after they were mounted in holders and ready for use? Sometimes it is necessary to have pens for various purposes, fine pens and coarse pens, possibly several of each, and those for red ink. The obsolete spiral spring was never available for desk use on account of its awkwardness. A battery cell $3\frac{1}{2} \times 7$ inches on the bottom and four inches high makes a good receptacle for pens and pencils. Such a cell, divided by a long central partition and having one of these side divisions subdivided into six little compartments, stands firmly on a desk and will classify automatically pens, pencils, paper knives, steel ink erasers, and other articles which are best held in an upright position. The long division is convenient, too, for notebooks and reminders. These cells can be obtained from dealers in surgical instruments and electrical supplies.

Steel pens have another provoking ten-

dency of wearing sharp and scratchy just when you have induced them to hold a reasonable amount of ink. A manicure file with its sharp point modified to one of chisel shape is a sufficient remedy for this trouble. Chip off the caked ink and file the point a little where it looks rough. This sounds cumbersome, but it isn't.

For opening letters, cutting magazine pages and the like a palette knife is superior to a paper knife. The paper cutter rarely is made with a sensible handle and tempered blade, and is, to many people, an unsatisfactory "convenience."

Desk drawers have an irritating habit of shifting their contents to the rear and even forcing them over a back boundary and into oblivion. This can be remedied by putting in partitions at right angles to the line of the drawers' action—parallel to the front edge of the desk. Sometimes subdivisions are a convenience, but at any rate the carpenter who does the work should adapt the main divisions to the articles most frequently stored—paper of various sizes and envelopes, for instance.

Some books are used so often that the work of thumb indexing them is well invested. Among such are:—Books of rates, schedules and computations, gazetteers and atlases books of synonyms and note-books, filed and saved for reference. In indexing a book, divide the length of its pages, from top to bottom, by the number of divisions you want to make. This gives the length of each panel or indice. Now separate the pages that make the division from the other pages by a thick card-board and cut away a strip along the edge from one quarter to a half inch wide, beginning at the bottom of the page and cutting to the lower boundary of the first panel. Sever the strip here by a cross incision and the first indice is ready for lettering. The others are made in the same way, separating the leaves to be indexed, marking the panel, and cutting away the superfluous paper. The lettering on the index may be done with a pen or by pasting letters snipped from magazines on the tabs.

INVOICE AND STATEMENT SHEET.

To enable the one in charge of this work to know on what accounts bills are coming due from day to day, and see that statements issue accordingly, he should keep a recapitulation sheet on which would be entered every 10 or 15 days the ledger folios on which unpaid bills appear. This should be a plain ruled sheet with columns for 31 days, a new sheet being used for each month of the year, the ledger folios to be entered under the dates on which the bills fall due.

Of course, these folios could be copied from the sales book at the end of each month, but where bills are subject to a cash discount, it would probably require more time to ascertain what bills have not been paid at the end of the credit period.

In rendering statements under this system, it is customary where, say, three bills fall

due on consecutive dates, and the three remain unpaid when the second becomes due, to send one statement for the three charges and draft accordingly.

FACTORY ACCOUNTANCY.

Accounting in a factory or manufacturing plant is really one of the most important features of that business, and unless it is attended to and systematized in the same manner as is the running of the factory, or the handling of the selling department, it will not only prove an endless source of worry, but also a serious stumbling block in the path of regular business.

It is a lamentable fact that many factories to-day are still using what might be called obsolete methods, by the employment of armies of bound books and records, where by the introduction of the modern perpetual and unit system, an instantaneous saving of 50 per cent. in clerical service value could be effected.

Because of this loss of clerical service value, the manufacturer should pay some serious at-

tion in records which are constantly at hand for ready guidance and reference.

The system employed generally embraces a number of smaller systems which work automatically towards the final records grouped in the recapitulation sheets. These individual systems, speaking generally, would be under the following headings:—Correspondence, Order System, Shipping System, Invoice System, Internal Order System, Synoptic, Perpetual Ledger Systems and Pay Rolls.

The books are all of the perpetual loose leaf order, but embrace many unique and novel features, which tend greatly to facilitate and simplify the accountancy.

Besides this, it lightens the work of the accountant; minimizes the possibility of errors and delays, which are generally charged to him under the old system.

In conclusion it might be appropriate to quote a telling advertisement, which seems to voice a modern truism, and one that should be thoroughly digested by every manufacturer:—"The purchase of a Copeland-Chatterton System cannot be considered an unnecessary expenditure, but rather in the na-

individual who makes less parade about it. I believe this idea to be absolutely without foundation. So far as my personal observation is concerned, I have noticed that the 'busy' man is always busy, never done; his papers are invariably in confusion, only comparable with the state of his mind; he wastes half his time in looking for things he has been too 'busy' to put away properly, and makes a poor use of the other half in endeavoring to overtake arrears of work which have accumulated owing to his painful lack of method in arranging his programme. I am not blaming the man; that would not be fair; his fault is constitutional, a disease of the imagination, a chronic disorder for which there is no cure, though there are certain palliatives that give relief to the sufferers' associates.

"The type of man we are discussing is of all human beings the most self-deluded. He is conscious of supreme exertions, feels evening by evening as he drags himself homeward that the toils of the day have exhausted his last ounce of energy, and labors under the impression that it would be impossible for him to accomplish more than he does in the working hours. He never realizes the enormous waste of energy his want of method entails, never grasps the essential point that without order, without method, the greater part of man's labor is vain. The man has our sympathy, his subordinates—if any so unfortunate as to work under his instructions—our profound sympathy, and at that we might leave it but for the fact that unfortunately a great number of people judge only by what they can see. They see the mad struggling, the perpetual rush, the ceaseless toil, and worried look of the 'busy' man, and they assume that all these things are evidence of the enormous amount of work accomplished. 'Look at so-and-so,' they say; 'there's a worker for you. Always busy, never still a moment; that's the sort of man for me.' And our busy one gets promoted to positions where he is afforded further opportunities of wasting his energy and exhausting his helpers without any compensating advantages in the matter of results.

"But I should be sorry to do our 'busy' friends injustice. It must be admitted there are those among them who have so much superabundant energy that in spite of wasting a large percentage of it they are yet able to accomplish a good day's work. It would be fairer, and perhaps serve a useful purpose, to make a rough classification of our fellows, and each of us can decide for ourselves into which category we should fall.

THE IDEAL MANAGER.

"In the first place I should divide mankind into workers and loafers. These I should sub-divide. There are workers who work methodically and without fuss, steady, unobtrusive men who are never in a hurry and never late, never seem busy, and yet are never idle. They never expect impossibilities from others, have time to consider new points that arise, and usually manage to get done at a reasonable hour. Salt of the earth men they are, with whom it is a pleasure to work. How few they are!

"Then there are the ordinary workers, who do a moderate amount of work with a moderate display. They waste a good deal of time, and they are frequently a source of waste and worry in others, but we can forgive a good deal in a man who will keep close to the collar.



The C.-C. Bank Seal Ledger. Showing Mechanism.

tention at once to his office equipment, and the system of accountancy employed. He should make it his special duty to reduce as far as possible the amount of office labor, endeavoring to make that department an automatic machine possible of doing a guaranteed amount of work each day, without extra pressure being employed.

The Copeland-Chatterton Co., of Toronto, the manufacturers of Systems for Business, have already installed throughout Canada and Europe, complete outfits for the handling of manufacturing accountancy, and in every case these have proved to be eminently satisfactory.

Their systems for factories are so flexible in their application as to be fitted to every class of that business, and as has been proved they greatly facilitate the general work by reducing the number of books and entries, and automatically concentrating the results

ture of a judicious investment, designed and guaranteed to produce certain economical results."

METHOD OR MUDDLE?

In an article under the above head a writer in the Commercial Intelligence, raises a question well worthy of the attention of every business man, whether his work is in office or factory. There is no class of person who deceives himself more utterly than the man who, without study or system, rushes from one thing to another in his work, half completing each, then wasting much of his time going over his work, to finish up in a desperate rush, what might easily have been completed when first begun.

"There is an idea more widely prevalent than most people realize that the 'busy' man gets through more work than an ordinary

"Lastly there are the workers who 'work on the bit.' We have already discussed their weakness. They tire and distress everyone with whom they come in contact. Good men leave their employment and seek more congenial positions elsewhere, for they make their own lives and the lives of those under them a burden. They remind us of the high-mettled steeds that always want to pull by the bit instead of by the traces, a very showy but unnecessarily tiring method of traction.

"Now we come to the loafers. There is not much to be said of them, and they may be dismissed at once—in two senses. There are the loafers who make a pretence of working, and deceive themselves that they are really 'busy;' there are the loafers who deceive other people and make them think they are 'workers,' and there are the loafers who are too lazy to deceive anybody—open, unashamed wasters.

"Probably few of the readers of this paper are in the ranks of the loafers; but I feel sure there are some of my readers who might be classified among each of the three workers' sections. I have in my mind a young man of real ability and restless energy. If only he could see himself as others see him, and realize how much of his time and energy is wasted by want of method, I believe him capable of the greatest achievements. We can never hope for a complete cure, but he might accomplish a good deal by a rigid determination to become a master of his own thoughts.

PLAN YOUR WORK, WORK YOUR PLAN.

"Loose acting is almost invariably the direct result of loose thinking. The man who is master of his own mind, who schools himself to think clearly and consecutively on everything, who persists until he reaches a definite conclusion, and who, without being obstinately dogmatic, yet declines unnecessarily to waste his time in going back on matters that have already been settled—such a man will not have his office and desk buried deep under unanswered letters, memoranda whose meaning he has forgotten, and notes to which no mortal has a clue. He will, on the contrary, tackle each matter as it arises, matters that must be deferred will be put away in order so that they may be taken up again at the proper moment without waste of time. He will not allow work to accumulate until it is impossible to overtake the arrears, and he will not waste other persons' time through being uncertain himself as to the course he intends to adopt.

"We might leave the subject here, but perhaps a word of caution against too much method will not be out of place. I heard a story the other day—I do not know whether it is old or new—of a lady who had a picture to hang. She decided to put it directly under a gas bracket, and in order to get the exact spot for the nail, she dropped a plumb line from the bracket and got the position so exactly correct that the nail went clean through the gas pipe.

"We do not want to follow the example of the lady. There may be—there no doubt are—absurd limits to which methodical procedure may be carried. It would be a mistake to spend so much time on perfecting a system that there was none left to work it, but there is a great deal more danger from the neglect of method altogether."

A CONVENIENT DEED BOX.

An ingenious yet simple method of keeping deeds, mortgages, insurance policies, agreements and other valuable documents has been placed on the market by Grand & Toy, Toronto.

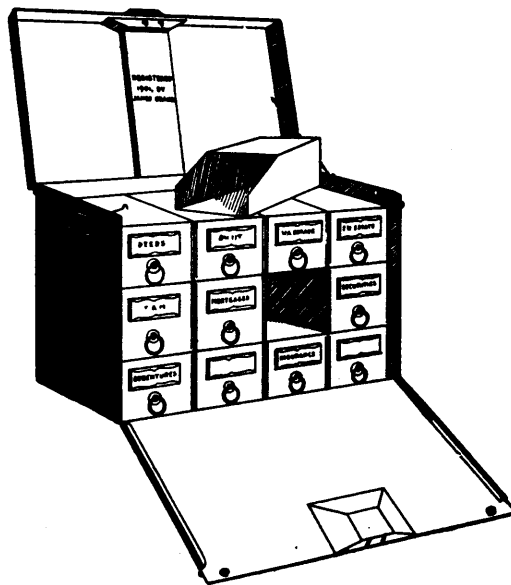
As may be seen from the accompanying illustration this deed box is fitted with a drop front, thus facilitating the examination of any of the papers.

The value of such a box for a manufacturer or other business man is obvious. Not only does it enable the owner to properly and systematically file away important documents separate from miscellaneous papers, but it enables a detailed classification of them.

These cases are made with metal bound

If you are inclined to be very excitable and nervous, if you "fly all to pieces" over the least annoyance, do not waste your time regretting this weakness and telling everybody that you cannot help it. Just assume the calm, deliberate, quiet, balanced composure which characterizes your ideal person in that respect, says a writer in the *Success Magazine*. Persuade yourself that you are not nervous or excitable, that you can control yourself; that you are well balanced; that you do not fly off on a tangent at every little annoyance. You will be amazed to see how the perpetual holding of this serene, calm, quiet attitude will help you to become like your thought.

A surprising saving of time can be secured



press board document cases, in three sizes, with strong lock and two flat keys. The boxes are also of metal bound press board, and are made in any depth desired from one inch to four inches.

HOW TO GAIN SELF-CONTROL.

