

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/
Couverture de couleur

Covers damaged/
Couverture endommagée

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Cover title missing/
Le titre de couverture manque

Coloured maps/
Cartes géographiques en couleur

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Bound with other material/
Relié avec d'autres documents

Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Additional comments:
Commentaires supplémentaires:

Coloured pages/
Pages de couleur

Pages damaged/
Pages endommagées

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Pages detached/
Pages détachées

Showthrough/
Transparence

Quality of print varies/
Qualité inégale de l'impression

Continuous pagination/
Pagination continue

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

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

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

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

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

The Classified Index

Beginning on page 37 of this issue of *The Canadian Manufacturer* will save our readers money, and should be consulted by them before purchasing.

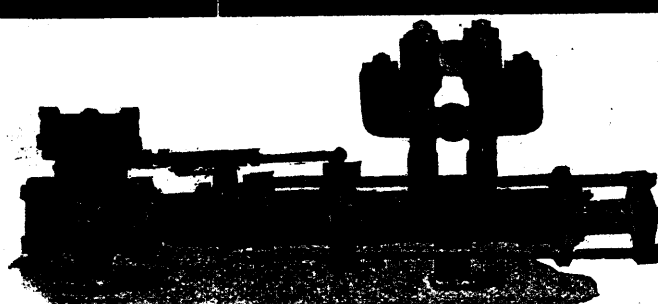
AN ADIAN MANUFACTURER
 AND INDUSTRIAL WORLD
 DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

VOL. 52. TORONTO, MARCH 16, 1906. No. 6.

B. & W. Patent WATER-TUBE BOILER
 Specially designed for the **RAPID, ECONOMICAL and SAFE** Generation of Steam up to the highest pressures.
Over 5,000,000. H.P. in use.
 If you are interested write for our book "Steam" mentioning this paper.
 HEAD OFFICE FOR CANADA:
BABCOCK & WILCOX, LIMITED
 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.



Steam and Power Pumps
 Centrifugal Pumps, Condensers,
 Travelling Cranes, Etc.
THE SMART-TURNER MACHINE CO., Limited, - HAMILTON, CANADA

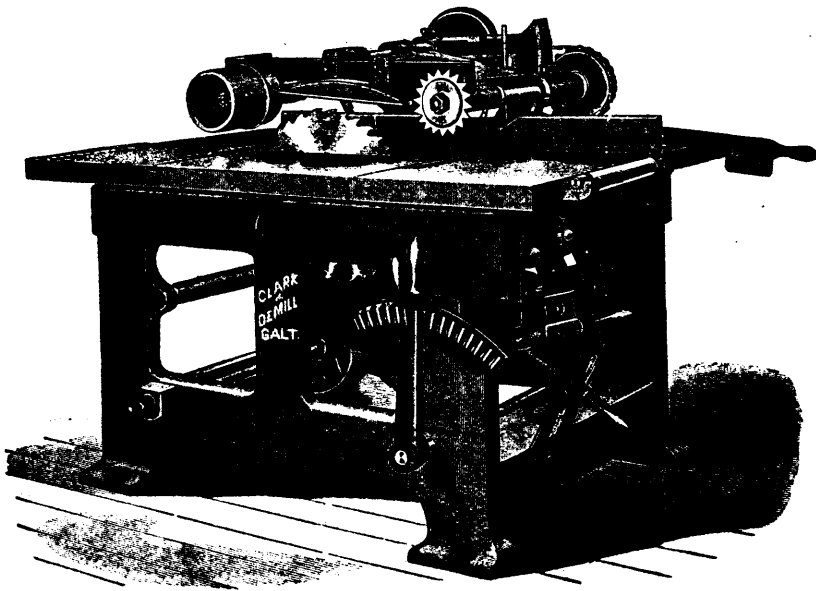
Dominion Oil Cloth Co. LIMITED
 Manufacturers of **Oilcloths** of Every Description.
 Floor Oil-Cloth, Table Oil-Cloth, Carriage Oil-Cloth, Enamelled Oil-Cloth, Stair Oil-Cloth, etc.
 OFFICE AND WORKS:
 Cor. St. Catherine and Parthenais Streets
MONTREAL, Que.

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

HAMILTON, ONT. **Manufacturers of** **Small Machine Tools** **also Extra Fine Quality Moulding Sand** **WRITE FOR PRICES.**

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.

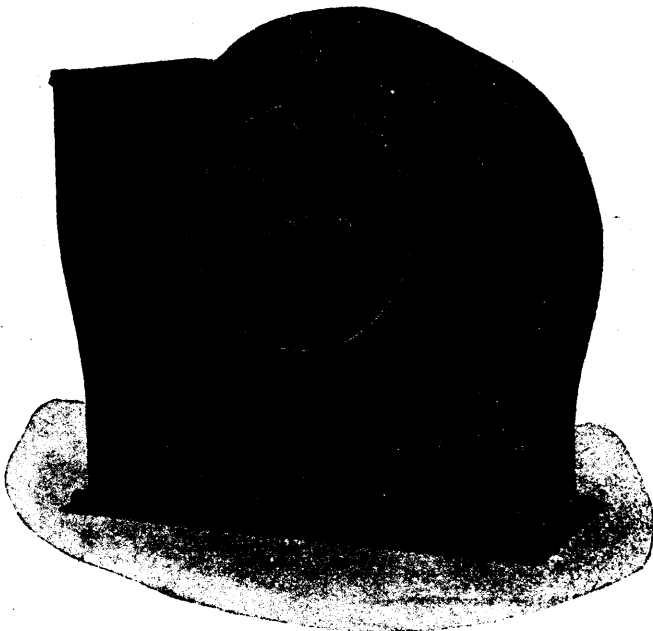
We aim to Lead in the Manufacture of New and Improved Wood Working Machinery

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

SHELDON & SHELDON

Engineers and Manufacturers

GALT, ONT.



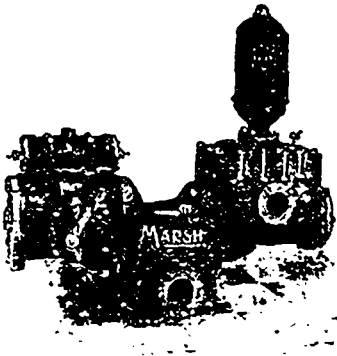
IDEAL ENGINES

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, Cat Meal Mill Machinery, Cat
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
"The Simple is to be Great."



MARSH AND AMERICAN STEAM PUMPS

"AMERICAN" COMPOUND PUMPS
"AMERICAN" POWER PUMPS

Each Type at the Head of its Class.

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

Write for No. 12 THE A. R. WILLIAMS MACHINERY CO., LIMITED, TORONTO.
Catalogue. WILLIAMS & WILSON, - MONTREAL.

MORISON Suspension Furnaces

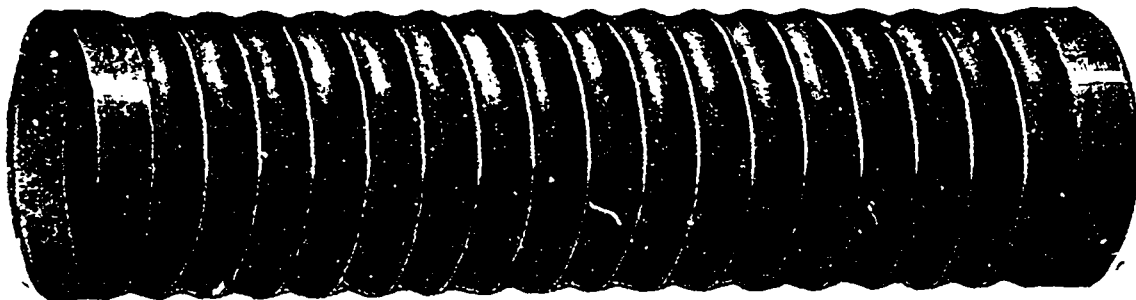


For Land and Marine Boilers

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

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

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.

SCOTT'S IXL ALL High Speed Steel

† You cannot hurt this steel by burning it.

† Heat tools to an absolute white or Welding heat and then cool in oil (not Kerosene).

† With tools of intricate shapes or having fine edges, heat as near a White heat as possible and cool as above.

† Will cut at one speed faster than any other high speed steel on the market.

All sizes in stock.

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

THE NOVA SCOTIA STEEL & 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

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

..HEAVY FORGINGS A SPECIALTY..

“FERRONA” PIG IRON, For Foundry Use.

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

Head Office—NEW GLASGOW, NOVA SCOTIA

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

NICKEL

THE CANADIAN COPPER COMPANY.

NICKEL FOR NICKEL STEEL

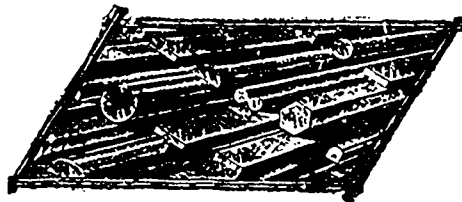
THE ORFORD COPPER COMPANY.

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.

WIRE For GUARDS

Factory and Mill Windows.
School and Church Windows.
Store and Basement Windows.
and for all Public Buildings.

HAMILTON, Ont.

THE B. GREENING WIRE CO., Limited.

Montreal, Que.

Make Your Money Earn More

Don't you want to invest your money to the best possible advantage?

Why put it in a bank or a mortgage at 3½, 4, 5 or even 6 per cent. when we can make it earn 20 per cent. for you.

No, this is no fake, neither is it a mining scheme.

It's simply a straight, legitimate business proposition,—a copper refinery.

And the only one in Canada.

Perhaps you don't know that copper is one of the most valuable metals used.

Well, it is, and the demand far exceeds the supply.

But we can get all we want, if we can only secure capital to increase our plant.

To do this, we're selling a limited number of shares of the stock of the Montreal Copper Co., Limited, at \$100 each.

Send for circular, it explains how 17½ per cent. was paid on the capital invested last year.

MONTREAL COPPER CO., Limited, 332 William St., 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.

MONTREAL PIPE FOUNDRY CO., LIMITED

SUCCESSORS TO

DRUMMOND-McCALL PIPE FOUNDRY CO. (Limited)

Manufacturers of

"Specials," Hydrants, Valves, Etc.

Offices: - - - Canada Life Building,
MONTREAL



The Jenckes Machine Co., Limited

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

Catalogues and Estimates on request. Correspondence Invited.

Branch Offices: TORONTO, HALIFAX, ROSSLAND, VANCOUVER.

Works and Head Office—SHERBROOKE, QUE.

During the fiscal year ending June 30, 1905, the imports of fuel into Canada and the value thereof were as follows:—Bituminous and Dust, **4,826,535** tons, value **\$8,346,352**; Anthracite and Dust, **2,604,137** tons, value **\$12,093,371**; Coke, **371,593** tons, value **\$807,842**; Charcoal, value **\$46,862**. Under the general tariff the duty on Bituminous Coal is 53 cents per net ton, and upon Bituminous Dust or Slack, and upon Charcoal, 20 per cent. There is no duty imposed upon Anthracite or Coke.

EVERY STEAM POWER PLANT IN CANADA USES COAL. EVERY FOUNDRY USES COKE.

The CANADIAN MANUFACTURER Reaches Them.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER

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., 13,986.

"RED JACKET"—Determined by 50 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, 10½ lbs.

Equivalent evaporated from and at 212 degrees per pound of combustible pounds, 12:33.

We also handle Pocohontas Coke. Correspondence solicited.

A Dead Man Does not subscribe **Trade Paper**
for any

He does not need it. Perhaps he is also

Busy About Other Things!

Live Men Need Live Information

It can be had in

The CANADIAN MANUFACTURER

It costs only \$1.50 a year.

BE A LIVE MAN.

Send for Advertising Rates.

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.

H. K. WICK, President.

W. D. WARD, Secy. and Treasurer.

H. K. WICK & CO.

(INCORPORATED)

Miners and Shippers of

Bituminous Coals

Pittsburgh,
Youghiogheny.

Brier Hill, Smithing.

Mercer & Butler County Coals.

Rooms 64 and 65

Erie County Savings Bank Bldg.

BUFFALO,

N.Y.

400 Individual Cars.



EXPORTERS

desiring full and up-to-date lists of buyers in Great Britain and Foreign Countries should procure a copy of Kelly's Directory of the Merchants, Manufacturers and Shippers of the World, a new edition of which is about to be issued, containing about 4,000 pages.

IMPORTERS

will find Kelly's Directory a most valuable addition to their office, containing as it does full and classified lists of the Manufacturers and Exporters of almost every line of goods in Great Britain and the World.

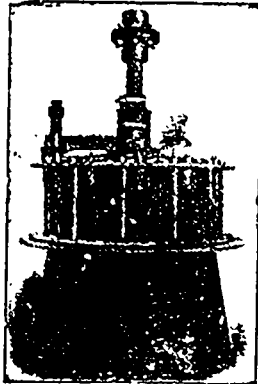
KELLY PUBLISHING CO.,

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 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.

Montreal Belting Co.

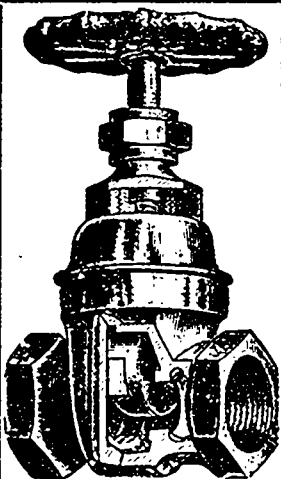
MANUFACTURERS OF

ENGLISH OAK TANNED
LEATHER BELTING

DISCOUNT 60, 10 AND 5% OFF LIST

SEND SAMPLE ORDER

595 St. Paul Street
MONTREAL



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

Wheelbarrows,
Concrete Mixers,
Hoisting Engines,
Derricks,
Rock Crushers,
Elevators,
Screens,
Picks,
Shovels,
Cars,
Rails,
Pumps,
All classes of Contractors'
Supplies.

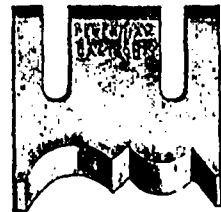


Wire Rope,
Manilla Rope,
Wells Lights,
Sledges,
Hammers,
Scrapers,
Track Tools,
Winches,
Spiral Pipe,
Blocks,
Crowbars,
Engines,
All classes of Railway
Supplies.

THE PETER HAY KNIFE CO., Limited



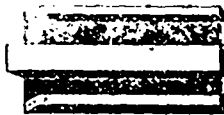
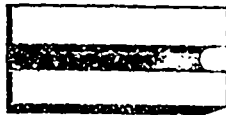
GALT, ONT.



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.

ELK FIRE BRICK CO.

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.

Did You Ever

Stop to consider the value of an advertisement in THE CANADIAN MANUFACTURER? You are brought in direct contact with men who need and use your goods. The cost is small, results sure.

Try It.

"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.

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 2232.

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 Fine Crushers,
 Balanced and Centrifugal Rolls, Emery Mills,
 Steam Road Rollers, Boilers 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. 1923
 (Residence, N. 2967
 Machinery Designed, Supervised, Inspected and
 Contracted for. Tests, Reports, Electric Light
 Plants, Power Plants, Pumping Plants.

DR. GEO. ARCHBOLD, M. A.,
TECHNICAL CHEMIST
 PRESCOTT, ONT.
 Dr. Archbold is technical adviser to three of the
 oldest firms in U.S.A. Terms on application.

PATENTS
 TRADE MARKS, Etc.
HANBURY A. BUDDEN
 NEW YORK LIFE BUILDING,
 MONTREAL.

RODERICK J. PARKE
 A.M. AMER. INST. E.E.
 A.M. CAN. SOC. C.E.
CONSULTING ENGINEER
 Janos Building, TORONTO
 Long Distance Telephone.
TO MANUFACTURERS:— Advice and specifications covering Industrial Applications of Electricity—Lighting—Power Transmission—Factory Power Distribution—Steam Plants.
TESTS—REPORTS—VALUATIONS.