Zopyrus, the physiognomist, said, "Socrates' features showed that he was stupid, brutal, sensual and addicted to drunkenness." Socrates upheld the analysis by saying: "By nature I am addicted to all these sins, and they were only restrained and vanquished by the continual practice of virtue."

Emerson says, in effect, "The virtue you would like to have, assume it as already yours, appropriate it, enter into the part and live the character just as the great actor is absorbed in the character of the part he plays." No matter how great your weakness or how much you may regret it, assume steadily and persistently its opposite until you acquire the habit of holding that thought, or of living the thing, not in its weakness, but in its wholeness, in its entirety. Hold the ideal of an efficient faculty or quality, not of a marred or deficient one. The way to reach, or to attain to anything is to bend one's self toward it with all one's might and we approximate it just in proportion to the intensity and the persistency of our effort to attain it.

by the use of rubber stamps. The variety of purposes to which a stamp can be put and the insignificance of its cost combine to cause a steady increase in their use by manufacturers.

Don't worry—worry kills work. Don't over-eat—a sluggish stomach makes a dull brain. Don't smoke too much—tobacco kills ambition. Sleep eight hours—more if you can. "Rest up" occasionally—a good razor cuts the better for it. Cut out medicine—fresh air and exercise are the best doctors. Wear light weight underclothing all year round—give your skin a chance to breathe.

Cheerfulness has a wonderful effect upon our physical natures. Show me a thin, dyspeptic, chalky face apology for a man who goes around groaning over his real or fancied ailments, and I will show you a man from whom cheerfulness has departed—not always because sickness has driven it out, but too often because moroseness has courted physical disability. "Let good digestion wait on appetite," and mirth on both. Optimism and cheerfulness go hand-in-hand. Pessimism and mental disturbance are twin sisters. If you have not a sound body and a sound mind you cannot fill the measure of your position and turn out work satisfactory to your employer and yourself.

THE LIGHTEST, STRONGEST AND BEST BINDER MADE.

The Twinlock Loose Leaf Ledger



Wide expansion makes it easy to insert sheets.

The round back of this Ledger causes it to rotate as the leaves are turned, thus keeping the same level writing surface at all times.

Complete outfits carried in stock for immediate delivery.

Descriptive Catalogue on request.

GRAND & TOY, Limited,

Stationers, Printers and Office Outfitters,

TORONTO



"Locked Out."

Mr. Old Methods: "It might have been otherwise!"

Step Lively!

If you fail to arrive at the house of Success before the door is forever locked against you, do not blame "your business." The cause of failure must be charged to you. For every business is a good business. How good, depends on how economically and ingeniously effective are the general business and office methods employed.

In every department of your business, therefore, it is your duty to employ such methods as are guaranteed to produce effective and economic results. Consider your office system. Consult us, for we are architects of methods for business—We devise and manufacture systems which are guaranteed to facilitate business generally by simplifying the accounting—reducing the number of books, and the number of entries, and enabling the heads of any concern to know at a glance where they stand, or to find the thing wanted quickly.

Write us for our booklet, "Business Epigrams."

The COPELAND-CHATTERSON CO., Limited

General Offices, - - - TORONTO
Works, - - - BRAMPTON, ONT.

Liverpool, London & Globe Bldg., MONTREAL.

14 Citizen Bldg., OTTAWA.

141 Bannatyne Ave. East, WINNIPEG.

43 Cannon St. E.C., LONDON, ENGLAND.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

LETTER COPYING.

The faults of the familiar copying press and the advantages of the "Y. & E." rapid roller letter copier are the subject of a booklet, illustrated in colors, issued by the Office Specialty Mfg. Co., Toronto.

The story of the evolution of this rapid roller letter copier is well worth reading. After referring to the annoyance caused to a business man by some poor work by the copying press, it depicts his reasoning as follows.

"It certainly does seem," he said, "that there ought to be some way of getting better results, without all this work.

"Now, if we had some way to throw on pressure without screwing up the letter press every time—if we could only keep the pressure on all the time and then apply it to the copy book as we needed it, there'd be some sense to the proposition."

This last idea suggested a train of thought. It would be easy enough to get any amount of pressure, certainly.



But how could this pressure be used so as to get as good copies—at least—as the copying press produced, without its expenditure of energy?

Well, here were the necessary elements, anyhow: (1) Pressure applied somehow; (2) the letter to be copied, and (3) a wet tissue sheet placed against the written side of the letter.

"There ought to be some way of getting these things together"—he mused, and then one day his eye chanced to light on his wife's clothes wringer and he caught an idea.

Here was the underlying principle—put your pressure on the rollers and pass your letter and your wet tissue sheet through them.

This, then, was the beginning of the "Y and E" rapid roller letter copier, but it was only a beginning.

There were several good, stiff problems to be solved before such an idea could be successfully used for commercial purposes.

To begin with, it would not do to have to soak up separate sheets and pass them by hand through the rollers, adjusting each one carefully to the letter. That would be just as much work as adjusting the blotters, wet cloths and other paraphernalia used with the copying press.

The substitute evolved was copying paper in a continuous roll.

Then, again, it was found that the paper would not make good copies unless it was equally moist all over.

This was solved by passing the paper through water, so that every bit of the sheet was equally wet.

Still another difficulty was the regulating of the necessary pressure. Too much or too little pressure made the results vary from good to indifferently bad. Besides, if the pressure were kept on all the time, the rubber rollers soon flattened out.

These difficulties were overcome by having adjusting screws by which the exact amount of pressure desired could be secured, and by introducing an adjustment lever by which the pressure could be thrown on before copying, and thrown off after.

The rollers themselves were a problem for a time, since a special quality of rubber, possessing great vitality, was needed to give the machine long life.

There were many other problems—some easier, many more difficult—all of a technical nature. Each in turn was squarely encountered, until the combined result was successful beyond question—and thus it stands today, an evolved product, the "Y and E" rapid roller letter copier.

Copies of the illustrated booklet describing this roller letter copier in detail will be sent to any enquirer by The Office Specialty Mfg. Co., Toronto.

PROPER EQUIPMENT IS VITAL.

The battleship that is not modernly equipped with death-dealing devices of the most modern type is not fit to float upon the seas, an ambassador for the peace of the country whose flag it serves.

What is true about equipment in bloody war is equally true in commercial war. The business man who would seek to enter the "open door" of foreign commerce, who would send his fleets to foreign ports must be equipped with modern business appliances or he will be out-Togo-ed in the strife. The business man in America too who would successfully compete with his neighbor must be system through and through, for which is the peer of his competitor if he is an American?

The Workers supplement of the Chicago Tribune recently contained an apt illustration of this when it related the story of a wearied business man that called upon his doctor confessing "I am losing my mind." It seems that the man had been very successful in business and for several years had endeavored to carry the details of his tremendous business in his head. The doctor skillfully drew from him his pathetic story and gave him at the conclusion of it a prescription. It was not for lotions or pills or sundry drugs but a letter to a friend of his who dealt in office systems and appliances. The distracted man told his troubles to the appliance dealer, and for every trouble there was an appliance, sometimes only a little card system and again involving more costly and complicated devices, in this case not only a money saver but a life saver.

And the moral is obvious.

WESTINGHOUSE EXTENSIONS.

The Canadian Westinghouse Co., Limited, Hamilton, Ont., are making a 100 feet by 80 feet extension to their foundry, and are also installing some large machinery. The

latter was provided for in their original layout but not hitherto installed.

This firm are also steadily adding to their staff of men. Slightly over one thousand men are employed by the company and this staff will be increased to 1,200 or 1,400 before any new buildings are erected.

BENEFITS OF GRAPHITE.

You know how small bits of paper, like the familiar confetti, resist the most patent sweeping, and how strongly they adhere to the floor and fill the cracks and crevices; well, that's pretty much the way that graphite adheres to metal surfaces. The flakes of graphite have much the same proportions as confetti, only very much smaller, their thickness being probably less than three ten-thousandths of an inch. The covering power of a given quantity of flake graphite, it would seem, would greatly exceed that of the same quantity of amorphous graphite, which is made up of irregular granular particles, just as the leaves of a pad would cover a greater area and more smoothly and evenly than the same pad cut into little irregular chunks.

Friction is due to the inability of human skill to produce perfectly smooth surfaces, and no matter how smooth a metal surface may appear to the naked eye, it will always be found rough when examined under the microscope. These roughnesses of rubbing surfaces interlock and resist free motion, i.e., cause friction, resulting in wear, overheating and "cutting."

When flake graphite is introduced into a bearing it soon fills up all the pores and irregularities of the metals, imparting a glaze or veneer of marvelous smoothness and high polish. Reduced friction follows such a perfection of bearing surfaces, and there is less heating, less wear and "cutting" is absolutely impossible. Less oil need then be used and even better results obtained, and in no class of machinery is this important feature more appreciated than in the cylinders of automobiles.

The graphite glaze on cylinder walls means better piston fit with less friction and no cutting, rusting or "freezing" of the piston. Flake graphite greatly increases the efficiency of any oil or grease for the lubrication of main bearings, gears, cams, slides and axles, and is the ideal lubricant for driving chains, preventing wear and noise and doing away with the necessity of a greasy chain, which always catches dust and sand. For such purposes the graphite is best combined with a firm wax or fat, which is melted and in which the chain is immersed until the graphite reaches every pivot.—Automobile Magazine.

COPPER OUTPUT OF CANADA AND MEXICO.

According to the Engineering & Mining Journal, "the copper production of Mexico in 1905 was 144,350,962 pounds, against 131,386,354 pounds in 1904, the increase being nearly 10 per cent., which was larger than the rate of increase in the United States. There will doubtless be a further increase in the Mexican production in 1906, inasmuch as certain of the large companies are increasing their facilities, while many small companies, which were making preparations in 1905.

I. C. FELL & CO.
 STAMP MANUFACTURERS
 DIE SINKERS
 Write us. ENGRAVERS
 84 Adelaide West TORONTO

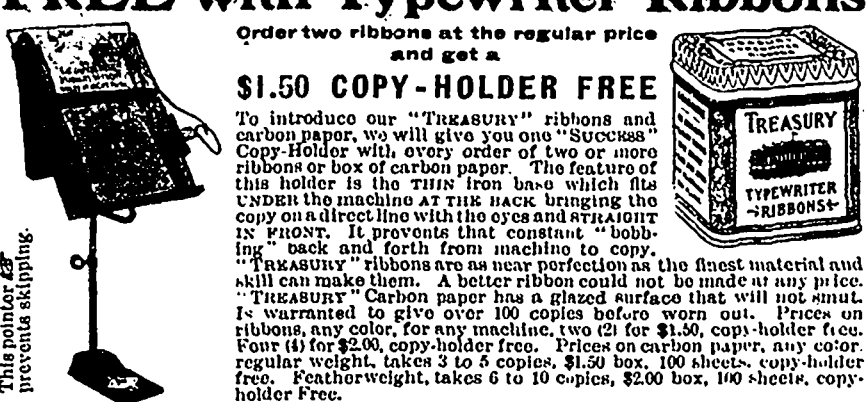
NEFF & POSTLETHWAITE
 CHARTERED ACCOUNTANTS
 26 Wellington St. East, TORONTO
 Phone Main 1880.
 Audits and Investigations a Specialty.

BANK OF HAMILTON
 J. TURNBULL, General Manager.
 HEAD OFFICE, HAMILTON, ONT.
 Capital. Reserve. Total Assets.
 \$2,000,000 \$1,700,000 \$22,000,000
 BRANCHES IN
 TORONTO, MONTREAL, WINNIPEG, VANCOUVER,
 and all principal towns in Canada.
 Collections made in all parts of Canada.

The Mercantile Agency
 ESTABLISHED 1841.
R. G. DUN & CO.
 Offices in 169 of the leading business
 centres of the world.
 CANADIAN OFFICES
 TORONTO, MONTREAL,
 HAMILTON, QUEBEC,
 LONDON, OTTAWA,
 WINNIPEG, ST. JOHN,
 VANCOUVER, HALIFAX.
 W. C. MATTHEWS, Toronto,
 General Manager for Canada.
 Established 1849.

BRADSTREET'S
 Capital and Surplus, \$1,500,000
 Offices Throughout the Civilized World.
 EXECUTIVE OFFICES,
 346 & 348 Broadway, New York City, U.S.A.
 CORRESPONDENCE INVITED.
 OFFICES IN CANADA:
 Halifax, N.S. Hamilton, Ont.
 London, Ont. Montreal, Que.
 Ottawa, Ont. Quebec, Que.
 St. John, N.B. Toronto, Ont.
 Vancouver, B.C. Winnipeg, Man.
 THOMAS C. IRVING, Gen'l Manager Western Canada
 TORONTO.

FREE with Typewriter Ribbons
 Order two ribbons at the regular price and get a
\$1.50 COPY-HOLDER FREE
 To introduce our "TREASURY" ribbons and carbon paper, we will give you one "SUCCESS" Copy-Holder with every order of two or more ribbons or box of carbon paper. The feature of this holder is the THIN iron base which fits UNDER the machine AT THE BACK bringing the copy on a direct line with the eyes and STRAIGHT IN FRONT. It prevents that constant "bobbling" back and forth from machine to copy. "TREASURY" ribbons are as near perfection as the finest material and skill can make them. A better ribbon could not be made at any price. "TREASURY" Carbon paper has a glazed surface that will not smut. It warranted to give over 100 copies before worn out. Prices on ribbons, any color, for any machine, two (2) for \$1.50, copy-holder free. Four (4) for \$2.00, copy-holder free. Prices on carbon paper, any color, regular weight, takes 3 to 5 copies, \$1.50 box, 100 sheets, copy-holder free. Featherweight, takes 6 to 10 copies, \$2.00 box, 100 sheets, copy-holder free.
 CLEVELAND RIBBON & MFG. CO., 2741 CARNEGIE AVE., CLEVELAND, OHIO



This pointer also prevents skipping.

FACTORY LOCATIONS.
 The following Canadian municipalities are offering inducements to secure manufacturing establishments. Inquiries should be addressed to the Mayor, Town Clerk or Board of Trade of the respective cities:
 Barrie, Ont.
 Brantford, Ont.
 Hamilton, Ont.
 Peterborough, Ont.
 Regina, N.W.T.
 Sherbrooke, Que.
 Toronto, Ont.

CANADIAN OFFICE & SCHOOL FURNITURE CO. LIMITED
 PRESTON ONT.
 FINE BANK OFFICE, COURT HOUSE & DRUG STORE FITTINGS.
 OFFICE, SCHOOL, CHURCH & REST FURNITURE
 SEND FOR CATALOGUE

WORK AND PRICES RIGHT GALVANIZING
 ONT. WIND ENGINE & PUMP CO.
 TORONTO ONT. LIMITED

CASTINGS GREY IRON
 IN ROUGH OR MACHINED.
PATTERNS WOOD OR IRON.
 ESTIMATES FURNISHED.
DAVID MAXWELL & SONS
 ST. MARYS, ONT.



Factory Property for Sale
 Substantial Buildings, good water power, 100 to 200 h.p., 28 dwelling houses, at Streetsville, near Toronto, Canada. Owner would finance a good proposition to utilize power and buildings.
 Apply—
 JOHN DICK LIMITED, TORONTO.
FOR SALE, CHEAP!
 Fine 3-story brick factory building, besides other storage buildings. If you are contemplating starting a branch in Canada this is a grand opportunity. Cheap electric power and natural gas. For further particulars apply to
 WM. CHAPLIN,
 St. Catharines, Ont., Canada

TRAVELLING SALESMAN WANTED
 TRAVELLING SALESMAN, who calls upon manufacturers, to carry a side line. Can make good money.
 Address:
 I. L. SCHEINMAN CO.,
 DETROIT, MICH.

First-class mills use
LOWELL CRAYONS
WHY? THEY ARE WORTH THEIR COST.
 Will you try our Samples?
 LOWELL CRAYON CO., Lowell, Mass.
 Original Manufacturers.

WOOD ENGRAVING
PHOTO ENGRAVING
HALF TONES
 OR ANY CLASS OF ENGRAVING FOR ADVERTISING PURPOSES.
 CATALOGUES, MAGAZINES, &c
J. L. JONES ENG. CO.
 168 BAY ST - TORONTO

You get more heats and Metal out of McCullough-Dalzell Crucibles—economical points you should remember. Write for prices.
MCCULLOUGH-DALZELL CRUCIBLE CO., Pittsburg, Pa.

HARBISON-WALKER REFRACTORIES Co.

PITTSBURG, PA.

**Manufacturers
of
Highest Grade
Refractory
Materials**
**7,000 Regular
Customers**

Write for Booklet

Fire Clay : Silica : Magnesia : Chrome

BRICK

**Sole Agents For
Carl Spaeter
Magnesite**

**Importers of
Chrome Ore**

**1,100,000
Daily Capacity**

ought to reach the producing stage in 1906. In many parts of Mexico there is great activity in copper mining. The production of copper in Canada in 1905 was 47,597,502 pounds, against 42,970,594 pounds in 1904, these being the statistics (subject to revision) of the Dominion Geological Survey. The major part of the production was derived from the Boundary district, but a considerable proportion comes from the Sudbury district of Ontario. As in the case of Mexico, the prospect is for a further increase in copper production in Canada in 1906. Inasmuch as the output of both these countries comes chiefly to the United States for refining, our own supply of copper is increased in proportion to the increase in their deliveries."

A notable feature of Cassier's Magazine for May is a series of articles by prominent engineers and manufacturers dealing with "The Metric System Fallacy." With the compulsory Metric System Bill now pending at Washington, and vigorously pushed by misguided enthusiasts, the articles above mentioned are of especial interest and importance, and appeal to English-speaking manufacturers everywhere. They are to be supplemented in succeeding issues by additional anti-metric opinions from some of the best known engineers on both sides of the Atlantic.

A novel arrangement is in use by the Philadelphia Rapid Transit Co., Philadelphia, Pa., for the local welding of track joints. This consists of a small foundry cupola carried on a trolley car and supplied with blast

from an electric pressure blower, furnished by the B. F. Sturtevant Co., Boston, Mass.

THE SOUTHERN CALIFORNIA NEW TRAIN.—BEST ROUTE.

The Los Angeles Limited, electric lighted, new from the Pullman shops, with all latest innovations for travel comfort, leaves Chicago 10.05 p.m. daily, arrives Los Angeles 4.45 p.m. third day via Chicago, Union Pacific & North-Western Line and The Salt Lake Route. Pullman drawing room and tourist sleeping cars, composite observation car, dining cars, a la carte service. For rates, sleeping car reservations and full particulars, apply to your nearest agent or address B. H. Bennett, 2 East King St., Toronto.

TO THE VARNISH BUYER

the most serious considerations are quality, reliability and uniformity, and these qualifications are of special importance to the dealer who is trying to build up a permanent varnish trade.

Berry Brothers' label or brand may be safely relied upon as ensuring the above conditions.

Our Varnishes are the safest goods to handle and the surest and most reliable goods to use.

BERRY BROTHERS, Limited

VARNISH MANUFACTURERS

WALKERVILLE, ONT.

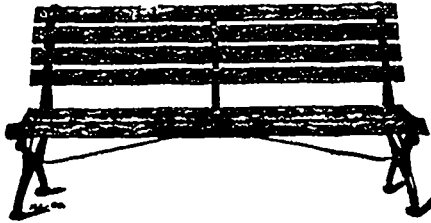
Write for our 100-page illustrated catalogue. Every dealer should have a copy for reference.

The N. L. Piper Railway Supply Co., Limited

314 Front St. West
TORONTO

STATION, DECK OR CABIN SEATS

Hardwood Bars, Malleable Iron Legs



Price for 4 foot Seat \$4.00 each.
" 6 " 5.00 "

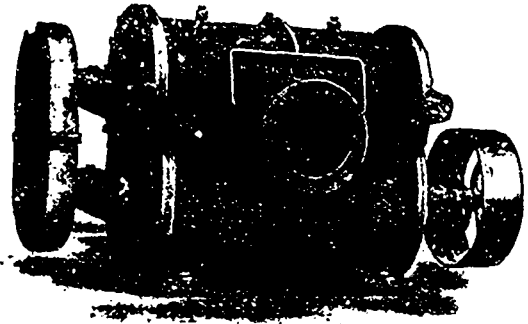
SPECIAL LENGTHS TO ORDER.

Our Station Seats are made of thoroughly seasoned Hardwood and perfectly annealed Malleable Iron Legs. Finished in Natural Wood or painted Red or Green and fastened together with Bolts.

Makes splendid Deck Seat.

Everlasting, Comfortable, Durable, Good Value.

STURTEVANT High-Pressure Blowers



For cupola and smelting furnaces, pneumatic and gas conveying systems, and for any purpose where from 1 to 10 lbs. air pressure is required.

Send for Bulletin No. 127.

B. F. STURTEVANT CO.,
Boston, Mass.

General Office and Works, Hyde Park, Mass.
New York. Philadelphia. Chicago. London.
Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fans, Blowers and Exhaustors; Steam Engines, Electric Motors and Generating Sets; Fuel Economizers; Forges, Exhaust Hoops, Steam Traps, etc. 364

THE CHEAPEST POWER KNOWN

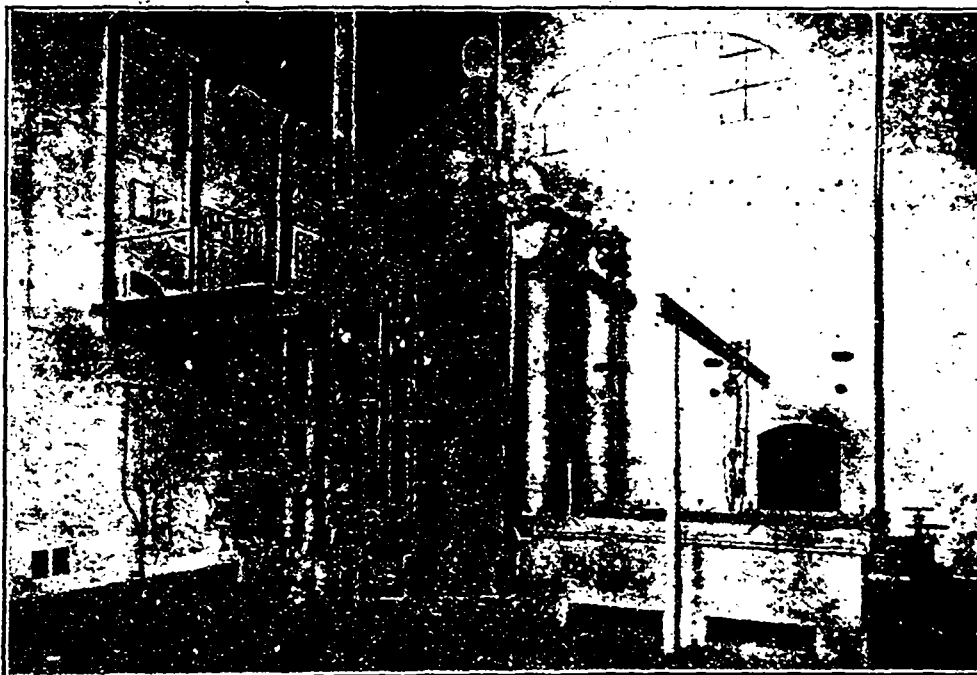
Pintsch Suction Gas Plants and National Gas Engines.

PLANTS

- No Smoke
- No Pressure
- No Danger
- No Leakage
- No Gas Holder
- No Noise
- No Boiler
- No Chimney

Engines in sizes from 2 to 50 B.H.P.

Suction Gas Plants in sizes from 10 to 1000 B.H.P. in single generators.



Two 150 B.H.P. Pintsch Suction Gas Plants.

ENGINES

- Simplest
- Most Durable
- Perfect Regulation
- Small Gas Consumption
- Easy-Starting
- No Noise
- Low Cost
- Loose Liners.
- Vertical Ball Governors

Total Power already installed, over 200,000 B.H.P.

Send for Catalogue and Prices.

THE ECONOMIC POWER, LIGHT & HEAT SUPPLY CO., Limited,

40 YORK STREET, TORONTO

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER

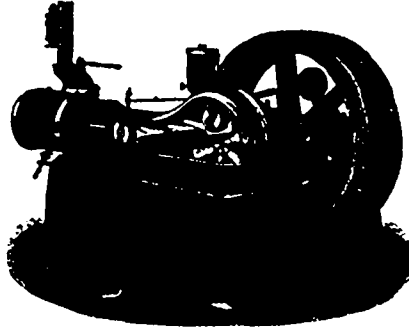
MALLEABLE CASTINGS

ORDERS FOR LARGE OR SMALL TONNAGE IN MALLEABLE CASTINGS PROMPTLY EXECUTED.

NEWEST AND BEST EQUIPPED MALLEABLE FOUNDRY IN AMERICA. FIRE-PROOF VAULTS FOR PATTERN STORAGE.

INTERNATIONAL HARVESTER CO., OF CANADA, Limited
HAMILTON, - ONT.

NOT ONE CENT FOR REPAIRS



An experienced engineer has written us as follows :

"After eighteen months of hard service, the "Robb" engines are in excellent shape, running very smooth and without a bit of vibration. Up to this time they have not cost one cent for repairs, the only expense being steam, oil and packing, and this below the average. Perfect alignment, parts well machined and good design make the "Robb" the most economical and labor saving engine that has ever come to my notice."