The Howe-Buller Co.
 CLEVELAND, O.
FIRE BRICK SILICA FIRE CLAY
 ALUMNITE
 SILICA CEMENT
 MACHESITE BURNT MACHESITE
 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 manufacture 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; 121 The Rookery,
 CHICAGO; Monongahela Bank Bldg., PITTSBURGH;
 Norfolk House, Cannon St., E.C. LONDON.
 Inspection of Rails and Fastenings, Cars, Locomotives, Pipe, etc.; Bridges, Buildings and other Structures. Chemical and Physical Laboratories. Reports and estimates on properties and processes.

JOHN J. GARTSHORE
 83 Front St. W., Toronto.
Rails and SUPPLIES,
 Now and Secondhand,
 For RAILWAYS, TRAMWAYS, Etc.
 Old material bought and sold.

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

E. VON DER OSTEN & CO.
Consulting Engineers
 Industrial Plants. Waterworks.
 Lighting and Power Plants.
 Sewerage and Sewage Disposal.
 Garbage Reduction Plants.
 Municipal Improvements.
 Roncesvalles Ave. and High Park
 Boulevard,
 TORONTO, ONT.

HORACE F. EVANS
 EXPLORE? and GEOLOGIST
 Having made a careful examination of the Thompson, Bonaparte and Nicola divisions of Yale District, British Columbia, is prepared to furnish investors and intending investors with reliable reports on the occurrence of metalliferous ores, also Coals, Lignite Coal and Lignite within the district indicated.
 Having made a careful examination of the Cold Water Coal Beds of the Nicola Valley and Hat Creek Country, very dependable reports on the character of these Coals and Lignites will be furnished to investors and others. These examinations have extended over many years and the value as well as extent of the coal measures will be given.
 Regular Address, ASHCROFT, B.C.
 Cable and Tel. Address, "Callor," Ashcroft, B.C.

AN ADVERTISEMENT
 IN THE
Canadian
Manufacturer
 DURING PROSPEROUS TIMES
 WILL BRING
 RETURNS IN DULL SEASONS.
 Don't let your customers
 forget you simply because
 you are rushed with
 work at present
Good Advertising Always
Pays
 SEND FOR RATES

Established 1873. Telephone Main 1639.
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 6035
 TORONTO, ONT.

H. D. PETRIE
 Barrister, Solicitor, Notary
 Spectator Building,
 HAMILTON, ONT.
 Companies Incorporated.
 Commercial Law and Collections.

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

S. DILLON - MILLS
MINING EXPERT
 Mining Properties examined and developed, reports furnished. Twenty years experience in Furnace and Mining Work.
 688 HURON STREET. TORONTO

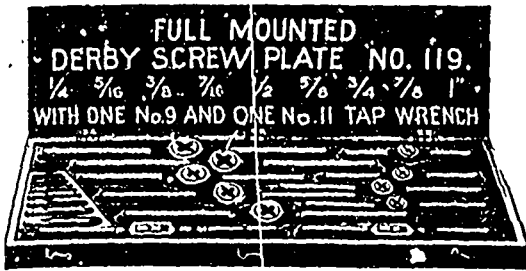
The Firstbrook Box Co. Limited
PACKING CASES.
COVETAIL BOXES.
Bottles' SHIPPING CASES.
BOX SHOOKS, Etc.
TOP PINS, SIDE-BLOCKS & CROSS-ARMS
 Write for prices. TORONTO, Canada.

W. H. STOREY & SON, Limited, Acton, Ont.
 Manufacturers of... **FINE GLOVES and MITTS**
 in every variety and style. Moccasins

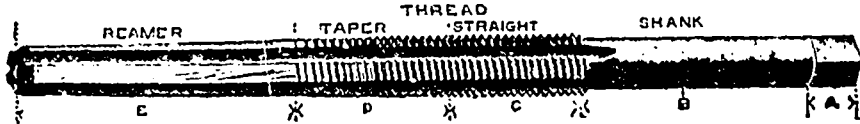
F. W. HORE & SON, Limited, HAMILTON, ONT.
 Manufacturers of
GARRIAGE, WAGGON, AND SLEIGH WOOD WORK.

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.
 CUYAHOGA FALLS, O., U.S.A.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



BUTTERFIELD & CO.,
Rock Island, Que.



Petrie's Machinery Depot

ENGINES AND BOILERS

MACHINE TOOLS

WOOD-WORKING MACHINERY

SAW MILLS

ENGINEERS' AND MILL MEN'S

SUPPLIES

UP-
TO-
DATE

NEW STOCK LIST
Issued
Monthly.
Ask for one.

AGENTS FOR

- | | |
|--------------------------------|---|
| London Machine Tool Co. | American Grinding Machines. |
| Cincinnati Milling Machine Co. | Morris Machine Works. |
| Cincinnati Planer Co. | C. H. Dutton Co. |
| Cincinnati Shaper Co. | Taber Pump Co. |
| Cincinnati Upright Drills. | Sturtevant and Buffalo Blowers and Fans. |
| Lodge & Shipley Lathes. | American Machinery Co. |
| Bickford Radial Drills. | Fox Machine Co. |
| Sebastian Lathe Co. | West Side Band Saw. |
| B. F. Barnes & Co. | Dain Hay Presses. |
| Automatic Machine Co. | The Cleveland Automatic Machine Co., Cleveland, Ohio. |
| Catlin Key-seater. | The Laurio Engine Co., Montreal. |
| Brewer Punch & Shears. | Potter & Johnson. |
| The National Machinery Co. | |
| Schuchart & Schutte. | |

H. W. PETRIE

Adjoining
Union Station.

TORONTO

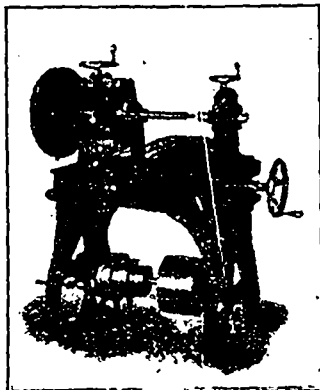
Prices and Descriptions of **NEW AND SECOND-HAND MACHINES** on Application.

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.

DECKER-BRAINARD MILLING MACHINE CO.,

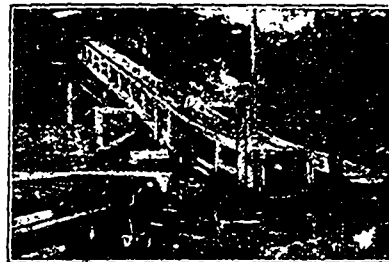
HYDE PARK, MASS., U.S.A.

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.

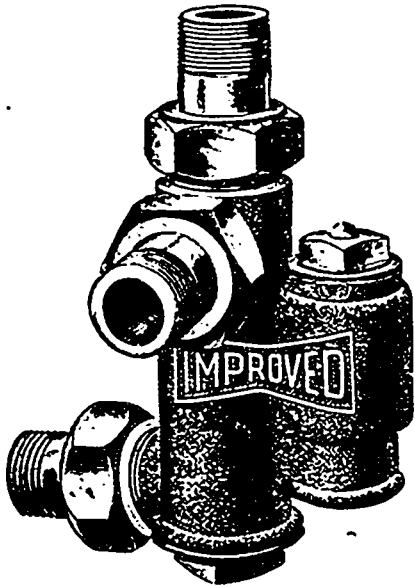
CORRESPONDENCE SOLICITED

THE JEFFREY MFG. COMPANY

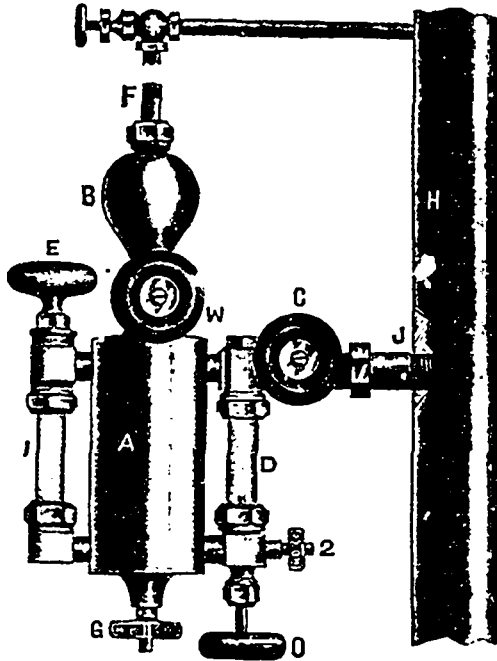
COLUMBUS, OHIO, U.S.A.

NEW YORK CHICAGO BOSTON ST. LOUIS DENVER

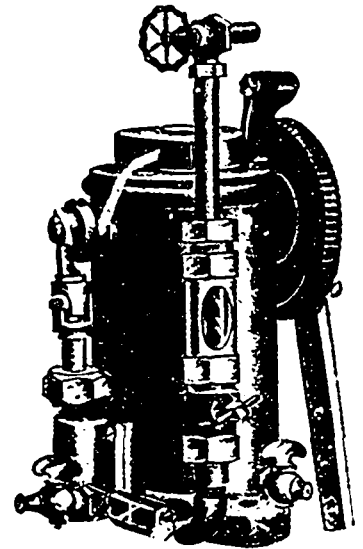
Toronto Agents—A. R. WILLIAMS MACHINERY CO.
Montreal " —WILLIAMS & WILSON.



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



IMPROVED MICHIGAN LUBRICATOR.

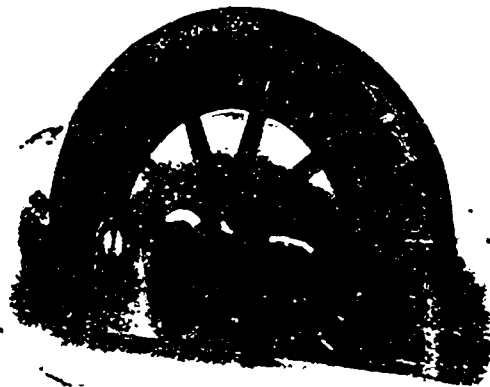


THE IMPROVED HAMILTON
OIL PUMP
with and without Sight Feed.

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

CROCKER-WHEELER COMPANY

Alternating
Current
Generators.



Direct
Current
Isolated
Plants.

Canadian Representatives

THE PACKARD ELECTRIC CO., Limited

MONTREAL.

ST. CATHARINES.

WINNIPEG.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

C. G. E. ARC LAMPS



Outdoor Direct Current

The time for artificial lighting is at hand. Let us solve the problem for you. Here are two types. We have many others for

FACTORIES, MILLS, WAREHOUSES, STORES, OUTDOOR LIGHTING, ETC.

Alternating or Direct Current. Series or Multiple.



Indoor Alternating Current

Canadian General Electric Company, Limited

Head Office, TORONTO, ONT.

BRANCH OFFICES— Montreal. Halifax. Ottawa. Winnipeg. Vancouver. Rossland.

THE EUGENE F. PHILLIPS ELECTRICAL WORKS

MONTREAL, - CANADA LIMITED

TORONTO STORE, 50 Adelaide Street West

Bare Copper Wire Weather proof Wire

LONG DISTANCE PHONE 1103.

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

Perfection TYPE DYNAMOS and MOTORS

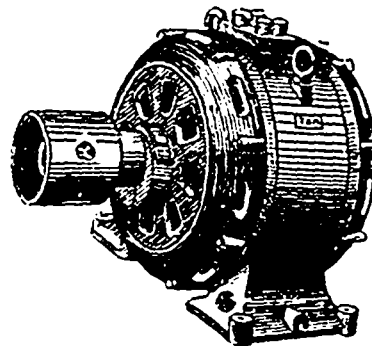
Multipolar or Bipolar, Direct-Connected or Belted.

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 —

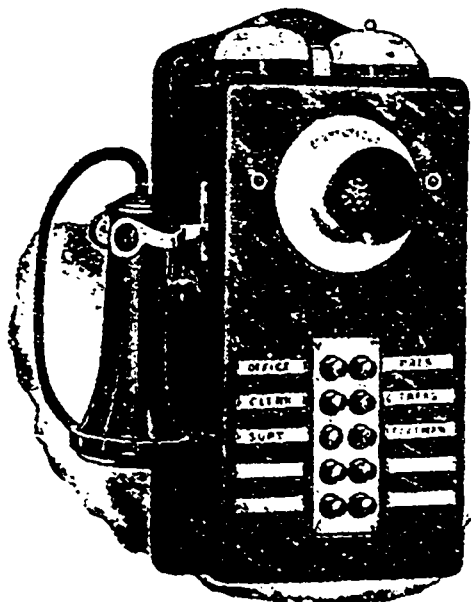
A. C. Generators

IN ALL SIZES.

TORONTO & HAMILTON ELECTRIC CO.

99-103 McNab North. HAMILTON, ONT

TELEPHONES OF EVERY DESCRIPTION



Telephone and Line Supplies

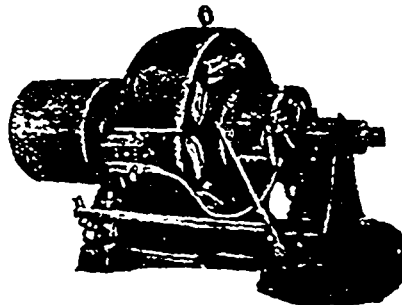
JOHN FORMAN

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:

T A B L E S

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	51.8
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.

IRON

Bars in Flats, Rounds, Squares, Ovals, Half-Ovals, Half-Rounds and Bands.

Also Wrought Washers.
Good Quality—Prompt Shipment.

LONDON ROLLING MILL CO.
LIMITED
LONDON, CANADA.

STEEL

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.

CORRESPONDENTS

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

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

WARING-WHITE BUILDING CO.
London, England.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



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 \$1.50 per year. All other Countries in Postal Union ten shillings sterling, including postage.

J. J. CASSIDY, Editor and Manager

Classified IndexPage 37
Index to AdvertisersPage 45

Another Tariff Edition.

As soon as the proposed revision of the tariff has been made and adopted by the Dominion Parliament, thus becoming the law of the land, a full and absolutely correct reproduction of it copied from the official document, will be published in the Canadian Manufacturer. It is impossible at this time to say just when that event will occur, probably during the present year. In the same special edition will be published in full, as heretofore, the tariffs of the United States, Great Britain, Australia and South Africa, all under the one cover, a convenience which will be fully recognized by our readers.

THE TARIFF.

It was the general expectation that at the session of the Dominion Parliament that was opened last week the revision of the tariff for so long a time promised would have been accomplished, but it is not to be at this session. Sir Wilfrid Laurier, the Premier, told the House the reason of the delay. Parliament, he said, was aware that, according to announcement, a thorough investigation had been undertaken by a government commission into the working of the tariff with a view of ascertaining if revision were necessary, in what directions, and to what extent. The work of the commission was not completed until the latter part of January, when instructions were issued for convening Parliament on March 8. The Premier stated that it had been the intention of the government to have a revision of the tariff at this session, but on account of an accident that had befallen Hon. W. S. Fielding, the Finance Minister, which incapacitated him for active work, it was not possible to undertake the revision at this time. The government proposes to have only a short session, introducing only such business as is absolutely unavoidable, and to reconvene Parliament early in November for the special purpose of dealing with the tariff question.

The current fiscal year is to end with the last day of March, the ensuing year to begin with the first day of April.

THE METRIC SYSTEM—2.