Robb Engineering Co., Limited
AMHERST, N.S.

District Offices { 320 Ossington Ave., Toronto, WILLIAM McKAY, Manager.
Bell Telephone Bldg., Montreal, WATSON JACK, Manager.
355 Carlton Street, Winnipeg, J. F. PORTER, Manager.

NOT A THOROUGHFARE HEATER



The Webster Feed Water Heater and Purifier

Is not a thoroughfare heater. It uses only just enough steam to heat the feed water to the boiling point, without any back pressure on the engines.

If you contemplate installing a feed water heater it will pay you to have a copy of our latest catalogue. Ask for Heater Catalogue 2-B.

DARLING BROTHERS LIMITED, "Reliance Works,"
MONTREAL

BRANCH OFFICES: 2 Toronto St., TORONTO, ONT.; 412 McIntyre Block, WINNIPEG, MAN.

CLASSIFIED INDEX.

Abrasives

Williams, A. R. Machinery Co. Toronto

Acids

Canada Chemical Co., London, Ont.
Canada Process Co., Toronto.
Nichols Chemical Co. of Canada, Montreal.

Air Compressors

Allis-Chalmers-Bullock, Limited, Montreal.
American Steam Pump Co., Battle Creek, Mich.
Canada Foundry Co., Toronto.
Canadian Rand Drill Co., Sherbrooke, Que.
Darling Bros., Montreal.
Smart-Turner Machine Co., Hamilton, Ont.

Alum

Nichols Chemical Co. of Canada, Montreal.

Aluminum

Northern Aluminum Co., Pittsburg, Pa.
Syracuse Smelting Works, Montreal.

Angles, Beams and Girders

Bourne-Fuller Co., Cleveland, Ohio.
Canada Foundry Co., Toronto.
Hopkins, F. H. & Co., Montreal.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.

Aniline Colors and Dyewood Extracts

Benson, W. T. & Co., Montreal.
Brunner, Mond & Co., Norwich, England.
Canada Chemical Mfg. Co., London, Ont.
Canada Process Co., Toronto.
Cassella Color Co., New York City.
McArthur, Cornille & Co., Montreal.
Nichols Chemical Co. of Canada, Montreal.
Winn & Holland, Montreal.

Annealing Muffles and Furnaces (Wire)

Leslie, A. C. & Co., Montreal.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Antimony

Syracuse Smelting Works, Montreal.

Anvils and Vises

Hopkins, F. H. & Co., Montreal.
Leslie, A. C. & Co., Montreal.

Architects

Gearing, H. Toronto.
Parks, R. J., Toronto.
Vogel, C. H. Ottawa.

Automatic Gear Cutting Machines

Becker-Brainard Milling Machine Co. Hyde Park, Mass.

Axles

Hopkins, F. H. & Co., Montreal.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.

Babbitt Metal

Petrie, H. W., Toronto.
Syracuse Smelting Works, Montreal.

Banks

Bank of Hamilton, Hamilton, Ont.

Bar Iron and Steel

Bourne-Fuller Co., Cleveland, Ohio.
Hopkins, F. H. & Co., Montreal.
Leslie, A. C. & Co., Montreal.
London Rolling Mills, London, Ont.
Union Drawn Steel Co., Hamilton, Ont.

Belt Dressing

McLaren, J. C. Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Sadler & Haworth, Montreal and Toronto.
Williams, A. R. Machinery Co., Toronto

Belt Fasteners

Bristol Co., Waterbury, Conn.
McLaren, D. K., Montreal and Toronto.
McLaren, J. C. Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Sadler & Haworth, Montreal and Toronto.
Williams, A. R. Machinery Co., Toronto.

Belting (Cotton)

Dominion Belting Co., Hamilton, Ont.
McLaren, D. K., Montreal and Toronto.
McLaren, J. C. Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Sadler & Haworth, Montreal and Toronto.

Belting (Leather)

Montreal Belting Co., Montreal.
McLaren, D. K., Montreal and Toronto.
McLaren, J. C. Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Sadler & Haworth, Montreal and Toronto.
Williams, A. R. Machinery Co., Toronto.

CLASSIFIED INDEX.

(CONTINUED).

Belting (Rubber)

Gutta Percha & Rubber Mfg. Co., Toronto.
McLaren, D. K., Montreal and Toronto.
McLaren, J. C., Belting Co., Montreal.
Petrie, H. W., Toronto.

Belting and supplies

Bristol Co., Waterbury, Conn.
Dominion Belting Co., Hamilton, Ont.
Gutta Percha & Rubber Mfg. Co., Toronto.
Jeffrey Mfg. Co., Columbus, Ohio.
Montreal Belting Co., Montreal.
McLaren, D. K., Montreal and Toronto.
McLaren, J. C., Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Williams, A. R. Machinery Co., Toronto.

Blast Furnace Brick

Dunbar Fire Brick Co., Pittsburgh, Pa.
Elk Fire Brick Co., St. Mary's, Pa.
Hamilton Facing Mill Co., Hamilton, Ont.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Pennsylvania Fire Brick Co., Beech Creek, Pa.
Queen's Run Fire Brick Co., Lock Haven, Pa.
Stowe-Fuller Co., Cleveland, Ohio.

Blowers

Hamilton Facing Mill Co., Hamilton, Ont.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

Boiler Compounds

Canada Chemical Mfg. Co., London, Ont.
Canada Process Co., Toronto.
Hamilton Facing Mill Co., Hamilton, Ont.

Boiler Inspection

Boiler Inspection & Insurance Co., Toronto.
Canadian Casualty & Boiler Insurance Co., Toronto.

BOILERS (See Engines and Boilers)

Bolts and Nuts

London Rolling Mills, London, Ont.
Morrow John Machine Screw Co., Ingersoll, Ont.

Brass Founders

Hamilton Brass Mfg. Co., Hamilton, Ont.

Building and Paving Brick

Dunbar Fire Brick Co., Pittsburgh, Pa.
Hamilton Facing Mill Co., Hamilton, Ont.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Pennsylvania Fire Brick Co., Beech Creek, Pa.
Queen's Run Fire Brick Co., Lock Haven, Pa.
Stowe-Fuller Co., Cleveland, Ohio.

Building Iron and Steel

Bourne-Fuller Co., Cleveland, Ohio.
Canada Foundry Co., Toronto.
Expanded Metal & Fireproofing Co., Toronto.
Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.

Builders' Materials

Albert Mfg. Co., Hillsboro, Ont.
Canada Foundry Co., Toronto.
Conduits Company, Limited, Toronto.
Expanded Metal & Fireproofing Co., Toronto.
Gartshore, John J., Toronto.
Hopkins, F. H. & Co., Montreal.
Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.
Sheldon & Sheldon, Galt, Ont.

Cables

Dominion Wire Rope Co., Montreal.
Greening, B. Wire Co., Hamilton, Ont.
Phillips, Eugene F. Electrical Works, Montreal.

Canada Plates

Leslie, A. C. & Co., Montreal.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.

Cances

Peterborough Cance Co., Peterborough, Ont.

Cups

McCullough-Dalsell Crucible Co., Pittsburg, Pa.

Card Clothing

McLaren, D. K., Montreal and Toronto.
McLaren, J. C. Belting Co., Montreal and Toronto.

Cast Iron Pipe

Canada Foundry Co., Toronto.
Montreal Pipe Foundry Co., Montreal.
McDougall, John, Caledonian Iron Works Co., Montreal.

Castings (Grey Iron, Malleable Iron and Brass

International Harvester Co., Hazelton, Ont.
Jenckes Machine Co., Sherbrooke, Que.
Kerr Engine Co., Walkerville, Ont.
McDougall, John, Caledonian Iron Works Co., Montreal.
McKinnon Dash & Metal Works Co., St. Catharines, Ont.
Maxwell, David & Sons, St. Mary's, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

Cement Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
Bradley Pulveriser Co., Boston, Mass.
McDougall, John, Caledonian Iron Works Co., Montreal.

Centrifugal Pumping Machinery

Morris Machine Works, Baldwinsville, N.Y.
Smart-Turner Machine Co., Hamilton, Ont.

Chain Making Machinery

(Welded Coil Chain)

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Channels

Bourne-Fuller Co., Cleveland, Ohio.
Canada Foundry Co., Toronto.
Leslie, A. C. & Co., Montreal.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.

Charcoal Pig Iron

Canada Iron Furnace Co., Montreal.
McDougall, John, Caledonian Iron Works Co., Montreal.

Chemicals

Canada Chemical Co., London, Ont.
Canada Process Co., Toronto.
Nichols Chemical Co. of Canada, Montreal.

Chemists

Heys, Thomas & Son, Toronto.

Clay Working Machinery

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Coal, Coke and Charcoal.

Bourne-Fuller Co., Cleveland, Ohio.
Hamilton Facing Mill Co., Hamilton, Ont.
Milnes, James H. & Co., Toronto.
Wilson, H. T. Coal Co., Detroit, Mich.

Coal Cutting Machines

Allis-Chalmers-Bullock, Limited, Montreal.
Canadian Rand Drill Co., Sherbrooke, Que.
Jeffrey Mfg. Co., Columbus, Ohio.

Coal Tipples

Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Sherbrooke, Que.

Coil Chains

Greening, B. Wire Co., Hamilton, Ont.
Leslie, A. C. & Co., Montreal.

Coke Ovan Brick

Dunbar Fire Brick Co., Pittsburgh, Pa.
Stowe-Fuller Co., Cleveland, Ohio.

Collection Agency

Petrie, H. D., Hamilton, Ont.

Concrete Mixers

Hopkins, F. H. & Co., Montreal.

Condensers

Smart-Turner Machine Co., Hamilton, Ont.

Conduits (Interior)

Conduits Company, Limited, Toronto.

Contractors' Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
Gartshore, John J., Toronto.
Hopkins, F. H. & Co., Montreal.
Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.
Smart-Turner Machine Co., Hamilton, Ont.

Contractors' Plants

Allis-Chalmers-Bullock, Limited, Montreal.
Hopkins, F. H. & Co., Montreal.
Jenckes Machine Co., Sherbrooke, Que.
Petrie, H. W., Toronto.
Smart-Turner Machine Co., Hamilton, Ont.
Williams A. R. Machinery Co., Toronto.

Conveying Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
Babcock & Wilcox, Limited, Montreal.
Canada Foundry Co., Toronto.
Jeffrey Mfg. Co., Columbus, Ohio.
Link-Belt Engineering Co., Philadelphia, Pa.
McDougall, John, Caledonian Iron Works Co., Montreal.
Perrin, William R. & Co., Limited, Toronto.
Smart-Turner Machine Co., Hamilton, Ont.

Copper Materials

Greening, B. Wire Co., Hamilton, Ont.
Phillips, Eugene F. Electrical Works, Montreal.
Syracuse Smelting Works, Montreal.

Corrugated Iron

Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.

Cotton Banding and Rope

McLaren, J. C. Belting Co., Montreal.

Covers

McCullough-Dalsell Crucible Co., Pittsburg, Pa.
Pittsburg Crucible Works, Pittsburg, Pa.

Cranes (Electric and Hand Power)

Smart-Turner Machine Co., Hamilton, Ont.

Crayons

Lowell Crayon Co., Lowell, Mass.
McLaren, J. C. Belting Co., Montreal.

Crucibles

Dixon, Joseph, Crucible Co., Jersey City, N.J.
Hamilton Facing Mill Co., Hamilton, Ont.
McCullough-Dalsell Crucible Co., Pittsburg, Pa.
Syracuse Smelting Works, Montreal.

Crucible Caps

Hamilton Facing Mill Co., Hamilton, Ont.
McCullough-Dalsell Crucible Co., Pittsburg, Pa.
Pittsburg Crucible Works, Pittsburg, Pa.

Crucible Covers

McCullough-Dalsell Crucible Co., Pittsburg, Pa.
Pittsburg Crucible Works, Pittsburg, Pa.

Cutter Grinding Machines

Becker-Brainard Milling Machine Co., Hyde Park, Mass.

Dashes

McKinnon Dash & Metal Works Co., St. Catharines, Ont.

Deep Well Engines

American Steam Pump Co., Battle Creek, Mich.

Dies (Socket, Sewer Pipe and Tile)

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Directories

Kelly's Directories, Limited, Toronto

Draw Benches (Wire)

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio

Dredges

Allis-Chalmers-Bullock, Limited, Montreal.

Drills

Allis-Chalmers-Bullock, Limited, Montreal.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Petrie, H. W., Toronto.

Drills (Pneumatic and Rock)

Allis-Chalmers-Bullock, Limited, Montreal.
Canadian Rand Drill Co., Sherbrooke, Que.
Jeffrey Mfg. Co., Columbus, Ohio.

Drop Forgings

Globe Machine & Stamping Co., Cleveland, Ohio

Drop Forging Dies

Globe Machine & Stamping Co., Cleveland, Ohio.

Dry Kiln Apparatus

Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

Dust and Shavings Separators

Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

Dye Stuffs and Chemicals

Benson, W. T. & Co., Montreal.
Brunner, Mond & Co., Northwich, England.
Canada Chemical Mfg. Co., London, Ont.
Canada Process Co., Toronto.
Cassella Color Co., New York City.
McArthur, Corneille & Co., Montreal.
Nichols Chemical Co. of Canada, Montreal.
Winn & Holland, Montreal.

DYNAMOS (See Motors and Dynamos)

Electric Meters and Transformers

Allis-Chalmers-Bullock, Limited, Montreal.
Packard Electric Co., St. Catharines, Ont.

Electric Mine Locomotives

Canadian General Electric Co., Toronto.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Jeffrey Mfg. Co., Columbus, Ohio.

Electric Repairs

Keystone Engineering Co., Toronto.

Electrical Supplies

Allis-Chalmers-Bullock, Limited, Montreal.
Bristol Co., Waterbury, Conn.
Canadian General Electric Co., Toronto.

CLASSIFIED INDEX.

(CONTINUED).

Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Electrical Construction Co., London, Ont.
Forman, John, Montreal.
Jones & Moore Electric Co., Toronto.
Keystone Engineering Co., Toronto.
Packard Electric Co., St. Catharines, Ont.
Toronto & Hamilton Electric Co., Hamilton, Ont.

Elevators and Conveyors

Allis-Chalmers-Bullock, Limited, Montreal.
Darling Bros., Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Sherbrooke, Que.

Elevator Insurance

Canadian Casualty & Boiler Insurance Co., Toronto.

Emery and Emery Wheels

Forman, John, Montreal.
Hamilton Facing Mill Co., Hamilton, Ont.
Petrie, H. W., Toronto.

Engineers (Chemical)

Hoys, Thomas & Son, Toronto.
Hunt Robert W. & Co., Chicago, Ill.

Engineers (Civil)

Parke, R. J., Toronto.
Vogel, C. H., Ottawa.

Engineers (Consulting)

Aitken, K. L., Toronto.
Canadian White Co., Montreal.
Electrical Construction Co., London, Ont.
Fensom, C. J., Toronto.
Gearing, H., Toronto.
Hunt, Robert W. & Co., Chicago, Ill.
Keystone Engineering Co., Toronto, Ont.
Marion & Marion, Montreal.
Parke, R. J., Toronto.
Perrin, William R. & Co., Limited, Toronto.
Vogel C. H., Ottawa.

Engineers (Contracting)

Babcock & Wilcox, Limited, Montreal.
Canada Foundry Co., Toronto.
Canadian White Co., Montreal.
Darling Bros., Montreal.
Electrical Construction Co., London, Ont.
Fensom, C. J., Toronto.
Keystone Engineering Co., Toronto.
McDougall, John, Caledonian Iron Works Co., Montreal.
Robb Engineering Co., Amherst, N.S.

Engineers (Electrical)

Aitken, K. L., Toronto.
Allis-Chalmers-Bullock, Limited, Montreal.
Canadian General Electric Co., Ltd., Toronto.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Canadian White Co., Montreal.
Crocker-Wheeler Co., St. Catharines, Ont.
Electrical Construction Co., London, Ont.
Fensom, C. J., Toronto.
Jones & Moore Electric Co., Toronto.
Keystone Engineering Co., Toronto.
Marion & Marion, Montreal.
Toronto & Hamilton Electric Co., Hamilton, Ont.

Engineers (Mechanical)

Allis-Chalmers-Bullock, Limited, Montreal.
Babcock & Wilcox, Limited, Montreal.
Darling Bros., Montreal.
Electrical Construction Co., London, Ont.
Fensom, C. J., Toronto.
Gearing, H., Toronto.
McDougall, John, Caledonian Iron Works Co., Montreal.
Hunt, Robert W. & Co., Chicago, Ill.
Kerr Engine Co., Walkerville, Ont.
Marion & Marion, Montreal.
Robb Engineering Co., Amherst, N.S.
Sheldon & Sheldon, Galt, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

Engineers (Mill and Hydraulic)

Fensom, C. J., Toronto.
Smart-Turner Machine Co., Hamilton, Ont.
Vogel, C. H., Ottawa.

Engineers (Mining)

Hoys Thomas & Son, Toronto.
Mills, S. D., Toronto.

Engineers and Contractors

Canadian White Co., Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Sherbrooke, Que.
Smart-Turner Machine Co., Hamilton, Ont.

Engines and Boilers

Allis-Chalmers-Bullock, Limited, Montreal.
Babcock & Wilcox, Limited, Montreal.
Canada Foundry Co., Toronto.
Goldie & McCulloch Co., Galt, Ont.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Hopkins, F. H. & Co., Montreal.
Jenckes Machine Co., Sherbrooke, Que.
Morris Machine Works, Baldwinville, N.Y.
McDougall, John, Caledonian Iron Works Co., Montreal.
Petrie, H. W., Toronto.
Robb Engineering Co., Amherst, N.S.
Sheldon & Sheldon, Galt, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
Sturtevant, B. F. Co., Boston, Mass.
Williams, A. R. Machinery Co., Toronto.

Engravers

Canadian Manufacturer, Toronto.
Jones, J. L. Engraving Co., Toronto.

Exhaust Fans

Hamilton Facing Mill Co., Hamilton, Ont.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

Exhaust Heads

Darling Bros., Montreal.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Hyde Park, Mass.

Exhausters

Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Hyde Park, Mass.

Factory Sites

(See Factory Locations, page 31.)
Central Ontario Power Co., Peterboro Ont.
Hutcheson, S. M., Paisley, Ont.

Feed Water Heaters

Babcock & Wilcox, Limited, Montreal.
Darling Bros., Montreal.
McDougall, John, Caledonian Iron Works Co., Montreal.
Robb Engineering Co., Amherst, N.S.
Smart-Turner Machine Co., Hamilton, Ont.

Files

Spence, R. & Co., Hamilton, Ont.

Fillet (Pattern)

Hamilton Facing Mill Co., Hamilton, Ont.
McLaren, J. C. Belting Co., Montreal.
Sadler & Haworth, Montreal and Toronto.

Filters (Oil)

Babcock & Wilcox, Limited, Montreal.
Darling Bros., Montreal.
McDougall, John, Caledonian Iron Works Co., Montreal.
Perrin, William R. & Co., Limited, Toronto.

Filters and Filtering Systems (Water)

Babcock & Wilcox, Limited, Montreal.
Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.

Financial

Bradstreet's, New York City.
Dun, R. G. & Co., Toronto.
Neff & Postlethwaite, Toronto.
Petrie, H. D. Hamilton, Ont.

Finials

Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.

Fire Brick and Clay

Dunbar Fire Brick Co., Pittsburgh, Pa.
Elk Fire Brick Co., St. Mary's, Pa.
Hamilton Facing Mill Co., Hamilton, Ont.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Pennsylvania Fire Brick Co., Beech Creek, Pa.
Queen's Run Fire Brick Co., Lock Haven, Pa.
Stowe-Fuller Co., Cleveland, Ohio.

Fire Escapes

Darling Bros., Montreal.

Fireproof Partitions

Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.

Flour Mill Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
Goldie & McCulloch Co., Galt, Ont.

Forges and Blowers

Canada Foundry Co., Toronto.
Hamilton Facing Mill Co., Hamilton, Ont.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

Founders

Canada Foundry Co., Toronto.
Goldie & McCulloch Co., Galt, Ont.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.
Robb Engineering Co., Amherst, N.S.
Smart-Turner Machine Co., Hamilton, Ont.

Foundry Facings and Supplies

Hamilton Facing Mill Co., Hamilton, Ont.

Fuel Economizers

Babcock & Wilcox, Limited, Montreal.
Sturtevant, B. F. Co., Hyde Park, Mass.

Furniture (Lodge, Opera and School)

Canadian Office & School Furniture Co., Preston, Ont.

Galvanizing

Ontario Wind Engine & Pump Co., Toronto.

Galvanizing and Tinning Machinery and Furnaces (Wire)

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio

Gas and Gasoline Engines

Morrison, T. A. & Co., Montreal.
Smart-Turner Machine Co., Hamilton, Ont.

Gauges (Recording Pressure)

Bristol Co., Waterbury, Conn.

Gauges (Steam)

Penberthy Injector Co., Windsor, Ont.
Petrie, H. W., Toronto.
Williams, A. R. Machinery Co., Toronto

Gauges (Water)

Babcock & Wilcox, Limited, Montreal.
Penberthy Injector Co., Windsor, Ont.

Generating Sets

Sturtevant, B. F. Co., Hyde Park, Mass

Generators

Allis-Chalmers-Bullock, Limited, Montreal.
Canadian General Electric Co., Toronto.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Electrical Construction Co., London, Ont.
Forman, John, Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.
Jones & Moore Electric Co., Toronto.
Phillips, Eugene F., Electrical Works, Montreal.
Toronto & Hamilton Electric Co., Hamilton, Ont.

Gloves, Mittens and Moccasins

Storey, W. H. & Son, Acton, Ont.

Government Notices

Factory Inspectors.
Minister of Agriculture.

Graphite

Dixon, Jos. Crucible Co., Jersey City, N.J.
Hamilton Facing Mill Co., Hamilton, Ont.
McCullough-Dalzell Crucible Co., Pittsburg, Pa.
Pittsburg Crucible Works, Pittsburg, Pa.

Hames.

McKinnon Dash & Metal Works Co., St. Catharines.

Hardware

Butterfield & Co., Rock Island, Que.
Gartshore, John J., Toronto.
Globe Machine & Stamping Co., Cleveland, Ohio.
Hopkins, F. H. & Co., Montreal.
Morrow, John, Machine Screw Co., Ingersoll, Ont.

Heating and Ventilating Apparatus

Darling Bros., Montreal.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

Hoisting Engines

Allis-Chalmers-Bullock, Limited, Montreal.
Jenckes Machine Co., Sherbrooke, Que.

Hoists (Chain and Pneumatic)

Allis-Chalmers-Bullock, Limited, Montreal.
Canadian Rand Drill Co., Sherbrooke, Que.
Hopkins, F. H. & Co., Montreal.

Hose (Fire and Pneumatic)

Gutta Percha & Rubber Mfg. Co., Toronto.
McLaren, J. C. Belting Co., Montreal and Toronto.
Sadler & Haworth, Montreal and Toronto.

Hotel

Gallatin Hotel, New York City.

Hydrants

Kerr Engine Co., Walkerville, Ont.
Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.

Hydraulic Accumulators

Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.
Smart-Turner Machine Co., Hamilton, Ont.

Hydraulic Leather

McLaren, J. C., Belting Co., Montreal.
Sadler & Haworth, Montreal and Toronto

Hydraulic Machinery

Canada Foundry Co., Toronto.
Darling Bros., Montreal.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.
Perrin, William R. & Co., Limited, Toronto.
Petrie, H. W., Toronto.
Smart-Turner Machine Co., Hamilton, Ont.
Wilson, J. C. & Co., Glenora, Ont.

English Card Clothing

FULL STOCK ON HAND

"GENUINE OAK"
Leather Belting

OUR PRICES ARE LOW

Rubber Belting

D. K. McLAREN

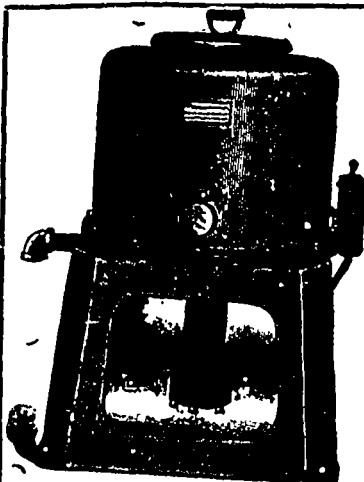
751 Craig Street, MONTREAL
196 King Street West, TORONTO
21 St. Peter Street, QUEBEC
169 Prince William St., ST. JOHN, N.B.



NOTICE The following are the Factory Inspectors for the Province of Ontario:

JAS. T. BURKE, Parliament Buildings, Toronto.
THOMAS KEILTY, Parliament Buildings, Toronto.
ARTHUR W. HOLMES, Parliament Buildings, Toronto.
JOHN ARGUE, Parliament Buildings, Toronto.
MARGARET CARLYLE, Parliament Buildings, Toronto.
MRS. JAS. R. BROWN, Parliament Buildings, Toronto.

Persons having business with any of the Inspectors will find them at the above address. HON. NELSON MONTEITH, Minister of Agriculture.