Our esteemed contemporary, The Shareholder, of Montreal, seems to have fallen into Prof. McLennan's way of thinking regarding the adoption by Canada, of the metric system of measurements—that is to say, the compulsory adoption of it, for it has been for a number of years and is now permissible by law. It tells us that Canada's action in the matter depends probably upon the action of the Imperial Parliament; that the feeling among commercial bodies in this country is favorable to the change, while at the same time there is considerable op-

position to it, due either to ignorance of the system or to the idea that it would cause inconvenience to trade. It suggests that it should be borne in mind that the system is in operation throughout the civilized world with the exception of Great Britain and her colonies, and the United States. Should the change be adopted by Great Britain, it tells us, it would soon extend to the colonies; and as to the United States, it would soon be compelled by force of circumstances to follow Great Britain's example. The metric system, when properly understood, does not present the difficulties which some profess to find in it. In that system there is a single unit of weight, one of capacity and one of extension. The subdivisions are by tens, hundreds and thousands, and are indicated by the Latin prefixes, deci, centi, and mille, while the multiples are indicated by the Greek prefixes, deca, hecla, and kilo. Those six words, or some division or multiple nearest to the quantity in most common use, is what The Shareholder tells us, people will require to get used to if the metric system is to be successfully adopted, which, once accomplished, they can instantly figure the divisions and multiples. For instance, the kilogram is the common quantity in weight, and it is equal to about 2 1-5 pounds or, decimally, exactly 2.040 pounds. It would not take long, it says, to get used to this, and to know that a kilogram was a little less than a quarter of a pound. It is only in a technical way that the smaller and larger quantities would be used, except the millier, or metric ton of a thousand kilograms, which is a little more than our present ton of 2,000 pounds. A litre is a trifle less than a dry quart and a trifle more than a liquid quart. To get used to the litre would not require any length of time, and to multiply by ten for a decalitre, and by one hundred for a hectolitre, which would be little less than three bushels, and a little more than twenty-six gallons, would be an easy matter. The metric yard is equal to 39.37 inches, or 3.37 inches more than a yard; and for short lengths the decimeter is about four inches. It would take but a short time to become

familiar with these lengths, and the values of them, and to divide and multiply them by ten for other denominations; or to learn that the distance of a kilometer is about five-eighths of a mile. The Shareholder thinks that from these illustrations the adoption of the metric system should not cause any special inconvenience, while at the same time it would facilitate commercial intercourse with those countries that have already adopted it. Were Canadians to adopt this system and give it a fair trial, they would prefer it on account of the ease and simplicity in calculations which it affords.

The arguments of The Shareholder in behalf of the metric system are identical, as far as they go, with those of Prof. McLennan which he is now setting before the people. We direct attention to the vagueness of them,—the delightful vagueness, and inconsistency.

If the metric system is so very plain, convenient and comprehensible as its advocates claim it to be; and if it is so much to be desired in preference to the methods we have had in use for more than two hundred years, and have to-day, it is surprising that the people of Canada know so little regarding it, and care so little for it. Why has it not been in force before now? The authority to do so has been before the country for many years. An act respecting weights and measures, cited as "The Weights and Measures Act" 42 Victoria, was, in 1886, passed by the Parliament of Canada, defining the weights and measures to be used throughout the country. Section 20 and section 23 of this act say:

20. The table in the third schedule of this Act shall be deemed to set forth the equivalents in Dominion weights and measures of the weights and measures therein expressed in terms of the metric system; and such table may be lawfully used for computing and expressing, in weights and measures, weights and measures of the metric system, 42 V., c. 16, s. 19.

23. No contract or agreement shall be invalid or open to objection on the ground that the weights or measures expressed or referred to therein are weights or measures of the metric system, or on the ground that decimal subdivisions of Dominion weights and measures, whether metric or otherwise, are used in such contract or dealing, 42 V., c. 16, s. 22.

The tables in the "Third Schedule" alluded to show the values of the principal denominations of measures and weights of the metric system, expressed in terms of the standard measures and weights of Canada. Thus, in measures of length the metre is the unit, the multiples thereof being the decametre, hectometre, kilometre, and miriametre; the decimal fractions being decimetre, centimetre, and millimetre, a miniametre being ten thousand metres, and a millimetre the one thousandth part of a metre, which is 1.093944 standard yard and decimal parts of a yard. In measures of surface the square metre is the unit, the multiples being the are, decare and hectare, the centiare being the one hundredth part of a square metre. The are is 100 square metres, and is the equivalent of 119.6714 square yards. In measures of weight the gramme is the unit, the equivalent of .002204 of the pound avoirdupois. The multiples of the gramme are decagramme, hectogramme,

kilogramme, myriagramme, quintal, and millier, and the fractions of the gramme are the decigramme, centigramme and milligramme. The millier is one million grammes, the equivalent of 2204.62125 pounds avoirdupois; and the milligram is the one thousandth part of a gramme, the equivalent of .000022 of one pound avoirdupois. In measures of capacity the litre is the unit, the equivalent of .2202 of an Imperial gallon. The multiples are the decalitre, hectolitre and kilolitre, the decimal fractions being the decilitre and centilitre. A kilolitre, or one cubic metre, is the equivalent of 220.2443 Imperial gallons; and the value of a centilitre is the one onehundredth part of a cubic metre, or twenty-two ten thousandth part of an Imperial gallon.

In measures of length every one knows the value of a lineal yard—that it contains three lineal feet, or thirty-six lineal inches; but the metric equivalent of a metre is 3.281833 feet.

In measures of surface every one knows that a square yard is three feet in each direction and therefore contains nine square feet; and if it requires ten yards of goods, a yard wide to make a dress, a proposition very plainly stated, how much goods should a woman call for in making the purchase in hectares, decares, ares, and centiares, metric measurement?

In measures of weight the foundryman desires to melt say ten short or standard tons of pig iron. He knows that there are two thousand pounds of iron to the ton, but how long a time would it take him to compute how many millier, quintals, miriagrammes, kilogrammes, hectogrammes, decagrammes, grammes, decigrammes, centigrammes and milligrammes, metric measure, would be required for his purpose? At \$20 per long ton for pig iron, how much would be the cost per gramme?

In measures of capacity—given a tank 11 feet 4 inches long, 5 feet 2 inches wide and 2 feet 5 inches deep, what would be the capacity, expressed in kilolitres, hectolitres, decalitres, litres, decilitres and centilitres? Would it not be more intelligible to express it, according to the British system as 141 cubic feet 880 cubic inches?

The Shareholder says that there is considerable opposition to the enforced adoption of the metric system, due either to ignorance of it or that it would cause inconvenience to trade. The British Empire, including Canada, and the United States are not aggregations of ignorance, and they have not adopted the system, simply because they, as commercial nations, know that it would be very inconvenient to their trade to do so.

Why should we be compelled to measure our lengths and distances by the metre and its multiples and fractions, expressed in strange words which are difficult to understand by the common people, instead of inches, feet, yards and miles with which we are familiar, and know the precise value of? Why should we speak of surface by ares with which we are not familiar, instead of acres, the area of which every farmer knows; or the size of our town lots, or the size of our sheets and blankets by metrical measurements? Why should we buy and sell iron and coal, potatoes and apples, or any other articles that are dealt in

by weights, already familiar to us, rather than by the gramme and its multiples and subdivisions? Why in building a potato bin in the cellar, or in estimating for heating and ventilating purposes, the cubical contents of a house or factory, the terms should be in the Latin and Greek language of the metric system instead of good old English expressions as now?

IN RESTRAINT OF TRADE.

At the recent and last meeting of the Tariff Commission at Ottawa at which the president of the Canadian Manufacturers' Association and the chairman of its tariff committee were present, the question of preferential trade being under discussion, it was urged in behalf of the association that the tariff preference should apply only to such dutiable merchandise otherwise entitled to it as was imported through a Canadian port; meaning that under no circumstances should the preference be allowed if the merchandise were imported via a United States port. Since the hearing at Ottawa the executive council of the association, to emphasize the argument, have again declared to the Government their views in this matter as above shown.

In the tariff revision now pending, should the views of the association be accepted and adopted, the British preference would apply only to goods which come into Canada direct from the country of origin. In other words goods landed at an American port will be denied the preference.

This question has heretofore been discussed in the Dominion House of Commons, but because of the opposition to it by the mercantile community, nothing was done.

Whatever the intention of the association might be in its desire to deprive British goods of the preference except when imported through a Canadian port, the effect would most seriously and perniciously affect ours in-transit foreign trade through the United States. This journal has heretofore shown the value and volume of this trade, of which the association seems so oblivious.

The value of all merchandise imported into Canada for home consumption from Great Britain in 1905 was:

	Value.	Duty paid.
Under general tariff.....	\$5,895,951	\$3,101,211
Under preferential tariff.....	38,444,668	7,754,629
Total dutiable.....	\$44,340,619	\$10,855,840
Free goods.....	15,243,182	
Total imports.....	\$59,583,801	

Merchandise imported from Great Britain under the general tariff, the product of that country, consisted of spirits, wines, tobaccos, etc., to which no tariff preference is shown.

The total value of all exports of Canadian produce to Great Britain in 1905 was \$97,114,867.

The total value of all merchandise imported into and exported from Canada from and to Great Britain through United States ports in 1905 was:

Imports.....	\$12,399,326
Exports.....	25,279,117
Total.....	\$37,678,443

The total in-transit trade of Canada with all countries through United States ports in 1905 was:

Imports.....	\$24,642,877
Exports.....	33,446,327
Total.....	\$58,089,204

The object of the tariff preference is to encourage trade between Canada and Great Britain.

The effect of the proposed restriction of the preference to only such goods imported from Great Britain as are brought in through Canadian ports is to discourage and restrict trade with the Mother Country.

The beneficiaries of the restriction could be only the Canadian ports through which the imports are made, to wit—Halifax and St. John, and under some circumstances, Montreal. All the rest of Canada, particularly Toronto and the many mercantile centres of Ontario, could not but be great sufferers by the restriction.

There are some features of the proposed restriction that seem to be ignored by the association. It is natural that Halifax and St. John should desire to restrict all imports from Great Britain to their harbors; and while all the rest of Canada desire, with them, to see them prosperous, the opinion prevails that under existing circumstances it cannot be done. In many instances the imports of certain goods are from Great Britain rather than the United States or other countries because of the discount of 33 1/3 per cent. from general tariff. At present a large volume of such imports are brought through United States ports; but if the wish of the association is adopted by the Government, and the preference is withheld because of that fact, the trading would inevitably be done with the United States instead of Great Britain.

The in-transit trade through United States ports between Canada and Great Britain, and other countries is carried on under no inherent right of Canada. It is a concession granted us by the United States; and it is to be observed that under the arrangement a considerable trade of the United States with other countries is carried on through Canada. It would be in violation of the spirit of that arrangement should we endeavor to restrict the trade through American ports, and should it be done, it would be the privilege of the United States to denounce the arrangement and prevent the in-transit trade of Canada through that country. As we have shown, the total in-transit trade of Canada through American ports in 1905 was valued at more than \$58,000,000, not, particularly for the benefit of that country, but for facilitating Canadian trade.

The trade of a country usually finds its way to its destination through those channels under the domination of the largest aggregation of capital, and those channels, as far as Canada is concerned, are nearly all upon the south side of the international boundary. This applies to both the import and export trade, with the difference that while the export trade of the country is to a great extent beyond the control of the government, the imports can be directed by means of the tariff. At the present time

even during the open season of the Saint Lawrence route, a large proportion of the trade of Canada is conducted over United States railways and via United States ports, but during the winter months these foreign ports take nearly all of it. If a change is made in the tariff giving a preference on all goods entering Canada direct from the country of origin, or in which they are manufactured, the effect would be at once apparent and far-reaching, but it does not follow that the far-reaching effect would be in the direction desired by the association, the probability being that, in the proposed change, it would be to the discouragement of British trade, to the increase of American trade, and possibly the abrogation of the bonding arrangement with the United States.

HE CAME—HE SAW—HE WRITES A LETTER.

A few weeks ago Mr. Alfred Mosely, a wealthy Englishman and a warm personal friend and admirer of Mr. Joseph Chamberlain, perambulated throughout Canada—his fifth visit, we believe, for the purpose of testing the opinion held in Canada on Mr. Chamberlain's political proposals. After having become satisfied with his explorations, having returned home he writes a letter to the London Times in which he tells of his observations and conclusions.

He begins by discussing the sentiment on preferential trade as he found it in Canada, and reports that opinion here was practically unanimous in its favor. Nevertheless he remarked, that everywhere he went he heard unfavorable comments regarding the lack of interest taken by the English people in the subject. He says that the masses in Canada cannot understand what the British people are about, and he found the task of explaining to them the many-sided problem a difficult one. Mr. Mosely explains that while Canada desires to do business with the Mother Country, in a commercial way, Canadians hope and believe that their country will have a future as a great manufacturing country, and are ambitious for the success of their manufacturing industries; yet on the whole, he found a strong sentiment in favor of the present preference, to be increased, perhaps, when the British people appreciate what we are now doing.

Mr. Mosely also discusses the question of possible reciprocity with the United States. The sentiment, he believes, is not dead, but merely dormant, and he gives it as his personal opinion that when time shall have removed Canadian resentment towards the United States for rebuffs when reciprocity was wanted by Canada, a new and closer arrangement will be made. But this will only happen if the Old Country remains indifferent. In this connection he speaks of the influx of American settlers to the West, and says "the natural inclination of these new-comers will be to do their trade across the border with their neighbors by selling their agricultural products to the States, and taking in return her manufactured goods, which are so well advertised in Canada and made to suit Canadian taste." He predicts that the trade will naturally flow to the United States "unless we wake up and

realize our chance and grasp the hand held out to us for interchange of commodities."

Speaking of Canada's possibilities for commercial greatness Mr. Mosely says:

"Canada's assets are simply stupendous; the country reeks with undeveloped riches—agricultural soil, timber, minerals, water-powers, navigable lakes, fisheries and a healthy and invigorating climate." We want only the capital and the energy of man to develop them. Speaking of capital, he says "that the great expansion and prosperity one now sees in this country has been chiefly brought about by the Americans, who have realized the situation. "What are we thinking of to let others capture Britain's heritage?" he demands. In conclusion, he urges upon English emigrants and manufacturers "to take advantage of the opportunity of the century." Only those who have travelled here can realize the full truth of Canada's latent greatness, "and it has been truly said that whilst the nineteenth century was the era of development of the United States, the twentieth will see a replica of that phenomenon in the development of Canada."

Mr. Mosely is, we believe, quite mistaken if he supposes that public opinion in Canada is, as he says it is, practically unanimous in favor of the British preference in trade, except on such terms as are laid down by the Canadian Manufacturers' Association. He failed to discover that the correct meaning of those terms is that the tariff under the preference shall be high enough to debar to greater or less extent the entry of British goods into Canada, the general tariff to be high enough to exclude American goods also. From what source did Mr. Mosely obtain his information from which he drew the conclusion that the people of Canada, particularly the manufacturers, are favorable to a preference that would admit British goods in competition with home products of similar character? The idea of preferential treatment to British goods, under the inspiration of Imperialism, is pleasing and inclines to popularity; but where is the manufacturer who is willing to favor the preference as affecting his own products, however willing he may be to have it operate in directions where he will not be injured? Why should any manufacturer favor a process by which he is strangled for the benefit of the British manufacturer, or even of Imperialism? Where is the demand for the preference? Not from Canadian manufacturers, certainly, unless they can make the measure of it. If the preference is to be reciprocal—that is, if Great Britain is to impose a tax on foreign imports while not imposing it on colonial products in return for such preference as we are now showing her, who is to be injured and who benefitted by it? Mr. Chamberlain is trying hard to induce the British tax payer to adopt it, but they decline to have anything to do with it. He proposed to restrict Canadian manufacturing expansion in the interest of British manufacturers, so that we might devote ourselves to the production of breadstuffs and raw materials for them, but that is not what Canada desires. After saying all that may be said in behalf of Imperialism, it is not the best interest of

Canada to become entangled in commercial alliances even with the Mother Country that could only result in restraint of trade and the onward march to national greatness.

AMERICAN CONSULATES IN CANADA.