Save the Oil

From Chips, Screws, Nuts, Bolts, or any other small parts which are finished in oil, and

Save the Waste

Get 90% of the oil returned and have waste perfectly clean for use again.

Ask for the Catalogue

THE CANADIAN OIL AND WASTE SAVING MACHINE COMPANY

BROCKVILLE, ONT.

Special Work.

Models. Experimental Work.

Special Machinery or Devices.

DIES and STAMPINGS
DROP FORGING DIES

THE GLOBE MACHINE & STAMPING CO.
977 Hamilton Street, - Cleveland, Ohio.

GASOLINE ENGINES

FOR LAUNCHES AND CANOES.

2-H.P. ENGINE COMPLETE FOR \$65.

M. O. CROSS ENGINE CO.
DETROIT.



BE PERFECTLY SURE

That our trade-mark and the name "F. Armstrong" is on every stock and die, pipe cutting and threading machine and pipe-fitters' tool that you buy. It guarantees its genuineness, guarantees that you are getting the tools that have stood the test of time.

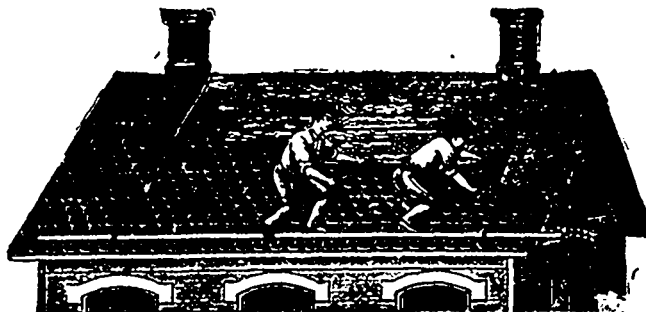
Write for our complete catalogue of water, gas and steam-fitters' tools and machines. Copies free on request.

THE ARMSTRONG MFG. CO.
281 Knowlton St.
BRIDGEPORT, CONN., U.S.A.

Advertise in the
Canadian Manufacturer.

"OSHAWA" STEEL SHINGLES

WIND,
WATER,
STORM
and
FIRE-
PROOF



LOCKED
ON ALL
FOUR
SIDES

Made from Painted or Galvanized Steel at prices varying from \$2.00 to \$5.10 per 100 square feet, covering measure. This is the most durable covering on the market and is an ideal covering for Factories, Houses, Barns, Stores, Elevators, Churches, etc. Any handy man can lay the "OSHAWA" Shingles. A hammer and snips are the only tools required.

We are the largest and oldest company of the kind under the British Flag and have covered thousands of the best buildings through Canada, making them

FIRE, WATER AND LIGHTNING PROOF

We also manufacture **Corrugated Iron** in long sheets.
Conductor Pipe and Eave Trough, Etc.
Metal Sidings in imitation of Brick or Stone.
Metal Ceilings in 2,000 designs.

Write for Catalogue No. 14R and Free Samples of "OSHAWA" Shingles.
Write to-day.

THE PEDLAR PEOPLE

Montreal, Que.
767 Craig St.

Ottawa, Ont.
423 Sussex St.

Toronto, Ont.
11 Colborne St.

London, Ont.
69 Dundas St.

Winnipeg, Man.
76 Lombard St.

Vancouver, B.C.
615 Pender St.

WRITE YOUR NEAREST OFFICE.

Head Office and Works, - **OSHAWA, ONTARIO, CANADA**

CLASSIFIED INDEX.

(CONTINUED).

Insulated Wires and Cables
Phillips, Eugene F., Electrical Works, Montreal.

Iron and Steel Specialties
Armstrong Mfg. Co., Bridgeport, Conn.
Bourne-Fuller Co., Cleveland, Ohio.
Canada Foundry Co., Toronto.
Leslie, A. C. & Co., Montreal.
London Rolling Mill Co., London, Ont.
Lysaght, John, Limited, Bristol, England and Montreal.
Metallic Roofing Co., Toronto.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.
Pedlar People, Oshawa, Ont.
Petrie, H. W., Toronto.
Union Drawn Steel Co., Hamilton, Ont.

Injectors
Canada Foundry Co., Toronto.
Hamilton Brass Mfg. Co., Hamilton, Ont.
Williams, A. R. Machinery Co., Toronto.

Iron and Steel Inspection
Hunt, R. W. & Co., Chicago, Ill.

Lamps—Electric
Allis-Chalmers-Bullock, Limited, Montreal.
Canadian General Electric Co., Toronto.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Forman, John, Montreal.
Packard Electric Co., St. Catharines, Ont.

Lathes
Petrie, H. W., Toronto.
Williams, A. R. Machinery Co., Toronto.

Lathes (Wood-working)
Goldie & McCulloch Co., Galt, Ont.
Petrie, H. W., Toronto.
Williams, A. R. Machinery Co., Toronto.

Loom Reeds
McLaren, J. C., Belling Co., Montreal.

Lubricators
Hamilton Facing Mill Co., Hamilton, Ont.

Machinists
Goldie & McCulloch Co., Galt, Ont.
Robb Engineering Co., Amherst, N.S.
Smart-Turner Machine Co., Hamilton, Ont.

Machinists' Supplies
Armstrong Mfg. Co., Bridgeport, Conn.
Butterfield & Co., Rock Island, Que.
Goldie & McCulloch Co., Galt, Ont.
Gutta Percha & Rubber Mfg. Co., Toronto.
Hopkins, F. H. & Co., Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.
Morrow, John, Machine Screw Co., Ingersoll, Ont.
Petrie, H. W., Toronto.

Machine Tools
Becker-Brainard Milling Machine Co., Hyde Park, Mass.
Darling Bros., Montreal.
Petrie, H. W., Toronto.

Malleable Castings
International Harvester Co., Hamilton, Ont.
McKinnon Dash & Metal Works Co., St. Catharines, Ont.
Smith's Falls Malleable Castings Co., Smith's Falls, Ont.

Marine and Stationary Engines and Boilers
Allis-Chalmers-Bullock, Limited, Montreal.
Jenckes Machine Co., Sherbrooke, Que.
Smart-Turner Machine Co., Hamilton, Ont.

Mechanical Draft
Babcock & Wilcox, Limited, Montreal.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

Metal Doors
Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.

Metal Stamping
Globe Machine & Stamping Co., Cleveland, Ohio.
Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.

Metallurgists
Mills, S. D., Toronto.

Mill Machinery and Supplies
Allis-Chalmers-Bullock, Limited, Montreal.
Armstrong Mfg. Co., Bridgeport, Conn.
Becker-Brainard Milling Machine Co., Hyde Park, Mass.
Darling Bros., Montreal.
Gartshore, John J., Toronto.
Goldie & McCulloch Co., Galt, Ont.
Gutta Percha & Rubber Mfg. Co., Toronto.
Hamilton Brass Mfg. Co., Hamilton, Ont.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Hay, Peter Knife Co., Galt, Ont.
Hopkins, F. H. & Co., Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Sherbrooke, Que.
Morrow, John, Machine Screw Co., Ingersoll, Ont.
McDougall, John, Caledonian Iron Works Co., Montreal.
McLaren, D. K., Montreal and Toronto.
McLaren, J. C., Belling Co., Montreal.
Petrie, H. W., Toronto.
Robb Engineering Co., Amherst, N.S.
Smart-Turner Machine Co., Hamilton, Ont.
Spence, R. & Co., Hamilton, Ont.

Milling Cutters and Machines
Becker-Brainard Milling Machine Co., Hyde Park, Mass.

Miners' Lamps
Allis-Chalmers-Bullock, Limited, Montreal.

Mining Machinery
Allis-Chalmers-Bullock, Limited, Montreal.
Canadian Rand Drill Co., Sherbrooke, Que.
Gartshore, John J., Toronto.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Hopkins, F. H. & Co., Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Sherbrooke, Que.
Link-Belt Engineering Co., Philadelphia, Pa.
McDougall, John, Caledonian Iron Works Co., Montreal.
Perrin, William R. & Co., Limited, Toronto.
Petrie, H. W., Toronto.
Williams, A. R. Machinery Co., Toronto.

Motors and Dynamos
Allis-Chalmers-Bullock, Limited, Montreal.
Canadian General Electric Co., Toronto.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Electrical Construction Co., London, Ont.
Forman, John, Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.
Jones & Moore Electric Co., Toronto.
Keystone Engineering Co., Toronto.
Petrie, H. W., Toronto.
Sturtevant, B. F. Co., Hyde Park, Mass.
Toronto & Hamilton Electric Co., Hamilton, Ont.

Moulding Sand
Hamilton Facing Mills Co., Hamilton, Ont.

Moulders Supplies.
Hamilton Facing Mill Co., Hamilton, Ont.

Nickel
Canadian Copper Co., New York, N.Y.
Orford Copper Co., New York, N.Y.

Nozzles
McCullough-Dalsell Crucible Co., Pittsburg, Pa.
Pittsburg Crucible Works, Pittsburg, Pa.

Office and Bank Fittings
Canadian Office & School Furniture Co., Preston Ont.

Oils and Lubricants
Dixon, Jas. Crucible Co., Jersey City, N.J.
Hamilton Facing Mill Co., Hamilton, Ont.
Imperial Oil Co., Petrolia, Ont.
Queen City Oil Co., Toronto.

Oil Cloth
Dominion Oil Cloth Co., Montreal.

Paints and Colors
Berry Bros., Walkerville, Ont.
McArthur, Cornille & Co., Montreal.

Paper Manufacturers
Barber, Wm. & Bros., Georgetown, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Patents
Budden, Hanbury A., Montreal.
Fetherstonhaugh & Co., Toronto.
Marion & Marion, Montreal.

Patterns (Wood and Iron)
Maxwell, David & Sons, St. Mary's, Ont.

Perforated Metals
Globe Machine & Stamping Co., Cleveland, Ohio.
Greening, B. Wire Co., Hamilton, Ont.
Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.

Personal Accident
Canadian Casualty & Boiler Insurance Co., Toronto.

Phosphorizers
McCullough-Dalsell Crucible Co., Pittsburg, Pa.

Piano Action and Key Machinery
H. Gearing, Toronto.

Pig Iron
Bourne-Fuller Co., Cleveland, Ohio.
Canada Iron Furnace Co., Montreal.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.
Syracuse Smelting Works, Montreal.

Pipe (Riveted, Iron and Steel)
Babcock & Wilcox, Limited, Montreal.
McDougall, John, Caledonian Iron Works Co., Montreal.

Pipe Threading Machines
Armstrong Mfg. Co., Bridgeport, Conn.
Butterfield & Co., Rock Island, Que.
Petrie, H. W., Toronto.

Pipes and Tubes
Bourne-Fuller Co., Cleveland, Ohio.
Canada Foundry Co., Toronto.
Montreal Pipe Foundry Co., Montreal.

Plaster
Albert Mfg. Co., Hillsborough, N.B.

Plates
Bourne-Fuller Co., Cleveland, Ohio.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.

Plumbago
Hamilton Facing Mills Co., Hamilton, Ont.
McCullough-Dalsell Crucible Co., Pittsburg, Pa.
Pittsburg Crucible Works, Pittsburg, Pa.

Pneumatic Tools
Allis-Chalmers-Bullock, Limited, Montreal.
Canadian Rand Drill Co., Sherbrooke, Que.
Hamilton Facing Mill Co., Hamilton, Ont.

Pointer Rolls (For Rods and Wire)
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

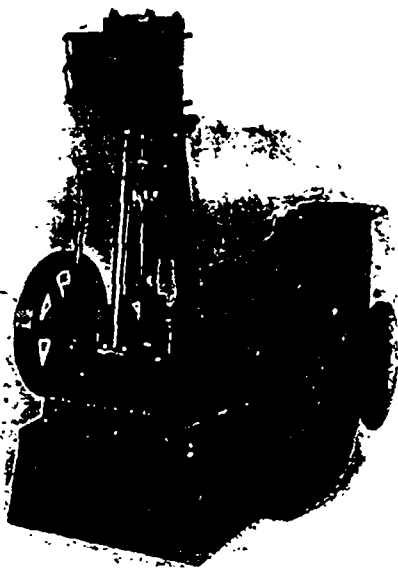
Power Plants—Equipments
Allis-Chalmers-Bullock, Limited, Montreal.
Babcock & Wilcox, Limited, Montreal.
Canadian General Electric Co., Toronto.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Darling Bros., Montreal.
Electrical Construction Co., London, Ont.
Goldie & McCulloch, Galt, Ont.
Gutta Percha & Rubber Mfg. Co., Toronto.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Jeffrey Mfg. Co., Columbus, Ohio.
Jones & Moore Electric Co., Toronto.
Keystone Engineering Co., Toronto.
McDougall, John, Caledonian Iron Works Co., Montreal.
Packard Electric Co., St. Catharines, Ont.
Perrin, Wm. R. & Co., Limited, Toronto.
Petrie, H. W., Toronto.
Phillips, Eugene F., Electrical Works, Montreal.
Robb Engineering Co., Amherst, N.S.
Smart-Turner Machine Co., Hamilton, Ont.
Sturtevant, B. F. Co., Boston, Mass.
Toronto & Hamilton Electric Co., Hamilton, Ont.