United States Senator Frye, before the Senate Committee on Foreign Relations, a few days ago, gave eleven reasons for the proposed establishment of an American consulate in the province of Alberta, or Saskatchewan, in Western Canada. The statement of these reasons calls attention to the fact that a marvelous development is going on in the western part of the Dominion, and that Americans predominate in the movement. These are Senator Frye's reasons:

1. Consulates are established in all the other provinces of Canada.
2. This country, including these provinces, is developing more rapidly than any district in the world since the discovery that wheat can be successfully raised there.
3. American citizens predominate, 131,000 coming in ten months. An American representative should be nearer than 900 miles—Winnipeg.
4. American capitalists have established a distributing trade centre at Calgary, in the province of Alberta, from which place goods are shipped over the entire North West in rapidly increasing quantities. They have already built 15 grain elevators in Alberta.
5. The wheat yield in these two provinces last year was 88,500,000 bushels. In Alberta alone more than a million pounds of butter were produced last year.
6. Canada is third in the list of customers of the United States, and likely soon to be second.
7. These provinces are about four and one-half times as large as Manitoba, and are destined to become the most important of the Dominion.
8. The town of Calgary, in the Province of Alberta, has already 15,000 inhabitants, 13,000 of whom are Americans.
9. This new country offers great opportunities for our manufacturers and merchants.
10. The Canadian Pacific runs through the Province of Alberta, and several branch lines are in operation and others projected.
11. The State Department has received a report from the Winnipeg consul, who visited these provinces last spring to see about the advisability of establishing a consulate.

EDITORIAL NOTES.

The total production of pig iron in Canada last year from native and imported ores amounted to 527,932 short tons, valued at \$6,492,972. Of this it is estimated that 70,550 tons, valued at \$1,047,860, should be attributed to Canadian ores. The metallic class gives an aggregate increase of about six and a quarter million dollars, and, omitting the Yukon placer gold, which decreased by \$2,172,800, the general mineral industry of the rest of the Provinces shows a considerable augmentation, approaching eleven million dollars. Coal forms 25.77 per cent. of the total mineral production of Canada; gold,

21.14 per cent.; nickel, 11.02 per cent.; copper, 10.83 per cent.; brick and stone, lime, 8.62 per cent.; silver, 5.26 per cent.; lead, 3.84 per cent.; cement, 2.81 per cent.; asbestos, 2.19 per cent.; pig iron from Canadian ore, 1.53 per cent. and petroleum 1.24 per cent. Coal, it will be noticed, occupies the largely predominant position, and when added to the value of the metallic products about 80 per cent. of the production of the country is accounted for.

Nachrichten fur Handel und Industrie, a leading German commercial paper, says the Mexican Government has made public the arrangement it has concluded with Elder Dempster & Co., relating to a subsidized line of steamers between the Canadian ports of Montreal, Canada, Charlottetown, Prince Edward Island, Halifax, Nova Scotia, and Tampico, Veracruz, and Progreso, and other Mexican ports. Elder Dempster & Co. agree to inaugurate the service within six months. The subvention paid by the Mexican Government is \$100,000 per annum. The present contract is to remain in force for one year.

The aggregate trade of Canada for the seven months ending with January was \$44,261,143 greater than for the same time last year. An idea of the enormous growth, of the trade of the Dominion during the past few years may be formed when it is pointed out that the seven months shows a greater volume of business by over \$66,000,000 than the whole year of 1897, when the British preference was adopted. The imports dutiable and free for the seven months were \$156,259,403, compared with \$140,484,425, an increase of \$15,774,978 over the previous year. The exports were \$150,834,433, compared with \$125,230,493, being an increase of \$25,603,940. The relative increase in exports is greater by over \$9,000,000 than the imports. There was an increase in every branch of trade. The output of the mines shows an increase of over \$500,000, the fisheries over \$3,500,000, the forest \$1,500,000; animals and their product, \$4,500,000, manufactures \$1,750,000, while agriculture heads the list with a little short of \$14,000,000. This is one of the best statements of trade ever given out by the customs department. The total aggregate trade for the seven months was \$323,616,803, as against \$279,355,660. The duty collected increased by \$2,000,000. The January imports show an increase of \$5,000,000, and the exports for the month of over \$5,500,000.

The Canadian post-office department has perfected a convention with Trinidad for the direct exchange of closed parcels by mail under the following conditions: The maximum weight of a single parcel is 7 pounds; not to exceed in dimensions 2 feet in length by 1 foot in width or depth. The rate of postage is 16 cents for each pound or fraction thereof. Every parcel is to be accompanied by a customs declaration showing the value of the contents, and all parcels are to be subject to the customs regulations of the country of destination. No parcel shall contain any article prohibited by the regu-

lations of the Trinidad post-office and no inclosure in the nature of a letter or communication.

Tinplates and rails are playing an important part in the electoral contest in Swansea town. Colonel Wright the Conservative candidate for that constituency, has secured the support of Mr. W. H. Edwards, a local tinplate manufacturer, who, when taking the chair at one of the Colonel's meetings, observed that he found himself opposed to the Liberal party for the first time in his life. It had taken the Welsh tinplate trade, he said, fourteen years to recover from the blow inflicted upon it by the McKinley tariff, and, but for that tariff, there would now probably be 800 tinplate mills in this country instead of 400. The Italian trade in tinplates had been lost to us, the Russian, Spanish, and French trades were diminishing, the German and Canadian trades were disappearing. Colonel Wright said that when he came to Laundore in 1867 there was a "rattling rail trade." They had the great American continent open to them till the American tariff stopped the whole export of rails from this country.—The London Ironmonger, January 13.

The Mexican Consul-General at Montreal has addressed a letter to the Department of Trade and Commerce asking that Mexican sugar be admitted into Canada at the preferential rate enjoyed by the British colonies. He writes:—"In support thereof I desire to draw your attention to the fact that the Mexican Government pay an annual subsidy of \$50,000 to the steamship service between Canada and Mexico, which is of immense advantage to the former country, but of little benefit to Mexico, inasmuch as the latter can only export six or seven articles, while Canada has an unlimited number of manufactured goods and general products to export." Canada's subsidy towards the Mexican line amounts to \$100,000, and Mexico contributes about \$40,000, taking the present value of silver. During the winter months the Elder Dempster Co., who operate the service, have been carrying coal from Canada to Mexico. Trade between the two countries is as yet in its infancy, but may be very largely developed.

Automobile tires are bound to be expensive articles, so long as they embody a desirable quantity of good rubber—no matter where or by whom they may be made, says Tire News. The fact is that rubber has become one of the most costly of raw materials, compared by weight, now employed in manufacturing. And automobilizing has helped to make it so. The natural rubber resources are no greater to-day than a century ago, and the number of uncivilized natives in the tropical jungles who can be cajoled or forced to bleed the rubber trees does not increase with the growth in the demand for rubber. Some of the older rubber manufacturers are now paying four or five times as much for fine rubber as when they first entered the business, whereas in the same period most other commodities, raw or manufactured, have declined greatly in cost. The world's requirements for rubber have grown constantly from the beginning,

but never so rapidly as in late years. Every additional automobile tire has its effect in raising the price level of raw rubber, and also the cost of all manufactures of rubber—whether for mechanical, surgical, sporting or household uses. No doubt rubber produced on plantations will in time reduce the present stringency, but not before many who read these lines will have ceased to need tires or any other articles of rubber. Not only is the best of rubber requisite in a tire, but for a pneumatic, cotton duck is equally so, and cotton is another commodity which fails to become cheaper with the advance of time. Then there are many substances which, for one reason or another, are compounded with rubber in manufacture, and these remain high in cost to the consumer. When there is added to all this the necessity for employing skilled labor in every process of making a pneumatic tire, it may be easy to see why there are so few bargain counter sales of good tires.

Prof. J. C. McLennan, of the University of Toronto delivered a lecture in the rotunda of the Board of Trade Building, Toronto, yesterday on the Metric System. In the lecture, after outlining the history of the development of the system, he explained its chief characteristics, and dealt with the advantages he claims are possessed by it. He also referred to the status of the system in different countries, giving a resume of the legislative action taken both in the United States and within the British Empire to have the system adopted. The subject as dealt with by Prof. McLennan possesses much interest from an academical standpoint, but very little interest from the standpoint of practical, everyday business life.

The German Government has, it is said, taken steps to arrange an interview with Hon. Mr. Fielding, Minister of Finance, to see if something cannot be done to establish more friendly trade relations between Germany and Canada. It is learned that the German Government offers to give Canada the benefit of the minimum instead of the maximum tariff, such as now exists. Germany considers that Canada offers a splendid field for investments, and desires to have facilities that will enable her to spend many more millions of dollars a year in this country than she now does. The purchasing of over two million dollars stock in the Sovereign Bank by the Dresdner Bank of Germany was the first step in this direction. If the Germans promise that their country will give even better trade terms than Canada in order to get a trade foothold here, the interview with Mr. Fielding will probably lead to a new feature in the Canadian tariff.

At the last meeting of the executive council of the Canadian Manufacturers' Association, the following resolution was passed and the secretary was instructed to transmit it at once to Hon. W. S. Fielding, Minister of Finance, as chairman of the tariff commission:

"Resolved that the executive council of the Canadian Manufacturers' Association, desirous of building up Canadian ports, unanimously favors the application of the Canadian preference only to goods entering Canada direct from the country of their origin."

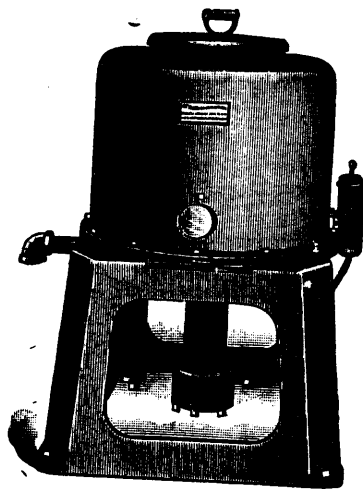
MACHINERY AND ENGINEERING.

A WASTE SAVING MACHINE.

The accompanying illustration is of a waste saving machine, manufactured by the Canadian Oil & Waste Saving Machine Co., Brockville, Ont. It is a new device just being put on the Canadian market; and it certainly seems to have solved the problem which has so long perplexed engineers. In addition to the fine mechanism of the machine, it embodies some of the latest principles of engineering, viz., the turbine system for delivering high speed with little vibration, and centrifugal force for separating the oil from the waste, the latter being thoroughly saturated with steam.

The results obtained from this machine are certainly remarkable as testified to by some of the users, many of which are well known in Canada and the United States.

The salient features claimed for this machine are its economy in operation and maintenance; no outside driving force; no expert care required; no outside running gear, and no stuffing boxes. It is impossible for dirt to reach the running parts. The bearing



is vertical, running in a well of oil; runs with steam pressure of 30 pounds and more; and requires but three minutes to load and three minutes to unload.

An important item with power stations and manufacturers is the use of various oils and greases as lubricants, and cotton or woolen waste, or rags to handle the oil. It is customary to limit the use of waste as much as possible, and to save such quantities of oil as is practicable with present facilities.

Many attempts have been made to clean waste and save the oil, by drip pans, presses, laundry driers, and chemicals, but only a portion could be saved, and at too great a cost. This machine offers an easy, complete, economical and safe means of reclaiming both oil and waste, saving 90% of the oil and all of the waste, leaving the latter in a better and more absorbant condition than when new, and it can be used over and over again.

These machines have been installed in some of the largest power plants in the world. At the Manhattan Power Station, 74th Street and East River, New York, a large machine was installed on January 5, 1904. It re-

claimed 195 gallons of oil on the first five-hour run. During the remainder of January 1,560 gallons of oil were extracted. The amount of new waste in this plant has been cut down from 150 lbs. per day to 10 lbs., as the waste has been used over and over again for eight months. Over 135 gallons of oil are now being saved daily at the Manhattan plant.

At the Brooklyn Rapid Transit Power House one machine is extracting over 100 gallons of oil daily.

At the New York and Queens Electric Co., Astoria, N.Y., where 8,000 h.p. is generated aside from the saving of oil with this machine, but one pound of new waste is used daily.

REFRACTORIES IN DEMAND.

The Harbison-Walker Refractories Co., Pittsburg, Pa., manufacturers of highest grade fire clay, silica, chrome, magnesite brick, importers and shippers of grain magnesite, magnesite cement, chrome ore, etc., report that during the past two months they were in receipt of the following interesting orders and contracts:

Bethlehem Steel Co., South Bethlehem, Pa.—Orders for all refractory materials required for new open hearth furnace construction and two new blast furnaces, eight new stoves, connections, etc.

New Jersey Zinc Co., Palmerston, N.J.—All fire brick required for new blast furnace and four stoves, connections, etc.

Milliken Bros., Mariner's Harbor, Staten Island, N.Y.—Entire requirements of refractory material for five new basic open hearth furnaces, soaking pits, heating furnaces, gas producers, etc.

New York State Steel Co., Buffalo, N.Y.—Entire requirements of refractory materials for two 200-ton "Talbot" furnaces with accompanying soaking pits, gas producers, boiler settings, etc.

Colonial Iron Co., Riddlesburg, Pa.—Complete blast furnace lining.

Dunbar Furnace Co., Dunbar, Pa.—Complete furnace lining and all brick required for one new stove.

Central Iron & Steel Co., Harrisburg, Pa.—Complete lining for blast furnace.

Colorado Fuel & Iron Co., Pueblo, Colo.—All brick required for blast furnace lining.

Marietta Glass Co., Indianapolis, Ind.—One of the largest orders for glass furnace construction ever placed.

H. C. Frick Coke Co., Pittsburg, Pa.—All brick required for 264-bee hive coke ovens.

Republic Iron & Steel Co.—All brick required for 100 bee hive coke ovens.

Washington Coal & Coke Co.—One million brick.

Copper Queen Mining Co., Dawson, New Mexico.—400,000 brick for coke ovens.

Hostetter Connellsville Coal & Coke Co.—500,000 brick.

National Cement Co., Eastern New Jersey.—All brick required for lengthening 16 kilns, etc.

Regular trade customers are ordering in larger quantities than ever before and new customers for refractory material are constantly coming forward.

The high pressure at which industrial establishments are being operated shows no signs of abatement; in fact, the insistent demand is increasing month by month as shown by the fact that the orders received in February are 25 per cent. larger in tonnage than those received in January and nearly double the tonnage in September, 1905. February orders were the largest ever received in the history of the Refractories Co. during the past four years, and those received to date, in March, are in excess of those received for a corresponding period in February.

SMALL POWER MOTORS.

The Westinghouse Electric & Mfg. Co., Pittsburg, Pa., have lately perfected a line of motors for light power service, such as operating sewing machines, dental apparatus, coffee grinders, small ice cream freezers, phonographs, sign flashers, moving window novelties and hundreds of other adaptations. The smaller sizes may be attached to an ordinary incandescent lamp circuit, furnishing a profitable day load for lighting companies.

These motors follow very closely the design of the well known Westinghouse fan motors, they are built for both alternating and direct current circuits, either 115 or 230 volts. The direct-current motors are either shunt or series wound, and the alternating-current motors are wound for 25, 60 or 133 cycles. The efficiency of all machines is exceedingly high.

The base of the motor consists of a separate casting, the frame being drilled and tapped so that the feet may be fastened in any one of four different positions. This construction adapts the motor for mounting in any position. The screw holes in the base are slotted to allow belt adjustment. A two-step grooved pulley, suitable for a cord or round belt, is supplied with each motor. The speed obtained by driving from the larger step is about twice that of the smaller.

The bearings are self-oiling and similar in construction to those of the fan motors. They are provided with vertical oil cups with a wick which effectually lubricates the shaft, and a suitable return channel prevents the dripping of oil from the bearings. The leads are brought out through hard rubber bushings, and connection to the motor is easily made. An ordinary lamp cord and plug may be attached to the motor leads for connecting it to an incandescent socket or receptacle.

All motors are finished in black enamel with the trimmings of brass, allowing them to be installed where neat appearance is essential.

The alternating current motors are of the single-phase induction type with open end frames and split phase winding, the starting coil of which is automatically cut out as the motor comes up to speed. A self-acting friction clutch engages the load after partial speed has been attained. The direct current motors are enclosed and are supplied either series or shunt wound, and are so constructed that no starting device is necessary.

When desired, grooved pulleys of other sizes are furnished.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

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.

As a result of meetings recently held in Toronto, a company is being formed in which Mr. E. P. Pearson, Toronto, is interested, to manufacture soda ash, the consumption in Canada of which in manufacturing and chemical industries is rapidly increasing. There were present at the meetings several capitalists from Montreal, Detroit, Toronto, New York, and also local representatives of British financiers. The reports presented by experts were to the effect that the industry could be profitably conducted in Ontario. The promoters have been quietly at work for some weeks, and, it is said, have secured between 50 and 60 acres of salt lands, facing the Detroit River, and close to Sandwich, Ont., and also about 10 acres of limestone lands in the same locality. Lime and salt are the important ingredients which go to make soda ash. Considerable preliminary work has been done on the salt lands, wells sunk, pumps put in, and engine-houses built and engines ready for work. One bank offered to finance the whole concern, but it was decided to raise stock in the usual way. The new company will secure a Dominion charter, and be capitalized at \$1,000,000, but only half that amount of stock will be at first issued.

In 1861, six years before Confederation, Canada possessed but 1,880 miles of railway, with a paid-up capital of \$38,278,986. They carried 1,825,000 passengers, handled 1,459,446 tons of freight, and earned a net sum of \$1,046,316, the aggregate earnings being \$6,722,666. On June 30 last there were 20,601 miles of completed railway in the Dominion, an increase of 990 miles over the previous year, besides 3,632 miles of sidings. The paid-up capital amounted to \$1,248,666,414, there were 25,288,723 passengers carried, and the freight traffic was represented by 50,893,957 tons. The gross earnings amounted to \$106,467,199, and the net earnings to \$26,489,625.

The close of the last fiscal year witnessed the completion of 793 miles of electric railway. The paid-up capital amounted to \$61,033,321, including \$173,000 of municipal aid. The gross earnings totalled \$9,357,125, a gain of \$903,516, and the working expenses \$5,918,194, an increase of \$591,677, leaving the net earnings at \$3,438,931, a betterment of \$311,839. There were 203,467,317 passengers and 510,350 tons of freight carried, being a gain of 22,777,319 persons and 110,189 tons respectively.

The ore shipped from the famous Cobalt mining camp in 1905 aggregated 2,144 tons from the 17 shipping mines in the camp. The following are the details of the output and the values:—Silver, 2,441,421 ounces, valued at \$1,355,306; cobalt, 118 tons, valued at \$100,000; nickel, 75 tons, valued at \$10,525; arsenic, 549 tons, valued at \$2,693, an aggregate value of \$1,448,524. The returns in value would have been larger but for the fact that during the latter part of the year the ore sellers received nothing for cobalt, nickel or arsenic, the buyers

declining to pay for those ores on the ground of the difficulty in treating them. The Canadian Copper Co. now have a plant in operation at Copper Cliff for treating these ores and another company having bought the old Hoepfner refining works at Hamilton is now installing a modern plant there.

It is stated that the Burk's Falls Chemical Works, at Burk's Falls, Ont., will open up for business within the next few months. The company will have a capital of \$200,000 and will give employment to about 25 men.

A blue book giving the canal statistics for the year 1904 has been issued by the Department of Railways and Canals, Ottawa. During that season the Welland Canal was used during navigation by 299 Canadian vessels, of 435,049 tons, and by 634 United States vessels, of 416,964 tons. The St. Lawrence canals were used by 8,674 vessels of 2,137,249 tons, of which 7,532 vessels, of 1,858,385 tons were Canadian, and 1,146 vessels, of 278,864 tons were American. The total amount of freight transported on Canadian canals in 1904 was 8,256,236 tons, a decrease of 947,581 tons, as compared with 1903. Of the total freight transported in 1904 no less than 3,478,687 tons was in transit between United States ports. This was about half a million tons less than the quantity transported from one United States port to another through the Canadian canals in 1903. Fifty-six Canadian and 16 American vessels took cargoes of 11,085 tons of freight through the canals to Montreal intact in 1904. For the seasons of navigation of 1903 and 1904 all the Canadian canals were declared free, consequently no tolls were collected. Had the tolls previously in force been levied in 1904 the revenue would have been \$291,676, which is some \$64,000 more than was collected in 1902.

The Lake Superior Corporation, whose works are at Sault Ste. Marie, Ont., have adopted plans for new open hearth furnaces and the contracts for construction are now being let. It is expected that work will be commenced this spring as soon as the weather conditions will permit, and before the end of the year the first big addition to the corporation's plant since the reorganization will be in operation. The building which will contain the furnaces will be 200 feet in length and 110 feet in width, and in its general plan of construction will conform to the buildings at present comprising the plant. It will be located near the Bessemer steel mill, and according to the plans will admit of indefinite extensions in the future, as the growth of the business may demand. The construction of the furnaces will cost in the neighborhood of \$250,000. The capacity of the furnaces to be constructed this year will be about 200 tons per day, but the chief significance of this addition lies in the fact that it will make possible the use of a larger amount of Canadian ore in connection with the steel plant. It will also be possible to use a large amount of scrap iron. The Corporation is also planning the construction

of a coking plant, to supply the furnaces with that kind of raw material which at present it is necessary to bring by rail from the United States. If the Government will remove the duty on soft coal for coking purposes the plant will be on the Canadian side.

Mr. Frederic Nicholls, president of the Niagara, St. Catharines & Toronto Railway Co., announces that he has placed an order for 5,000 tons of 80-pound steel rails, 1,000 tons of which are for immediate delivery, for proposed extensions and improvements. The first work to be taken up will be relaying the entire main line of the railway between St. Catharines and Niagara Falls. An order has been placed with the Canadian Shipbuilding Co., Toronto, for a new steamer for the Port Dalhousie-Toronto route, details of which will be given later. Arrangements are being made for an improved service between Niagara Falls and Buffalo. Mr. Nicholls is very enthusiastic over his proposed extensions in Ontario.

Appreciation of the advantageous features of the Sturtevant engine has been shown by recent orders received by the B. F. Sturtevant Co., Boston, Mass., one of which was from the Standard Ideal Sanitary Co., Port Hope, Ont.

The corporate name of the Smith's Falls Foundry & Malleable Co., Smith's Falls, Ont., has been changed to that of the Rideau Malleable & Foundry Co.

Carbons, Limited, Toronto, have been incorporated with a capital of \$40,000, to manufacture electrical carbons, lamps, etc. The provisional directors include J. H. Hall, C. W. Bongard, and W. H. Wallbridge, Toronto.

The Tarentor Mining Co., Sault Ste. Marie, Ont., have been incorporated with a capital of \$700,000, to carry on a mining, milling and reduction business. The provisional directors include J. C. Curtain, A. Vallier, Sault Ste. Marie, and S. G. McAllister, Fort William, Ont.

The Berlin Button Works, Berlin, Ont., have been incorporated with a capital of \$100,000, to manufacture buttons, novelties, etc. The provisional directors include D. Bechtel, G. E. Schlee, Berlin, and M. B. Shantz, Rochester, N.Y.

The Vigers-Shear Lumber Co., Port Arthur, Ont., have been incorporated with a capital of \$200,000, to carry on a lumber, milling and contracting business. The provisional directors include R. Vigers, H. Shear and W. Vigers, Port Arthur.

The Haileybury & Cobalt Telephone Co., Haileybury, Ont., have increased their capital from \$5,000 to \$40,000.

Messrs. Heyes Bros., Limited, Toronto, have been incorporated with a capital of \$40,000, to manufacture druggists' and tobacconists' sundries, etc. The provisional directors include C. D. Gourlie, J. E. Riley and A. Bicknell, Toronto.

The Brantford Brewing Co., Brantford, Ont., have been incorporated with a capital of \$100,000, to manufacture malt liquors, carbonated waters, etc. The provisional directors include F. Westbrook, C. Eldridge and H. T. Westbrook, Brantford.

The Barnes Hardware Co., Port Arthur, Ont., have been incorporated with a capital of \$40,000, to carry on the business of a

hardware dealer. The provisional directors include J. W. Barnes, C. Beck and F. J. Lampshire, Port Arthur.

The Robinson Co., Napanee, Ont., have been incorporated with a capital of \$75,000, to manufacture clothing, hats, caps, etc. The provisional directors include J. W. Robinson, J. E. Robinson, and W. J. Campbell, Napanee.

The Red Rock Silver Mining Co., Haileybury, Ont., have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include D. A. Dunlop, N. A. Timmins, Haileybury, and R. McBride, Sudbury, Ont.

The Redemptionist Fathers of Montreal, will erect a novitiate at Hintonburg, Ont., at a cost of about \$50,000.

The Atikokan Iron Co., Fort William, Ont., have given contracts to the Stowe-Fuller Co., Cleveland, Ohio, and the Reese-Hammond Fire Brick Co., Bolivar, Pa., for the supply of 700,000 fire bricks each.

The premise of the Cord & Tassel Co., Ottawa, were damaged by fire March 7, to the extent of about \$4,000.

It is stated that a syndicate of American capitalists have secured a substantial interest in the Northern Iron & Steel Co., Collingwood, Ont., who have a rolling mill and steel plant there. Former Comptroller Gavin of Buffalo is the American representative on the board of directors. The company have a new plant, consisting of open hearth furnaces and rolling mills, with a daily capacity of 200 tons of finished material, and it is expected that a blast furnace of 250 tons daily capacity will be added.

The Grand Trunk Railway Co. will erect a building for exhibition purposes on the grounds of the Canadian National Exhibition, Toronto, to cost about \$50,000. } }

Capt. W. A. Marsh, Toronto, and Mr. Hunter, Cincinnati, Ohio, have secured a tract of land in the Abitibi district for \$1,000,000. The tract is a mineral vein 95 feet wide, containing gold, silver and copper. A diamond drill will be put in at once and ore taken out for shipment.

The new postoffice at Alexandria, Ont., which was just completed last fall, was destroyed by fire March 12.

Options have been secured on several valuable gypsum properties in Hagersville, Ont., by Mr. J. T. Mullaney and Mr. M. A. Reeb of Buffalo, N.Y. It is proposed to establish a large crushing mill and refinery in the vicinity of the Grand Trunk Railway station at a cost of about \$50,000.

The benzole tank of the paper factory of Messrs. F. W. Bird & Son, Hamilton, Ont., exploded March 9, causing a loss of about \$1,000.

C. D. Warren, president of the reorganized "Soo" industries, has received word that the steel works there had surpassed all records in the history of steel making in Canada. Eight hundred and two tons were rolled in one day under their contract with the Canadian Pacific Railway Co. The normal capacity of the works was supposed to be about 500 to 600 tons per day, but has been greatly increased. Eight hundred and two tons represents about 2,500 rails.

The congregation of St. Andrew's Presbyterian Church, Hamilton, Ont., will enlarge and improve their church building at a cost of about \$17,000.

The ratepayers of Cayuga, Ont., have voted favorably on a by-law to raise \$5,000, to purchase fifty acres of land for the Pittsburg Window Glass Machine Co., who intend erecting a factory there.

The Minister of Public Works, Ottawa, will present to parliament a comprehensive scheme of improvement on the Upper Lakes, the execution of which will mean a great deal for the Canadian shipping interests of those waters and for the railways operating to the Georgian Bay ports. The object is to provide 20 feet of water at Port Arthur and Fort William on Lake Superior, at Depot Harbor and Midland, the Grand Trunk terminals, and at Victoria Harbor, the new Canadian Pacific Railway terminal on Georgian Bay. The large expenditure that this work involves will be spread over six years. The railways will build their own docks and terminal facilities. All the Government is undertaking is to provide them with 20 feet depth of water.

The brass moulding shop of Messrs. J. N. Tallman & Sons, Hamilton, Ont., was damaged by fire recently. Loss about \$1,400.

The Erie, London & Tillsonburg Railway Co., Tillsonburg, Ont., will apply for incorporation with power to build an electric railway to run from Port Burwell, on the north shore of Lake Erie, into the city of London, passing through or near the town of Aylmer, and from a point on that line, into the town of Tillsonburg. The company will also ask for power to generate electricity and compressed air.

The public school building at Markham, Ont., was destroyed by fire. Loss about \$5,000.

The Keewatin Lumber & Mfg. Co., Keewatin, Ont., have sold to the Backus-Brooks Co., Minneapolis, Minn., over 80,000,000 feet of timber in Minnesota and Canada.

It is stated that the Coventry Ordnance Co., Coventry, England, are considering the establishment of a branch factory in Ottawa.

The National Drug Co., Montreal, will open a branch in Ottawa, employing about forty hands.

The City Storage Co.'s building, Toronto, was damaged by fire March 3 to the extent of about \$3,000.

Orders for economizers have recently been received by the B. F. Sturtevant Co., Boston, Mass., from the Trimont Mfg. Co., Roxbury, Mass.; Hamilton Powder Co., Montreal; Oliver Machinery Co., Grand Rapids, Mich.; Raritan Copper Works, Perth Amboy, N.J. The last named plant changed to the Sturtevant after experience with another type of economizer.

Mr. P. W. Gardiner has erected in Galt, Ont., a new stone planing mill, 100x80 feet, two stories high. The engine is a splendid Wheelock, from the Goldie & McCulloch works, Galt. The heating plant is furnished by the Sheldon & Sheldon Co., and with it is associated a dust collecting apparatus serving each machine and keeping the whole floor absolutely clear of sawdust and shavings, which are conducted by suction to the separator on the roof and thence to the furnace room.

The post office at Hamilton, Ont., will be improved, about \$7,000 being expended for that purpose.

The town council of Eganville, Ont., will erect a town hall at a cost of about \$10,000.

A high school building will be erected in Wingham, Ont.

The ratepayers of Smith's Falls, Ont., will vote on a by-law to assist the Frost & Wood Co., to rebuild.

The Diamond Park Mineral Water Co., Arnprior, Ont., will erect a new factory 80x40 feet, two stories high.

The Felt Roofing Co., will erect a large factory in Brantford, Ont., having a capacity of about 30 tons of roofing per day.

Sheldons Limited, Galt, Ont., will carry on business, making and installing heating, ventilating and drying systems, making and selling light, structural or sheet steel or iron articles, also carrying on a general foundry business.

The work of developing the water power of Kakabeka Falls, 16 miles west of Fort William, Ont., has been realized, and by June 1, 1906, the industrial wheels of Fort William will be set in motion by the electrical energy developed at these falls. The work has been in the hands of Mr. R. W. Leonard. Associated with him were Mr. R. S. Kesh, electrical engineer, and William Kennedy, jr., hydraulic engineer, both of Montreal. The waters of the river are diverted into a large conduit pipe 10 feet in diameter, which takes the water at a point three-quarters of a mile above the falls. This conduit-pipe skirts the valley of the Kaminstiquia river along a ledge of hills, to a point some distance below the falls, at which point a large fore-bay or reservoir is constructed to hold the water in reserve previous to its being taken in the steel penstock, which carries the water perpendicularly 180 feet to the power house below. The actual construction of the work is almost finished, so that as soon as the electrical machinery comes forward the development will be complete. The initial installation will be 10,000 h.p.; this will be increased from time to time as required in units of 10,000 h.p., until the whole of the power is developed at this point. Over 1,000 men have been employed in the work of development and it is expected when the work is completed it will cost in the neighborhood of two million dollars. The current is carried from the power house to a sub-station in Fort William on a heavy copper line at 25,000 volts.

Lloyd-Thompson Wire, Limited, Toronto, have been incorporated with a capital of \$75,000, to manufacture wire, metal goods, machinery, etc. The provisional directors include C. S. Lloyd, G. C. Thompson and W. M. Smith, Toronto.

The Cobalt Silver & Copper Mining Co., Sault Ste. Marie, Ont., have been incorporated with a capital of \$500,000, to carry on a mining, milling and reduction business. The provisional directors include F. E. Ketchum, C. W. Baldwin and C. J. Brook, Sault Ste. Marie.