Presses (Tile, Sewer Pipe, Nozzles and Sleeves)
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Pulleys
Darling Bros., Montreal.
Goldie & McCulloch Co., Galt, Ont.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Jeffrey Mfg. Co., Columbus, Ohio.
McDougall, John, Caledonian Iron Works Co., Montreal.
McLaren, J. C., Belling Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Smart-Turner Machine Co., Hamilton, Ont.

Pumps and Pumping Machinery
Allis-Chalmers-Bullock, Limited, Montreal.
American Steam Pump Co., Battle Creek, Mich.
Canada Foundry Co., Toronto.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



Morris Machine Works.

BALDWINVILLE, N.Y.

MANUFACTURERS OF

Centrifugal Pumping Machinery

and Steam Engines

SPECIAL PUMPING OUTFITS TO SUIT
SPECIAL REQUIREMENTS

Estimates Furnished upon Application.

H. W. PETRIE, Agent
TORONTO, CANADA.

NEW YORK OFFICE: 39-41 CORTLANDT ST.

HEMION & HUBBELL, Agents
61-69 North Jefferson St., CHICAGO, ILL.



Corrugated Iron
*For Sidings, Roofings,
Ceilings, Etc.*

Absolutely free from defects—made from very finest sheets.
Each sheet is accurately squared, and the corrugations pressed one at a time—not rolled—giving an exact fit without waste.
Any desired size or gauge—galvanized or painted—straight or curved. Send us your specifications.

The Metallic Roofing Co.
WHOLESALE MANFRS. LIMITED
TORONTO, CANADA.

DO IT NOW!

Subscribe for THE CANADIAN
MANUFACTURER.

The Power & Gas Machine Company

LIMITED

GALT - - ONTARIO

Toronto Office, 206 Manning Chambers.

SOME OF OUR PRODUCTS

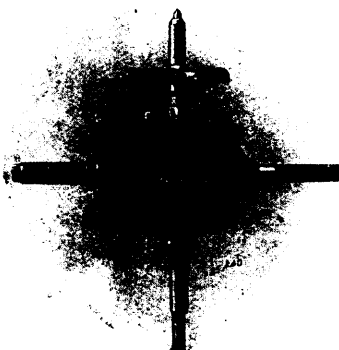
AIR
COMPRESSORS

AIR DRILLS

WOOD BORERS

HAMMERS

RIVETTERS



AIR JACKS

ELEVATORS

CRANES

HOISTS

TROLLEYS

If interested write for Catalogues and ask to have representative call.

The Canadian Rand Drill Co.

Suite 58, Sovereign Bank Building

MONTREAL, QUE.

James Thomson, J. G. Allan, James A. Thomson, Alex. L. Gartshore,
Pres. and Man. Dir. Vice-Pres. Secretary. Treasurer.

The GARTSHORE-THOMSON PIPE & FOUNDRY CO.
LIMITED

CAST IRON PIPE

3 in. to 60 in. diameter.

For Water, Gas, Culverts and Sewers Special Castings and all kinds of Flexible and Flange Pipe
WATER WORKS SUPPLIES HAMILTON, ONT.

DEEP WELL PUMPS

Steam Geared or Electrically Driven.

Deep Well Pumping Systems for Cities, Railroad, Mines, Factories, etc.

DOWNIE PUMP CO., Downieville, Pa., U.S.A.



Try
Dixon's
Graphite
At Our
Expense

Dixon's Flake Graphite will reduce friction, save coal and oil, lessen labor, prevent wear and repairs. We want you to know all this and will gladly send liberal sample 33-C free to prove it.

Joseph Dixon Crucible Co.

JERSEY CITY, N.J., U.S.A.

A COMPLETE

ELECTRICAL LIBRARY

By PROF. T. O'CONNOR SLOANE

The Celebrated Electrician.

The Canadian Manufacturer will send, postage paid to any address, any of the following books upon receipt of the price, money to be sent by Post Office or Express Money Order.

How to Become a Successful Electrician

Illustrated. \$1.00.

It is the ambition of thousands of young and old to become electrical engineers. Not every one is prepared to spend several thousand dollars upon a college course, even if the three or four years requisite are at their disposal. It is possible to become an electrical engineer without this sacrifice, and this work is designed to tell "How to become a successful Electrician," without the outlay usually spent in acquiring the profession.

Electricity Simplified

Fully Illustrated. \$1.00.

This work is the simplest ever published on the subject of Electricity, and does something not hitherto accomplished. Electricity is in many respects unexplained by the scientist; to the ordinary man it is all a mystery. The object of "Electricity Simplified" is to make the subject as plain as possible.

Arithmetic of Electricity

SIXTEENTH EDITION

Illustrated. Price, \$1.00.

A Practical Treatise on Electrical Calculations of all kinds, reduced to a series of rules, all of the simplest forms, and involving only ordinary arithmetic; each rule illustrated by one or more practical problems, with detailed solution of each one. Followed by an extensive series of Tables.

Electric Toy-Making, Dynamo Building and Electric-Motor Construction

Fully Illustrated. \$1.00.

This work treats of the making at home of Electrical Toys, Electrical Apparatus, Motors, Dynamos and Instruments in general, and is designed to bring within the reach of young and old the manufacture of genuine and useful electrical appliances. The work is specially designed for amateurs and young folks.

STANDARD ELECTRICAL DICTIONARY

A popular dictionary of words, terms and phrases, used in the practice of electrical engineering—a concise and practical book of reference. Tenth edition, revised and enlarged, bringing the work right up to date. 393 illustrations. PRICE \$3.00. 682 pages.

The work is absolutely indispensable to all in any way interested in "Electrical Science," from the higher electrical expert to the every-day electrical workman. In fact, it should be in the possession of all who desire to keep abreast with the progress of the greatest science of the times.

ELECTRICIAN'S HANDY BOOK

Handsomely Bound in Red Leather, with Titles and Edges in Gold.

556 Illustrations and Diagrams. Price \$3.50.

A compendium of useful data, covering the field of Electrical Engineering, including the theory of the electric current and circuit, electro-chemistry, primary batteries, storage batteries, generation and utilization of electric power, armature winding, safety appliances, arc and incandescent lighting, bell wiring, electro-plating, etc.

Address—

Canadian Manufacturer Pub. Co., Limited

TORONTO - CANADA

CLASSIFIED INDEX.

(CONTINUED).

Darling Bros., Montreal.
Downie Pump Co., Downieville, Pa.
Goldie & McCulloch Co., Galt, Ont.
Jencks Machine Co., Sherbrooke, Que.
Kerr Engine Co., Walkerville, Ont.
Morris Machine Works, Baldwinsville, N.Y.
McDougall, John, Caledonian Iron Works Co., Montreal.
Ontario Wind Engine & Pump Co., Toronto.
Petrie, H. W., Toronto.
Smart-Turner Machine Co. Hamilton, Ont.

Punches and Shears
Globe Machine & Stamping Co., Cleveland, Ohio.
Petrie, H. W., Toronto.

Purifiers
Babcock & Wilcox, Limited, Montreal.
Goldie & McCulloch Co., Galt, Ont.
McDougall, John, Caledonian Iron Works Co., Montreal.

Purifying and Softening Systems (Water)
Babcock & Wilcox, Limited, Montreal.
Darling Bros., Montreal.
McDougall, John, Caledonian Iron Works Co., Montreal.

Railroads
Chicago & North-Western Ry., Toronto and St. Paul, Minn.

Railway Supplies
Algoma Steel Co., Sault Ste. Marie, Ont.
Allis-Chalmers-Bullock, Limited, Montreal.
Gartshore, John J., Toronto.
Greening, B. Wire Co., Hamilton, Ont.
Gutta Percha & Rubber Mfg. Co., Toronto.
Hopkins, F. H. & Co., Montreal.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.
Phillips, Eugene F., Electrical Works, Montreal.

Reamers
Butterfield & Co., Rock Island, Que.

Rivets
Bourne-Fuller Co., Cleveland, Ohio.
London Rolling Mills, London, Ont.

Rock and Ore Crushers
Allis-Chalmers-Bullock, Limited, Montreal.
Bradley Pulverizer Co., Boston, Mass.

Rolling Mill Engineers
Bourne-Fuller Co., Cleveland, Ohio.

Roofing
Bourne-Fuller Co., Cleveland, Ohio.
Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.

Rubber Goods
Gutta Percha & Rubber Mfg. Co., Toronto.

Rubber Packing
Gutta Percha & Rubber Mfg. Co., Toronto.

Rubber Washing Tubs
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Rural Mail Boxes
Globe Machine & Stamping Co., Cleveland, Ohio.

Saddlery Hardware
McKinnon Dash & Metal Works Co., St. Catharines, Ont.

Safes and Vaults
Goldie & McCulloch Co., Galt, Ont.

Saw Mill Machinery
Allis-Chalmers-Bullock, Limited, Montreal.

Screws
Morrow, John, Machine Screw Co., Ingersoll, Ont.

Screw Plates
Armstrong Mfg. Co., Bridgeport, Conn.
Butterfield & Co. Rock Island, Que.

Shafting
Allis-Chalmers-Bullock, Limited, Montreal.
Bourne-Fuller Co., Cleveland, Ohio.
Goldie & McCulloch Co., Galt, Ont.
Jeffrey Mfg. Co., Columbus, Ohio.
McDougall, John, Caledonian Iron Works Co., Montreal.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.
Petrie, H. W., Toronto.
Smart-Turner Machine Co., Hamilton, Ont.

Shear Knives
Hay, Peter Knife Co., Galt, Ont.

Sheets (Iron and Steel)
Bourne-Fuller Co., Cleveland, Ohio.
Leslie, A. C. & Co., Montreal.
Lysaght, John, Limited, Bristol, England, and Montreal.
Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.

Sheet Metal Goods
Globe Machine & Stamping Co., Cleveland, Ohio.
Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.

Sheet Metal Stamping
Globe Machine & Stamping Co., Cleveland, Ohio.
Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.

Shovels.
Hamilton Facing Mill Co., Hamilton, Ont.

Smoke Stacks
Gearing, H., Toronto.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
McDougall, John, Caledonian Iron Works Co., Montreal.
Robb Engineering Co., Amherst, N.S.
Smart-Turner Machine Co., Hamilton, Ont.

Solder
Globe Machine & Stamping Co., Cleveland, Ohio.
Syracuse Smelting Co., Montreal.

Special Machinery
Allis-Chalmers-Bullock, Limited, Montreal.
Globe Machine & Stamping Co., Cleveland, Ohio.
Smart-Turner Machine Co., Hamilton, Ont.

Speed Recorders
Bristol Co., Waterbury, Conn.

Sprinkler Insurance
Canadian Casualty & Boiler Insurance Co., Toronto.

Stamps and Stencils
Globe Machine & Stamping Co., Cleveland, Ohio.

Steam Pumps
Allis-Chalmers-Bullock, Limited, Montreal.
American Steam Pump Co., Battle Creek, Mich.
Canada Foundry Co., Toronto.
Darling Bros., Montreal.
Goldie & McCulloch Co., Galt, Ont.
McDougall, John, Caledonian Iron Works Co., Montreal.
Petrie, H. W., Toronto.
Smart-Turner Machine Co., Hamilton, Ont.
Williams, A. R. Machinery Co., Toronto.

Steam Separators
Babcock & Wilcox, Limited, Montreal.
Darling Bros., Montreal.
Robb Engineering Co., Amherst, N.S.
Sheldon & Sheldon, Galt, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

Steam Shovels
Allis-Chalmers-Bullock, Limited, Montreal.

Steam Specialties
Darling Bros., Montreal.
Penberthy Injector Co., Windsor, Ont.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Hyde Park, Mass.

Steam Valves
American Steam Pump Co., Battle Creek, Mich.
Babcock & Wilcox, Limited, Montreal.
Darling Bros., Montreal.
Kerr Engine Co., Walkerville, Ont.
Petrie, H. W., Toronto.
Williams, A. R. Machinery Co., Toronto.

Steel Rails
Algoma Steel Co., Sault Ste. Marie, Ont.
Drummond, McCall & Co., Montreal and Toronto.
Gartshore, John J., Toronto.
Hopkins, F. H. & Co., Montreal.

Steel Shafting
Darling Bros., Montreal.
Goldie & McCulloch Co., Galt, Ont.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Leslie, A. C. & Co., Montreal.
McDougall, John, Caledonian Iron Works Co., Montreal.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.