The Queen City Mining & Development Co., Toronto, have been incorporated with a capital of \$150,000, to carry on a mining, milling and reduction business. The provisional directors

ectors include J. B. LeRoy, J. R. Humphreys and T. Mitchell, Toronto.

The Savage Mine of Cobalt, Limited, Toronto, have been incorporated with a capital of \$500,000, to carry on a mining, milling and reduction business. The provisional directors include G. Taylor, L. M. Heal and G. W. Spence, Toronto.

The Cobalt-North Ontario Mining Co., Haileybury, Ont., have been incorporated with a capital of \$40,000, to carry on a mining, milling and reduction business. The provisional directors include J. E. Myers, W. H. Allman, Chicago, Ill., and G. A. Mason, Highland Park, Ill.

The Williamson Marks Mines, Limited, Toronto, have been incorporated with a capital of \$300,000, to carry on a mining, milling and reduction business. The provisional directors include H. W. Williamson, I. Marks, Toronto, and J. Playfair, Midland, Ont.

The Galt Electric Gas Fixtures, Limited, Galt, Ont., have been incorporated with a capital of \$40,000, to manufacture electric and gas fixtures, etc. The provisional directors include H. Dakin, R. G. Struthers, and M. A. Secord, Galt.

The Lakeside Canning Co., Wellington, Ont., have been incorporated with a capital of \$25,000, to carry on the business of a canning and preserving company. The provisional directors include W. W. Fitzgerald, J. W. Wilder, Wellington, Ont., and A. Burlingam, Picton, Ont.

Messrs. Sanderson, Percy & Co., Toronto, have been incorporated with a capital of \$100,000, to manufacture paints, colors, oils, varnishes, etc. The provisional directors include S. Percy, C. N. Haldenby and J. D. Craig, Toronto.

The St. Marys, Kirkton & Exeter Telephone Co., Kirkton, Ont., have been incorporated with a capital of \$40,000, to carry on the general business of a telephone company. The provisional directors include W. R. Carr, Kirkton, J. W. Graham, St. Marys, and J. G. Jones, Exeter, Ont.

The Windigo Lake Co., New Liskeard, Ont., have been incorporated with a capital of \$50,000, to acquire a milling business and power plant at present operated by William Judge. The provisional directors include Wm. Judge, Lake Windigo, Ont., S. White, Windsor, Ont., and T. P. Watson, New Liskeard, Ont.

Final arrangements for the automobile show in the Granite Rink, Toronto, from March 31 to April 7 have been made by the directors. Automobiles ranging in price from \$600 to \$10,000 will be on exhibition, no two being alike, and so many are the entries that all available space will be filled. There will also be an exhibit of motor boats. The Buffalo Auto Club is expected to come over in their own machines in a body. Clubs in Hamilton and other places will be represented. An elaborate scheme of decoration has been arranged, and there will be some formal opening ceremonies. A number of English automobile manufacturers are sending about 20 cars for their Exhibition, after which they will be shipped to Montreal, where an automobile show opens on April 21. Among the cars coming over are the Napier, De Dion, Daintier, Swift, Turnuph, Argyle, Rex, Zenith and Pankard.

J. H. Armstrong, C.E., and S. D. Lake, contractors, St. Catharines, Ont., have secured a generous allotment of construction work on the Grand Trunk Pacific Railway. Their contract will embrace 50 miles of the road eastward from Saskatoon in the Saskatchewan district. Some idea of the magnitude of the contract may be gathered from the fact that the undertaking involves the removal of about 750,000 cubic yards of material as the work progresses. They expect to start work about April 1, and will require 150 men.

The grease plant of the Imperial Oil Co., Sarnia, Ont., was destroyed by fire March 12. Loss about \$50,000.

The premise of the Canadian Jewelry & Import Co., and B. B. Beland, wholesale liquor dealer, Montreal, were destroyed by fire March 12. Loss about \$30,000.

The building occupied by the Merchant's Clothing Co., Dominion Clothing Co., and Suckling & Co., Montreal, was destroyed by fire March 1. Loss about \$50,000.

The Karn Music Hall, Montreal, was damaged by fire recently, to the extent of about \$75,000.

The Canadian Bank of Commerce, Toronto, will open a branch in Quebec City shortly.

A new railway company, called the Grand Trunk Pacific Branch Lines Co. is being organized to construct branch lines to become feeders and work in conjunction with the Grand Trunk Pacific.

The factory of the Montreal Waterproof Clothing Co., was damaged by fire recently. Loss about \$5,000.

The Canadian Bag Co., Montreal, have been incorporated with a capital of \$1,000,000, to acquire as going concerns the Canada Jute Co., and the Dominion Bag Co. The incorporators include Messrs. Huntley Drummond, H. L. Rutherford, Edgar McDougall, A. W. P. Buchanan, George L. Cains, and John S. Robertson, Montreal. The company will erect a large and finely equipped bag factory in Winnipeg, Man.

The plant of the Decarie Brick Co., Montreal, was wrecked by an explosion March 4. Loss about \$5,000.

The members of the Church of the Messiah, Montreal, will erect a new church building at a cost of about \$50,000.

In a decision by Judge Somerville the board of United States general appraisers at New York have sustained a claim filed by O. C. Dane, of Newport, Vt., regarding the customs classification of pulp wood exported from the province of Quebec by the Lake Megantic Pulp Co. It was decided that pulp wood cut on private lands in the Dominion, as distinguished from Crown lands, is not subject to a countervailing duty of 25 cents a cord. The government's contention therefore was dismissed.

The Canadian Radiator Co., Lachine, Que., have been incorporated with a capital of \$1,000,000, to manufacture radiators, boilers, etc. The charter members include A. R. Mackay, Montreal, T. Millar, Oshawa, Ont., and Dr. J. S. Hart, Toronto.

The Merchants' Awning Co., Montreal, have been incorporated with a capital of \$40,000, to manufacture canvas goods, woolens, etc. The charter members include R. Luc Frieur, H. L. O'Donoghue, and T. Sullivan, Montreal.

Messrs. Winn & Holland, Montreal, have been incorporated with a capital of \$100,000, to manufacture iron, steel, tools, machinery, etc. The charter members include P. H. Holland, W. J. Michaud, and G. A. Holland, Montreal.

Messrs. I. C. Michalson & Sons, Montreal, have been incorporated with a capital of \$50,000, to manufacture watches, jewelry, etc. The charter members include I. L. Michalson, H. Michalson, and R. Goltman, Montreal.

The Interprovincial & James Bay Mining Co., North Temiscamingue, Que., have been incorporated with a capital of \$20,000, to carry on a mining, milling and reduction business. The charter members include D. Lunam, R. S. Smith, and M. J. Malone, North Temiscamingue, Que.

Messrs. George Phillips & Co., Montreal, have been incorporated with a capital of \$20,000, to manufacture cutlery, watches, jewelry, etc. The charter members include G. Phillips, W. J. Walker, Montreal, and A. E. Bell, Sheffield, England.

The Dominion Foundry Supply Co., Montreal, have been incorporated with a capital of \$50,000, to manufacture machine, shop and foundry supplies, etc. The charter members include G. H. Weaver, E. W. Gilman, Montreal and E. H. Bennett, Bayonne, N.J.

The R. P. Inglis Co., Montreal, have been incorporated with a capital of \$50,000, to manufacture minerals, machinery, etc. The charter members include R. P. Inglis, W. H. C. Mussen and G. Boulter, Montreal.

The Fashion Craft Manufacturers, Montreal, have been incorporated with a capital of \$250,000, to manufacture clothing, etc. The charter members include J. A. Richard, S. Munro and H. Vosberg, Montreal.

The Montreal Railway Co., Montreal, have recently placed in service a new car house on De Fleurimont Street, Montreal. The car house is made up of two adjoining bays, each 140 feet wide, 202 feet long and 17 feet 4 inches high from the top of the floor to the under side of beam. Each bay contains twelve tracks, having space for four cars per track, so that the combined capacity of the two structures is equivalent to 96 50-foot cars. Between the bays there is a space of 24 feet, containing the boilers, the fans, etc., for heating, as well as the offices and storerooms. The buildings were designed to combine the advantages of a practically fireproof construction, a quick clearing of the car houses in case of fire, and the possibility of easily inspecting cars and making light repair to them. The heating and ventilating system used in these car houses was supplied by the B. F. Sturtevant Co., Boston, Mass. It is capable of changing the air in the bays four times an hour and heating the building to 70 degrees F. in zero weather. The main hot-air ducts leading from the fans are of concrete, and those under the floor of galvanized iron.

The Ross Realty Co., Montreal, have been incorporated with a capital of \$1,500,000, to manufacture steam, gas, electricity, etc. The charter members include J. G. Ross, Westmount, Que.; F. H. Wilson and J. Findlay, Montreal.

The Canada Smelting & Refining Co., Montreal, have been incorporated with a capital

of \$15,000, to manufacture metals, etc. The charter members include G. P. McClure, T. J. Gates and F. H. Wilkinson, Montreal.

The Montreal Copper Co., Montreal, inform us that they have just received another order for 100,000 pounds of ingot copper to be shipped to the New York Air Brake Works, from whom they have recently received several other large orders for ingot copper. The ingot copper made by the Montreal Copper Co. compares most favorably, we are told, with the "Lake" brand produced by the Calumet & Hecla Co. The first ingot of copper produced by the Montreal Co. was in February 3, 1904, since which time their output has increased very rapidly. A shipment of four car loads of ingots has recently been made to the Chinese Government for their new coinage system.

The Montreal & Great Lakes Transportation Co., Montreal, have been incorporated with a capital of \$100,000, to operate a fleet of steamers between Montreal and Fort William, Ont. The directors of the company are:—President, Mr. Robert Bickerdike, M.P., Montreal; vice-president, Mr. J. H. Hall, Ottawa; Mr. S. S. Samuel, Toronto, and Mr. C. A. Jaques, Montreal. The latter has been appointed managing director.

The premises of the Beaver Suspender Co., Montreal, were damaged by fire March 8. Loss about \$1,800.

H. W. Petrie, Esq., Toronto, has opened a branch machinery agency in Montreal. He carries a complete stock of saw-mill and wood-working machinery, contractors' machinery, hoisting engines, boilers, and steam appliances, and is agent for the American Tool Works Co., the R. K. Leblonde Co., Rahn, Mayer, Carpenter & Co., makers of high-grade machine tools, all of Cincinnati, Ohio. Among the many articles carried in stock are boilers of all kinds, traction, automatic, horizontal, upright, marine and gas and gasoline engines, pumps and pumping machinery, foot and power lathes of all kinds, iron planers and shapers, drilling machines, foot and power presses, emery grinding machines hoisting blocks, winches, etc., woodworking machinery of all kinds electric appliances, volume and pressure blowers, printing machinery, laundry machinery, tanks and kettles, grist mill machinery and candy machinery.

The shops of the Intercolonial Railway Co., Moncton, N.B., which were destroyed by fire a short time ago, will be rebuilt and will be thoroughly up-to-date and economical in their management. Mr. M. J. Butler, Deputy Minister of Railways and Canals, Ottawa, will draw up the plans for the new shops.

The Government of Nova Scotia have completed a contract with a syndicate of Canadian capitalists, headed by Sir Montague Allan, Montreal, for the construction of the Nova Scotia Eastern Railway from Halifax to Guysboro', N.S. The contract provides for the building of a line along the eastern shore from Halifax to Guysboro', and a spur from New Glasgow to Country Harbor. The construction of the two hundred miles of road from Halifax to Guysboro' will give railway communication to every part of Nova Scotia, and will open a country rich in timber, gold and iron deposits. The Government assistance will be given in the

form of a loan, which will be secured by a first mortgage on the road.

Wolfville, N.S., is to have a new science building to cost about \$30,000.

It is reported that Cape Breton Coal, Iron & Railway Co., now developing at Broughton, N.S., have acquired areas owned by the Cumberland Coal Co., which comprise the block of 12 square miles, and approach within a short distance of the Marconi towers. The price named is \$250,000, and the seams underlying the property are very valuable.

The Dow Cereal & Milling Co., Pilot Mound, Man., will erect an oatmeal mill at that place.

Mr. E. Snider, Shoal Lake, Man., has been awarded the contract for a new school building to cost about \$8,800.

The Royal Bank of Montreal have purchased a site in Winnipeg, Man., and will erect a bank and business block.

The City Council, Winnipeg, Man., have granted the Canadian Pacific Railway Co. \$3,000 towards building a footbridge across the Assiniboine river.

The Canadian Iron Wool Co., Winnipeg, Man., will erect a two story brick and stone block.

The Western Canada Flour Mills Co. have purchased the Kelly flour mills of Brandon, Man., which they will rebuild and enlarge. The mill will have a capacity of 600 barrels daily and will be equipped throughout with modern machinery.

The contract for the grading of the Midland railway from Portage la Prairie, Man., to the international boundary, has been let to the Guthrie Co., St. Paul, Minn.

The ratepayers of Carberry, Man., have voted favorably on a by-law authorizing the erection of a municipal light plant.

Messrs. Ramsay Bros. & Co., Vancouver, B.C., and the Imperial Syrup Co., Montreal and Quebec, have amalgamated and will establish a modern syrup factory in Winnipeg, Man.

The Crown timber office, Winnipeg, Man., has issued interesting statistics showing the amount of lumber consumed in Manitoba and Saskatchewan, based on reliable information, which assures that the figures are approximately correct. The total aggregates 379,901,189 feet, of which 37,015,821 feet were imported from the United States, 116,000,000 feet brought from British Columbia, and 82,000,000 from New Ontario. There was an increase of nearly 38,000,000 feet over the preceding year.

The Canadian Northwest Coal Co., Winnipeg, Man., have been incorporated with a capital of \$1,000,000, to manufacture minerals, machinery, etc. The provisional directors include Hon. R. Watson, Portage la Prairie, Man.; W. N. Kennedy and D. Philip, Winnipeg, Man.

The malt house of the Canada Malting Co., Winnipeg, Man., was destroyed by fire March 10. Loss about \$30,000.

E. Hawke, Esq., Toronto, states that his company will establish a large brickyard at Melfort, Sask., and manufacture concrete brick and tile.

It is stated that the Standard Oil Co. will erect a wholesale warehouse at Melfort, Sask.

The City Council, Edmonton, Alta., are having plans prepared for a waterworks system which will cost about \$115,000.

The City Council, Calgary, Alta., are considering installing an electric lighting system, at a cost of about \$30,000.

The Farmers' Elevator Co., Lemberg, Sask., will erect a grain elevator there.

The shops of the Alberta Railway & Irrigation Co., Lethbridge, Alta., were destroyed by fire March 7. Loss about \$20,000.

The Robb Engineering Co., Amherst, N.S., have received an order for a 300 h.p. engine for the Alberta Railway & Irrigation Co., Lethbridge, Alta.

The Dominion Copper Co., Rossland, B.C., have awarded the contract for the erection of a new smelter to A. G. Creelman.

ELECTRICITY.

Electrical machinery and appliances of all kinds, electrical power plants and other progress in the electrical industries will be noted here.

The process of electric welding, which is one of the cheapest, simplest, and most effective for uniting metals, has now found its way into numerous industries, and curiously enough with little or no eclat. Chains, rails and galvanized wire fencing are common products of the electric weld, while a more specialized article is the hexagon headed bolt, now accurately and speedily produced by electric welding machinery. The making of the printer's chase, a rectangular article which must be absolutely true and parallel in respect to its sides, is so cleanly completed by the electric welder that the finishing processes indispensable with the older methods are entirely done away with. The chief feature of electric welding is the comparative simplicity of the machine, which can be designed for special applications and attended to by unskilled labor. As a result the process is now largely employed for the manufacture of rings, steel tubing, parts of railway rolling stock, steel tyres, wheel rims, tools and smaller articles. In the matter of fuel consumption the gas and electric welds are about equal, but the great economy of the latter resides in the fact that the labor item is very greatly reduced. The power supply companies would do well to keep the electric welder prominently to the front.

ELECTRICAL DEVELOPMENT AT EUGENIA FALLS.

The company who are undertaking to develop power at Eugenia Falls, Ont., in which ex-Mayor John O'Donoghue, Stratford, Ont., is one of the principal shareholders, have commenced operations, and the actual work of developing power commenced. Mr. Robert McDowall, C.E., set the work going. Messrs. Roman & Elliott, contractors, St. Catharines, Ont., who are the successful tenderers for building the tunnel through the mountain at the falls have commenced work.

At the present stage a few particulars relating to the company's plan of development will prove interesting. A concrete steel dam 43 feet high will be built across the river up stream from the falls proper. A steel

pipe 54 inches in diameter, will be carried from the dam along the south side of the stream to a point about 50 feet from the head of the falls. Here it will be carried across the river on concrete piers, and through the tunnel and down the north-westerly side of the mountain to the power-house.

From the dam to the power-house there is a total fall of 413 feet, and after leaving the falls proper the river winds around to the north. Instead of following the river's course with the pipe line, a short cut is taken through the mountain, thus saving considerable in length of pipe along the mountain edge.

The tunnel will be eight feet high, 11 feet wide, and 800 feet in length and elliptical in section. It will be lined throughout with three-inch cedar lumber. The portals at each end will be of concrete and the tunnel will be drained by a four-inch tile drain. The contract calls for the tunnel being completed within 150 days.

There is no other power development in Canada east of the Rocky Mountains where a head at all approaching 413 feet is obtainable and one who has not made a study of the subject cannot realize how great a force is produced by a 54-inch column of water under a 413 feet head.

THE INVENTOR OF THE TELEPHONE.

At the banquet of the Brantford, Ont. Board of Trade, held in that city March 8, Prof. Alexander Graham Bell was the guest of honor and the principal speaker. Replying to the toast "the Inventor of the Telephone," he gave the history of the invention. Telling how it was that he was at the time a resident of Brantford he stated that it was owing to his own ill-health that his father had decided to come to Canada and live an out-door life. This they did at the old homestead on Tutela Heights, near the city. His own health had been completely restored there, although many neighbors had all given the delicate young man of those days only six months to live. "So I shall always praise Brantford as a sanitarium," said Dr. Bell.

The first ideas of the transmission of speech had been perfected by him in the old home at Tutela Heights in 1874. In 1876 the first practical demonstration had taken place between Brantford and Tutela Heights. He remembered very well the summer of that year, when his father invited a party of Brantford friends to hear the demonstration. He was unable to get enough regular wire in the city to complete the line from Mount Pleasant Road to the house on Tutela Heights, and so had recourse to ordinary stovepipe wire, which was tacked along the fence. His uncle, Prof. David Bell, was at the Brantford end, and at the appointed time the connections were made and the first sentence that came over his first long-distance telephone wire was "To be or not to be," and "it was to be," said Prof. Bell.

He stated that it was quite true Boston could lay claim to the first telephone where speech could be both transmitted and received. In the Brantford experiments messages only could be received.

Dr. Bell ended his fascinating narrative by stating that he was experimenting with a flying machine, and he prophesied that within a very few years people would use flying machines just as easily and just as readily as they now use telephones.

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 Hamilton Motor Works, Hamilton, Ont., have sent us an illustrated catalogue and price list having reference to the marine gasoline engines and motor boats built by them. The Canadian season for boating and out-door life is now at hand, and nothing can possibly be quite as enjoyable as boating, particularly now that the cost of motor boats is within the reach of all who are inclined to indulge in such sport, with the knowledge that as good as the best and as fine as the finest of such pleasant carriers are made in Canada. This little catalogue tells all about the different styles of boats, the peculiarities of their motive power; what the requirements of the best boats and the best engines are, how to take care of them, etc. If you read the catalogue, which can be had for the asking, you will have the motor boat fever, and when the fever sets in the Hamilton motor boat will follow as a matter of course.

Messrs. Darling Bros., Limited, Montreal, manufacturers of steam specialties, have sent us a catalogue illustrating some of the special machines they manufacture, and inform us they issue separate catalogues describing each machine. The company will send copies on application.

The Canadian Westinghouse Co. have issued a special booklet describing and illustrating the electrical apparatus which they manufacture at Hamilton, Ont. They have also issued circulars No. 1126, describing Type C Transformers; No. 1127, describing control apparatus and trolleys for single-phase railway systems, and No. 1107, describing westinghouse automatic circuit-breakers carbon brake.

Allis-Chalmers-Bullock, Limited, Montreal, have sent us their calendar for March, which shows the coat-of-arms of New Brunswick.

The Canadian General Electric Co., Toronto, have sent us a pamphlet illustrating and describing the Edison primary batteries, for which they are sales agents in Canada.

The National Electric Co., Milwaukee, Wis., have sent us an illustrated bulletin having reference to the Type NL direct current motors and generators manufactured by them.

The George White & Sons Co., London, Ont., manufacturers of traction and portable engines, stationary boilers, threshing machines, etc., have sent us a booklet illustrating and describing their manufactures.

The Georgian Bay Engineering Works, Midland, Ont., have sent us their new catalogue concerning the hoisting engines and automatic pile hammers, and also the line of standard hoisting engines, with and without boilers, manufactured by them. These are all first-class goods.

The ore roasters of the Atikokan Iron Co., Port Arthur, Ont., are to be equipped by the B. F. Sturtevant Co., Boston, Mass., with a complete induced draft apparatus consisting of two large steel plate engine driven fans.

PERSONALS.

The annual meeting of the Canadian Forestry Association was held in Ottawa March 8, and the election of officers resulted as follows:—Patron, his Excellency the Governor-General; honorary president, Sir Wilfrid Laurier; president, Mr. E. Stewart; vice-president, H. M. Price; secretary-treasurer, R. H. Campbell; assistant secretary, Roland D. Craig; board of directors, William Saunders, LL.D., Thomas Southworth, Monsignor Laflame, Hiram Robinson, J. R. Booth, E. G. Joly de Lotbiniere, Hon. Sydney Fisher, Senator Bestock, William Little, Prof. John Macoun, Hon. W. C. Edwards, J. B. Miller, W. C. J. Hall, J. F. Ellis, Gordon C. Edwards; vice-presidents:—British Columbia, Sir Henri Joly de Lotbiniere; Ontario, Hon. Nelson Monteith; Quebec, Hon. A. Turgeon; New Brunswick, Hon. F. J. Sweeney; Nova Scotia, Hon. Arthur Drysdale; Prince Edward Island, Rev. Father Burke; Manitoba, Hon. J. H. Agnew; Saskatchewan, Hon. A. E. Forget; Alberta, William Pearce; Keewatin, Lieutenant-Governor of Manitoba; Mackenzie, F. D. Wilson; Ungava, A. P. Low; Yukon, W. B. McInnis. The report of the board of directors showed the membership had increased from 562, as reported last year, to 1,162. Mr. R. H. Campbell, having resigned the editorship of the Forestry Journal, the appointment of a successor was left to the executive committee. Arrangements may be made for the management of the publication by a board of editors.

At the annual meeting of the Canadian Mining Institute, held in the City of Quebec last week, the following officers were elected for the ensuing year:—President (re-elected), George R. Smith, Megantic, Que.; vice-presidents, (for one year), Dr. F. D. Adams, Montreal; Major R. G. Leckie, Temagami, Ont.; (for two years), Frederick Keffer, Greenwood, B.C.; G. Herrick Duggan, Sydney, N.S.; treasurer, J. Stevenson Brown, Montreal; secretary, H. Mortimer Lamb, Montreal.

The Universal Postal Union, which settles all matters of postal interest, such as transit rates, changes in postal rates, authorizing the formation of new parcel post conventions, money orders and postal work generally, meets in Rome on April 7. Dr. Coulter, Deputy Postmaster-General, has been appointed to and will represent Canada.

At the annual meeting of the Toronto Industrial Exhibition Association, held last week, Lieut.-Col. J. A. McGillivray was elected president for the ensuing year in succession to Mr. W. K. McNaught; Mr. W. K. George was elected first vice-president, Mr. George H. Gooderham, second vice-president, and Messrs. H. R. Franklin and S. E. Briggs members of the executive. Dr. J. O. Orr is continued as manager.

At the recent annual meeting of the Toronto Veterans of 1866 Association a resolution was passed disapproving of the "increasing custom of making the Union Jack the medium of calling attention to auction sales and otherwise using it for advertising purposes, demeaning the flag and taking from it the respect with which it ought to be viewed."

Messrs. Thomas Heys & Son, the analytical

chemists and assayers, Toronto, have removed from Bay Street to 124 Yonge Street, corner of Adelaide Street, where they have installed a large new gas assay furnace.

The Frevert Machinery Co., 18 Dey Street, New York, inform us that they have opened a salesroom and offices as above where they carry a complete line of new and second hand metal working tools and machinery. They also manufacture a line of newly designed hand power traveling cranes, trolleys, hoists, etc.

H. E. Gillis, City Clerk, Calgary, Alta., is advertising the merits of that wide awake Western Canadian city, and offering fine inducements for manufacturers to locate there. Mention is made of tannery, shoe factory, pump works and biscuit factory. Go west and grow up with the country.

DR. HAANEL'S SUCCESSFUL EXPERIMENTS.

The application of electricity to the reduction of iron ore as recently conducted at the works of the Lake Superior Corporation at Sault Ste. Marie, Ont., by Dr. Haanel, Dominion Superintendent of Mines was the subject of a very interesting address delivered by him in Toronto this week.

After a reference to the vast importance of steel in all works and even the necessities of life, Dr. Haanel said in Canada the demand for steel was rapidly increasing, all industries requiring a share. So essential an industry had led the Government to give bounties for the production of pig iron and steel. Iron was found in the central districts of Canada; coal, the essential for coke, in the extreme east and west; consequently, the country was at a disadvantage in the manufacture of iron and steel. This made it evident to Dr. Haanel that some other method of smelting was necessary if the country was to reap the full benefit of the vast mineral wealth it possessed.

Electricity as applied in some parts of Europe seemed to indicate the true solution of the problem. In the European experiments Stassano in Italy and Heroult and Keller in France had done great work. If their experiments were successful, then Canada could find a commercial success in its production of iron and steel. When Hon. Clifford Sifton was Minister of the Interior he appointed a commission to inquire into the subject, and the report of that commission was laid before the Government. However, the only experiments the commission witnessed were those at La Pras and Livet in France.

Dr. Haanel then gave an account of the results of these experiments. For the successful smelting of Canadian ores by electricity, the following points, which could not be settled by European experiments, required demonstration:

- Can magnetite be successfully smelted?
 - Can iron ore with considerable sulphur content be made into pig iron of marketable value?
 - Can charcoal be substituted for coke, which must be imported? And, lastly, what is the exact amount of electric energy required per ton of pig iron produced?
- The experiments on Canadian ores began in earnest about the middle of February and continued night and day until March 5. In that period 150 casts were made, yielding

55 tons of pig iron. In the first experiment the ores used were hematite, such as the Algoma Steel Co. uses. For the remainder of the experiments different kinds of Canadian magnetite were used from different mines, all of high sulphur contents, with the exception of the Vilbur magnetite, which was low in sulphur.

"Our first experiment with magnetite proved our fears groundless," said Dr. Haanel, "and we found that magnetite could be smelted as easily as hematite. It was important to substitute charcoal for coke, because the former can easily be made in Canada, so the charges were made with charcoal, and not the slightest difficulty experienced. Analysis of the iron produced showed that, although the slag was not particularly basic, the sulphur could be passed into it, resulting in pig iron containing a few thousandths of a per cent. of sulphur. In every case the output was far greater, in several instances one-third greater, than the figures of Mr. Harbord in the report to the commission on electric smelting. Further experiments with roasted and briquetted nickeliferous pyrrhotite showed that a ferro-nickel pig could be produced with 4½ per cent. of nickel and virtually free from sulphur. This product is valued at from \$40 to \$44 per ton. So successful was this experiment that the Lake Superior Co. have decided to try and acquire the plant put up for the experiment.

The experiments further demonstrated that the cost per ton of pig iron for electrodes, which had in the French experiment cost 77 cents, would be by the Government experiments reduced to 30 cents per ton. The experiment has shown that the magnetite with one per cent. of sulphur can be successfully treated by the new system.

The experiment proves conclusively that Canadian ore, chiefly magnetite, can be economically smelted. Ores of high sulphur content can be made into good pig iron. The silicon content can be varied as required for the class of pig iron to be produced. Charcoal can be cheaply produced from refuse of wood or peat. Ferro-nickel pig can be produced practically free from sulphur from roasted nickeliferous pyrrhotite. Pyrite cinders, now a waste product, can be turned into pig iron.

The new process will lead to the greatest utilization of water power, and as the iron ores which cannot be treated by blast furnaces gradually become the only available ores, blast furnaces can only be successful for a few years.

The process would insure the utilization of peat bogs for the production of peat coke; it would render Canada independent of fuel import for metallurgical processes, enable Canada to produce her own pig iron from her own abundant sources of supply, and lead to the development of steel plants and rolling mills.

Although only one year has elapsed since the report of the commission on electrical treatment of ore was issued, one furnace is in operation in Sheffield, England, one almost ready in Syracuse, N.Y., and one in Germany, and thus the success of the new experiment was assured. Dr. Haanel concluded his address with an outline of what might be done in Canada by the new system of dealing with the abundant supply of ore found in the Dominion.

TORONTO SEWAGE DISPOSAL.

The Provincial Board of Health recently approved of a plan, to which they attached a proviso, for the disposal of Toronto's sewage, which involves an initial cost of \$2,385,000, and an annual cost of \$76,000. The scheme favored by the Board is number two of a number of alternative plans drawn up by City Engineer Rust and Dr. Sheard, Medical Health Officer, and is as follows:

The construction of septic tanks in the vicinity of Ashbridge's Bay, near the Woodbine, and the purchase of 500 or 600 acres of land immediately north of Danforth Avenue, in the vicinity of Woodbine Avenue, to be used as filter beds, the sewage to be lifted to this point. The land proposed to be purchased is of a sandy, gravelly nature, and admirably suited for the purpose. I do not consider that any profit should be anticipated from the sale of the produce. During the continuance of very cold weather, and when the wind is from a westerly direction, it would be economical and quite satisfactory to turn the effluent directly into the lake after septic tank treatment. It would then only be necessary to pump the sewage to the farm about eight months in the year.

The approximate capacity and cost of this proposition is as follows:

	Gallons per day.
Capacity of intercepting sewers	100,000,000
Capacity of septic tank 25,000,- 000 and 25 per cent. reserve	31,250,000
Capacity of pumping plant 25,- 000,000 and 50 per cent. re- serve	37,500,000
Capacity of forcing mains	25,000,000
Capacity of filter areas	25,000,000
High level sewer, Dufferin Street sewer, Garrison Creek sewer to outlet for storm water into lake near Woodbine, including Rosedale and Garrison Creek interceptors, connections, land damages, siphon under Don, etc.	\$731,541
Low level sewer, Garrison Creek, along Front Street and East- ern Avenue to Woodbine, in- cluding siphon under Don, overflows, land damages, etc.	257,100
Septic tank, 7 feet deep 16½ acres, with 25 per cent. added for reserves in storms, etc., including excavation and land, etc.	344,700
Force main, one 48-inch main, septic tanks to upper side of filter area	120,000
Filter area, 600 acres, 300 at pre- sent prepared, houses, etc.	265,000
Pumping station, total capacity 37,500,000 gallons per day, against 160 feet head, including screens, wells, site, building, etc.	355,000
Net total	\$2,073,341
Add 15 per cent.	311,001

Gross total	\$2,384,342
First cost, say	\$2,385,000
Annual cost	76,000

The proviso attached by the Board was that the soil was suitable, that the city would install properly constructed filter beds, with thorough underdraining, and would provide for the efficient maintenance of the same.