Stocks and Dies
Armstrong Mfg. Co., Bridgeport, Conn.
Butterfield & Co., Rock Island, Que.
Petrie, H. W., Toronto.

Stoppers
McCullough-Dalzell Crucible Co., Pittsburg, Pa.
Pittsburg Crucible Works, Pittsburg, Pa.

Structural Steel
Bourne-Fuller Co., Cleveland, Ohio.
Canada Foundry Co., Toronto.
Hopkins, F. H. & Co., Montreal.

Sulphate of Alumina
Nichols Chemical Co. of Canada, Montreal.

Suspension Furnaces
Continental Iron Works Co., New York City.

Tanks (Oil and Water)
Canada Foundry Co., Toronto.
Goldie & McCulloch Co., Galt, Ont.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Jencks Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.
Ontario Wind Engine & Pump Co., Toronto.

Taps and Dies
Butterfield & Co., Rock Island, Que.
Globe Machine & Stamping Co., Cleveland, Ohio.

Tees
Bourne-Fuller Co., Cleveland, Ohio.
Canada Foundry Co., Toronto.

Textile Manufacturers
Dominion Oil Cloth Co., Montreal.
Storey, W. H. & Sons, Acton, Ont.

Textile Supplies
McLaren, J. C. Belting Co., Montreal and Toronto.

Thermometers (Recording)
Bristol Co., Waterbury, Conn.

Tin
Leslie, A. C. & Co., Montreal.
Syracuse Smelting Works, Montreal.

Tool Steel
Bourne-Fuller Co., Cleveland, Ohio.
Hopkins, F. H. & Co., Montreal.
Leslie, A. C. & Co., Montreal.

Trucks
Hopkins, F. H. & Co., Montreal.
McDougall, John, Caledonian Iron Works Co., Montreal.
Sheldon & Sheldon, Galt, Ont.

Trucks (Railway)
Canada Foundry Co., Toronto.

Trucks (Wire Mill Supplies)
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Tubs (Cleaning and Coating Wire)
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Tumbling Barrels
Globe Machine & Stamping Co., Cleveland, Ohio.
Petrie, H. W., Toronto.
Smart-Turner Machine Co., Hamilton, Ont.

Turbines
Canada Foundry Co., Toronto.
Hamilton, Wm. Mfg. Co., Peterborough Ont.
Jencks Machine Co., Sherbrooke, Que.

Valves
American Steam Pump Co., Battle Creek, Mich.
Babcock & Wilcox, Limited, Montreal.
Canada Foundry Co., Toronto.
Hamilton Brass Mfg. Co., Hamilton, Ont.
Kerr Engine Co., Walkerville, Ont.
Petrie, H. W., Toronto.
Smart-Turner Machine Co., Hamilton, Ont.
Williams, A. R. Machinery Co., Toronto.

Valves (Rubber)
Gutta Percha & Rubber Mfg. Co., Toronto.

Varnishes
Berry Bros., Walkerville, Ont.

Ventilators
Darling Bros., Montreal.
Metallic Roofing Co., Toronto.
Pedlar People, Oshawa, Ont.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

Wagon and Carriage Wood Work
Hore, F. W. & Son, Hamilton, Ont.

Washers or Hollenders (Cleaning Rubber)
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Water Power Development
Vogel, C. H., Ottawa.

Water Purifying Chemicals
Canada Chemical Mfg. Co., London, Ont.
Canada Process Co., Toronto.

Wheelbarrows.
Hamilton Facing Mill Co., Hamilton, Ont.

Windmills
Ontario Wind Engine & Pump Co., Toronto.

Wire Mill Supplies
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Wire and Wire Rope
Dominion Wire Rope Co., Montreal.
Greening, B. Wire Co., Hamilton, Ont.
Leslie, A. C. & Co., Montreal.
Phillips, Eugene F. Electrical Works, Montreal.

Wire Rope Fittings
Dominion Wire Rope Co., Montreal.

Wire Cloth
Greening, B. Wire Co., Hamilton, Ont.

Wire Drawing Machinery
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Wood-Working Machinery
Advance Machinery Co., Toledo, Ohio.
Goldie & McCulloch Co., Galt, Ont.
Petrie, H. W., Toronto.
Sheldon & Sheldon, Galt, Ont.
Williams, A. R. Machinery Co., Toronto.

Zinc
Leslie, A. C. & Co., Montreal.
Syracuse Smelting Works, Montreal.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER

PITTSBURGH COAL COMPANY

Miners and Shippers

OF

**YOUGHIOGHENY
GAS and PITTSBURGH
STEAM COAL**

Manufacturers of

HIGH GRADE COKE

Loading and Fueling Docks at all Ports on the
Great Lakes.

GENERAL OFFICES:

PITTSBURGH, PA.



Manufacturers' Agents

Who are looking for the representation of English or Foreign Manufacturers cannot do better than secure a copy of

**KELLY'S DIRECTORY OF MERCHANTS, MANUFACTURERS
AND SHIPPERS OF THE WORLD**

A new edition of which has just been issued, containing full and classified lists of the Manufacturers and Exporters of almost every line of goods in Great Britain and the World.

KELLY PUBLISHING CO.,

5 Beekman St., NEW YORK.

Head Office: LONDON, W.C., ENGLAND

Dominion Branch—70 Dunn Ave., TORONTO

And at Paris, Hamburg, Melbourne, Sydney, Dunedin, Cape Town,
Bombay, Buenos Ayres, etc., etc.

The American Carpet and Upholstery Journal

The leading magazine devoted to these trades, published in Philadelphia, the center of carpet and upholstery manufacture in the United States.

Subscription, - \$2.00 per annum.

A copy of the "American Buyer's Directory" of the wholesale trade, free with subscription.

THE TRADES PUBLISHING COMPANY

102 South 12th Street,

PHILADELPHIA

NEW YORK OFFICE: Hartford Building.



THE GRIFFIN MILL

**The Greatest Pulverizing
Machine in the World**

Used Wherever Portland Cement Is Made

Over 50 per cent. of the Portland Cement manufactured in the United States to-day is ground in the Griffin Mill.

THE GRIFFIN MILL PULVERIZES MORE CEMENT THAN THE COMBINED OUTPUT OF ALL OTHER MACHINES USED FOR THIS PURPOSE.

Thoroughly tested by continually successful and constantly increasing use during the past sixteen years.

Portland Cement Clinker reduced from ½ inch to required fineness in one operation, with no auxiliary apparatus. No other machine made will do this.

Buy the GRIFFIN MILL and get the BEST. It holds the world record from every standpoint.

Send for Catalogue and full information.

BRADLEY PULVERIZER COMPANY, 92 State Street, Boston

Do It Now! Advertise in
THE CANADIAN MANUFACTURER

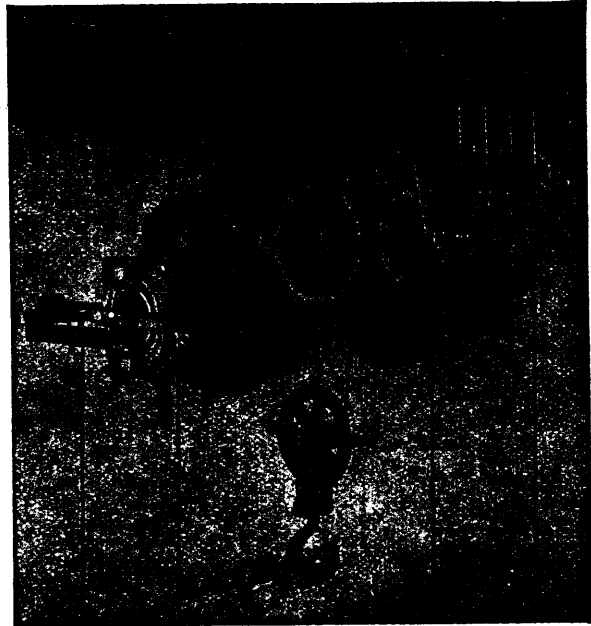
When writing to Advertisers kindly mention **THE CANADIAN MANUFACTURER**.

WESTINGHOUSE

Alternating and Direct Current

MOTORS

Reliable and Efficient



Westinghouse Induction Motor Driving 1,200 lbs. Capacity Single Rail Crane.

Canadian Westinghouse Co., Limited

General Office and Works, HAMILTON, ONTARIO.

Lawlor Bldg., King and Yonge Sts.,
TORONTO.
152 Hasting Street,
VANCOUVER.

For particulars address nearest office:
HAMILTON.
922-923 Union Bank Bldg.,
WINNIPEG.

Sovereign Bank of Canada Bldg.,
MONTREAL.
184 Granville Street,
HALIFAX.

ALLIS - CHALMERS - BULLOCK LIMITED



ONE OF MANY USES OF COMPRESSED AIR.

This is a view of one of our Corliss Cross Compound Steam and Compound Air Compressors in the power house of the Canada Car Co., Montreal. The various uses of compressed air are described in Catalogue 75 C.

Works—MONTREAL.

Branch Offices—TORONTO

NEW GLASGOW

WINNIPEG

NELSON

VANCOUVER

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

THE QUEEN CITY OIL CO. LIMITED, LUBRICATING AND REFINED OIL

TORONTO.

MARTHUR,
CORNEILLE & CO.
310 to 316 ST. PAUL ST.
MONTREAL

OILS, CHEMICALS, DYESTUFFS
AND
TANNING EXTRACTS

Waxes, Gums, Shellacs,
Glues, Gelatines, Etc.

CANADIAN AGENTS
FOR THE
BERLIN ANILINE CO.
BRITISH ALIZARINE CO. and
MILLER'S TANNING EXTRACT CO.

THE BOILER INSPECTION
and INSURANCE CO. of CANADA
CANADA LIFE BUILDING
TORONTO

Thirty Years' Experience as Consulting Engineers

Toronto, October 17th 1904.
THE BOILER INSPECTION & INSURANCE CO.
OF CANADA,

Canada Life Building,
Toronto, Ont.

Gentlemen:—
We have much pleasure in signifying our very high appreciation of the valuable engineering services rendered to us by you during the period our boilers have been insured.

We consider that any of your Policy-holders who choose to take advantage of services that are practically free to them, will receive far more than full value for the premiums paid by them.

Personally we cannot speak too highly of the advantages we have derived from your advice on several occasions, advice which has been the means of saving us considerable money.

Yours truly,
THE ONTARIO LUMBER CO., LIMITED
H. H. Cook, President.

CONDUITS COMPANY
LIMITED
SUCCESSORS TO

The Richmond Conduit and Mfg. Co.
Limited

Sole Manufacturers

Under U.S. and Canadian Patents

GALVADUCT

AND

LORICATED

CONDUITS

For Interior Construction

TORONTO, CANADA

MANUFACTURING CHEMISTS

THE CANADA PROCESS COMPANY, LIMITED

Office and Works, Queen's Wharf, BATHURST STREET, TORONTO

Manufacturers and Importers of High Grade Chemicals

Glauber Salts, Hypo-Sulphite of Soda, Nitrate of Iron,
Sulphuric Acid, Nitric Acid, Muriatic Acid,
Pure Liquid Carbonic Acid Gas "Zenith Brand."

Also Sulphite of Lime, Bi-Sulphite of Lime, Sulphite of Soda, Bi-Sulphite of Soda, Hydrofluoric Acid, Liquid Sulphur Dioxide and Specialties for Dyeing, Tanning and Manufacturing Industries.

Special Machinery

Do You Make

-- WIRE --

We build machinery to help you draw it right.

Save time and stock by using our machinery.

WRITE US—

The TURNER, VAUGHN & TAYLOR CO.
OUYAHOGA FALLS, O., U.S.A.

BRISTOL'S PATENT
STEEL BELT LACING

— ONE HUNDRED SIZES —
Adapted to all kinds of belts.



READY TO APPLY FINISHED JOINT
Greatest Strength with Least Material

EASILY APPLIED and LOW IN PRICE

Saves Time, Saves Belts, Saves Money

SAMPLES SENT FREE
SEND FOR CIRCULAR G

THE BRISTOL CO.
WATERBURY, CONN.

Smith's Falls Malleable
Castings Company, Limited

CAPACITY 4,000 TONS

MANUFACTURERS
OF

**MALLEABLE
IRON
CASTINGS**

Labor Gazette

Smith's Falls, Ont., Can.

PATENTS

Fetherstonhaugh & Co.

Head Office—TORONTO

Branch Offices / Montreal, Ottawa, Winnipeg, Vancouver and Washington

HAMILTON, ONT.

Manufacturers of

THE HAMILTON FOUNDRY AND MACHINE CO., LIMITED,
Ceylon Plumbago Supplies

also Extra Fine Quality

MOULDING SAND

WRITE FOR PROGRAM