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.

FUEL ECONOMIZING.

A visitor to some of the great power generating plants of the country cannot fail to be impressed with the elaborate devices designed for utilizing, as far as possible, every bit of energy given up by the fuel. This is being accomplished in two ways. First in the selection of efficient power units, boilers, engines, and dynamos; and second in the use of heat saving or fuel economizing apparatus. It is well known that the development of the steam engine and steam turbine has been brought to such perfection that there is but little chance of increased economy in steam consumption. However there is plenty of opportunity for saving the heat which for many years in the past has been allowed to escape through the tall chimneys of power plants.

The apparatus for utilizing the waste heat from the boilers is called a fuel economizer.

This consists of a group of pipes which are arranged so that the hot gases must pass through them before being discharged into the air. In these pipes the feed water is circulated before going into the boiler, which results in the water being heated to a very high temperature and consequently requiring less heat in order to be converted into steam, thereby greatly increasing the capacity of the boilers. Another advantage of the economizer is that it causes all the soot and other solid material in the gases to be deposited, which does away with all smoke nuisance. Thus it is seen that by using the proper means very little heat need be lost.

There is still another way to save money in power generation and that is by the use of mechanical or fan draft. This system consists of blowing air under the boiler grates by means of a fan or exhausting the gases from above the fire, which produces any desired draft independent of chimneys and weather conditions, and at the same time not only does away with the tall and expensive chimney but allows the use of the poorest grades of coal.

Many of these modern systems of fuel economizing have been designed and installed by the B. F. Sturtevant Co., Boston, Mass., who were pioneers in this line of industry.

CANADA'S MINERAL PRODUCTION.

Canada's mineral production during 1905 aggregated over \$68,500,000, as compared with \$60,073,897 for the previous year and \$62,600,434 for 1903. The leading items of production were:

METALLIC ORES.

	Quantity.	Value.
Copper, lbs.	47,696,502	\$7,420,451
Gold.		14,486,833
Iron ore (export) tons	116,779	125,119
Pig iron from Canadian ore, tons.	70,554	1,047,860
Lead, lbs.	55,961,000	2,634,084
Nickel, lbs.	18,876,315	7,550,526
Silver, oz.	5,974,875	3,605,957
Cobalt.		100,000
Metallic products, including zinc, lbs.	240,000	180,000
Total.		\$37,150,836

NON-METALLIC ORES.

	Quantity.	Value.
Asbestos, short tons .	50,670	\$1,486,359
Coal, short tons.	8,775,933	17,658,615
Corundum, sh't tons .	1,644	149,152
Grindstones, sh't tons	5,172	57,200
Gypsum, short tons. .	435,789	581,543
Limestone for flux, short tons.	341,614	258,759
Mica.		168,043
Mineral water.		100,000
Natural gas.		314,249
Petroleum, bbls.	634,095	849,687
Pyrites, short tons. .	32,744	123,574
Salt, short tons.	45,370	310,858

STRUCTURAL CLAY AND CLAY PRODUCTS.

	Quantity.	Value.
Cement, bbls.	1,360,731	\$1,926,014
Granite.		209,555
Sands and gravels (export) tons.	366,935	152,805
Sewer pipe.		382,000
Building material.		6,095,000

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.

IN BRITISH COLUMBIA.

United States Consul Smith, of Victoria, B.C., reports that American investors have made and are making large purchases of lands in British Columbia, and are projecting enterprises of magnitude, much more generally than ever before. He mentions the following:

A Seattle firm have completed the purchase for \$37,500 of 6,000 acres of timber leases on Vancouver Island, near Nanaimo. It is understood that the firm will erect a large lumber mill there.

An American company have been formed in this Province, at the head of which is the Portland patentee of a system of rafting. The capital is \$200,000, and the company will use the Robertson patent raft for transporting all kinds of lumber from British Columbia to southern California and other markets. It proposes to construct these rafts in the Fraser River, then to have them towed to Chemainus and other lumber yards and loaded. Each raft will cost \$7,000, and will be towed by steam colliers. They will be 1,000 feet in length, 75 feet in breadth, and will draw 23 feet of water. The logs used will be from eight inches to two feet in diameter at the top. A deck load of 3,000,000 or 4,000,000 feet of sawed lumber will be received on the raft also.

Another large deal made by a Duluth firm embraces the leases of 10,000 acres of valuable timber land around Coquitlan Lake and on the Fraser River, which also involves the construction of a lumber mill.

Spokane capitalists have completed the purchase of 17 square miles of coal lands

in this province for \$100,000. The land is about 60 miles east of Fernie, B.C., and it is expected a short line of railroad will be built on the land to take the product to market at Spokane, or on the line of one of the great transcontinental roads.

It is publicly announced by representatives of the Great Northern Railway that it has been decided to construct the railroad surveyed some three years ago from Wenatchee to Oroville through the Okanogan country to a connection with the great Northern line, from Midway to Hope, now under construction. The construction of this line, which is to be commenced within 90 days, will give the Great Northern Railroad, through the Similkameen coal region, the southern British Columbia mining section, an outlet to salt water on the American side of the boundary and bring the product to United States markets.

CANADIAN BLAST FURNACE NOTES.

Of the four furnaces of the Dominion Iron & Steel Co., Sydney, N.S., three were in blast on December 31. The company are holding the idle furnace in reserve and will blow it in when any of the furnaces which are now active blow out for repairs.

The Londonderry Iron & Mining Co., Londonderry, N.S., have dismantled Furnace B. The stack was built in 1875-6 and was 62x18 feet. It has been idle for several years. Furnace A ran for 293 days in 1905 and was active on December 31. Foundry iron only was made.


The Nova Scotia Steel & Iron Co. have abandoned their Ferrona Furnace, at Fer-

rona, N.S. It was 65x15 feet, was blown in 1892, and was last active in June, 1904. It will probably be dismantled.

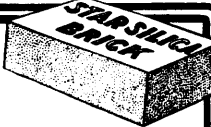
The Canada Iron Furnace Co., were not operating their charcoal furnace at Radnor Forges, Que., on December 31. During 1905 the furnace ran for 236 days. It is now being relined and operations will probably be resumed by February 10. The coke furnace of the company at Midland, Ont., was also idle on December 31 for relining. During 1905 it ran for 345 days. It will probably be ready for blast early in March.

Messrs. John McDougall & Co., Montreal, operated their Grantham Furnace, at Drummondville, Que., for 48 days during 1905 and their St. Francis Furnace at the same place for 285 days. Grantham was idle on December 31 but St. Francis was active. Charcoal pig iron only is made.

The Algoma Steel Co., Sault Ste. Marie, Ont., had their No. 1 and No. 2 furnaces in blast on December 31. Furnace No. 1 ran for 290 days during 1905 and No. 2 was in blast during the entire year. No. 1 used charcoal alone, charcoal and coke mixed, and coke alone for fuel. At the close of 1905 it was using coke alone and this fuel will probably be used during the first half of 1906. Furnace No. 2 used coke only during the whole of 1905. No work was done in 1905 on the two furnaces for which ground was broken in 1901 but upon which work was subsequently suspended. Nor is it likely that work will be resumed upon these furnaces during 1906. The charcoal furnace of the Deseronto Iron Co., Deseronto, Ont., was out of blast on December 31 but ran for 348 days during 1905. Work was resumed on January 18.




CORNERS *in* QUALITY



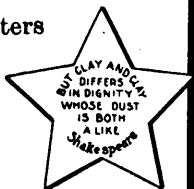
We have "cornered" the brick market—so far as **quality** is concerned. It's an interesting story, but we have only space to outline it here:

The first chapter begins at the clay mines. It shows how particular we are about **good raw material**. The grading is very thorough. At every step—inspection—selection—rejection, until our experts have the cream of the clay beds picked out.

The last chapter is a long way from the first, for it takes longer to wear out **Harbison-Walker Refractories** than any other fire-brick made.



This is a true story. You can see the proofs, any time, in this office—letters from users of refractories who have set down in black and white facts and figures which are the most valuable records of experience ever collected in the history of fire brick manufacturing.



1,100,000 Daily Capacity.
7,000 Regular Customers.

No order too small for our best attention; none too large for our capacity.


We have expert knowledge for your brick troubles.

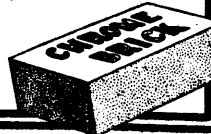
Always state for what purpose brick are to be used.

Send for Catalogue "K"

Harbison-Walker Refractories Co.

PITTSBURG, PA.





During 1905 the Northern Iron & Steel Co. did no work whatever upon the furnace at Collingwood, Ont., which they acquired in September, 1904. Nor is it likely that work will be resumed during 1906.

The Atikokan Iron Co., Port Arthur, Ont., are pushing work on the coke furnace for which they broke ground a short time ago and now expect to have the stack completed and ready for operation by August 1.

We learn from Mr. Eugene Haanel, Ph.D. Superintendent of Mines of the Dominion of Canada, that the experimental furnace which the Canadian Government erected at Sault Ste. Marie last year for the manufacture of pig iron by electricity was in operation for about 15 days during January, 1906, and that about 36 tons of pig iron were made. The furnace was not operated during 1905. The experiments are being made by Dr. Heroult, of La Praz, France, under the supervision of Mr. Haanel.—The Bulletin.

THE CREATION OF DRAFT.

"Although the ultimate object of any means of draft production must necessarily be to create draft or velocity sufficient to

provide the required amount of air and to carry off the gases, yet this portion of its work is almost infinitesimal as compared with the demand made for sufficient pressure to overcome the resistance of the fuel and the boiler. In other words, the ability to create sufficient pressure difference is the primary requisite to burning a given quantity of fuel, rather than the ability to move a certain amount of air. Draft-producing apparatus is not, therefore to be based merely upon the total number of cubic feet to be moved per hour, as determined by multiplying the coal consumption by the allowance of air per pound of coal. If this were the case, a low chimney, or a large slow-running fan, would meet the requirements. In reality, the relatively immense resistances of fuel and boiler demand that the chimney or fan shall first be designed to create sufficient intensity of draft to overcome these resistances and to create the requisite velocity. This velocity must be such that, if multiplied by the full area at which it is measured, the product will equal the volume of air necessary for the combustion of the stated amount of fuel. The height of chimney or the diameter and speed

of fan necessary to create the draft thus shown to be required having been determined, it is only necessary to make the capacity such as to accommodate the given volume of air." (From "Treatise on Mechanical Draft," by the B. F. Sturtevant Co., Boston, Mass.)

From the least of beginnings, from a crude blower with but a single use to the many types of carefully constructed blowers of to-day with their multitude of duties, the story is one of constant progress. A story indeed, of many obstacles overcome, of success often brought out of apparent failure, emphatic proof that "where there's a will there's a way." Such is the story of the B. F. Sturtevant Co., Boston, Mass. To-day the fan blower may be found in almost every line of manufacture, in the office, the public building, the mine, and the steamship, serving ever its useful purpose, and rendered constantly more indispensable as its value is appreciated. It insures healthful air in thousands of buildings; it serves as a vital element in the drying of various materials, it is the constant reliance of the blacksmith and the iron founder, of the steam producer and the cotton ginner.

The super-excellence of McCullough-Dalzell Crucibles is largely due to the use of the celebrated Klingenberg Crown Clay and Ceylon Plumbago—perfectly blended.

MCCULLOUGH-DALZELL CRUCIBLE CO., Pittsburg, Pa.

WATCH FOR THE
ANNOUNCEMENT OF

The Power & Gas Machine Company

LIMITED

GALT - - ONTARIO

ELECTRICAL DISTRIBUTION IN TORONTO.

What is said to be the finest electric power transforming station in the world is approaching completion in Toronto. It forms part of the transmission system of the Electrical Development Co., whose power plant installation at Niagara Falls is intended for the generation of 125,000 horse power. Whatever portion of this power is to be used by the people of Toronto must pass through the new transforming station, which thus becomes a kind of terminal for the 80-mile cables of the company.

These run over the right of way of the company, which lies almost parallel with the railway tracks to Burlington Beach, and then branches south to Niagara Falls. Along this strip are set up the towers upon which the cables are strung.

Some nervousness on the part of the public may be dissipated by the knowledge that, while undoubtedly dangerous for any who should meddle with the cables, under ordinary circumstances there is no risk whatever. It is entirely in the company's interests that there should be no risk, for any accident to the transmission cables renders the expensive machinery at either end of the line liable to serious and costly injury. All ordinary and all foreseen extraordinary risks are therefore carefully guarded against.

The cables are six in number as at present strung, representing two three-phase circuits. Each circuit is capable of delivering 20,000 h.p. each, with a loss of 10 per cent. The greater loss is due to the greater energy

required to force the power over the line, the analogy in this respect to the pumping of water being fairly close. The dynamos at Niagara to deliver 40,000 h.p. in Toronto would require an initial force of 50,000 h.p. To deliver 20,000 h.p. only about 22,500 h.p. would be required at Niagara. In the future should more than 40,000 h.p. be required a second series of cables will be strung, as only half the capacity of the new transforming station is presently to be utilized. As the site of the station is on a large block of land belonging to the company, further extensions can readily be added.

The transmission line is believed to be the best so far constructed. Everything about it is tested far beyond the point of ordinary strain. The insulators, which are of the finest porcelain, are triple in arrangement, cemented together, and tested to 120,000 volts. The cable was specially made of hard drawn copper wire twisted round a hemp core, the six strands of copper forming a cable nine-sixteenths of an inch in diameter. It weighs six-tenths of a pound to the foot and has an ultimate strength of fifty-five or sixty thousand pounds. The elastic limit of the cable is high at 35,000 pounds, below which point it will not stretch. It is capable of carrying ice an inch thick in a sleet storm, with wind pressure at the same time of 100 miles an hour without injury. All ordinary contingencies have thus been figured on.

Standing at the Canadian Pacific Railway track near Davenport road, the cable towers, over forty feet high, standing in symmetrical order, may be seen

stretching along the right of way for more than a mile until the row bends off gracefully northwards. Near the spectator a specially strong anchor tower provides for the bend in the line which brings it to the transforming station, where another anchor tower forms the terminal one, close to where the cables penetrate the station wall.

The transforming station itself is an imposing structure, measuring 202 feet in length, 55 feet in width, and 45 feet in height. It is substantially built of a superior quality of vitrified brick, and has the architectural virtue of strength and unpretentiousness. When surrounded by flower pots and its newness relieved by creepers and climbers, it will present a fine appearance.

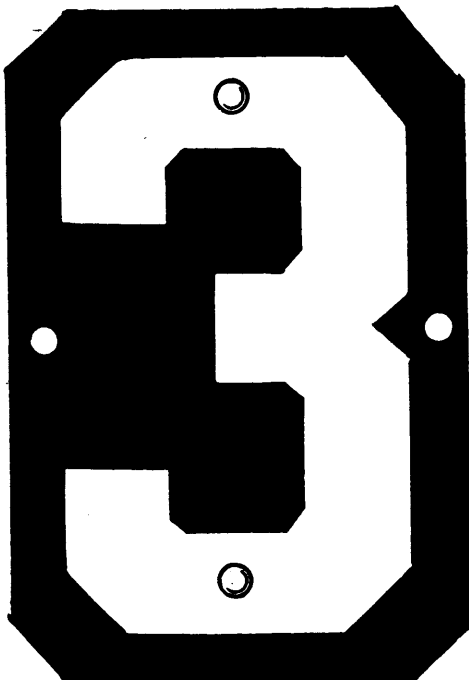
To accommodate the three-phase supply of electricity it is notable that almost every feature in the installation of the building is of a triple character. The cables go in threes, and as it is of the utmost importance that they should never come in contact, or even within "striking" distance, the insulation provided is of the most complete kind, whether, as on the towers by their 36-inch distance apart, or in the station by the construction of separate brick or cement chambers for every wire, or switch or transformer, or lightning arrester, or other device necessary in the plant.

There are two stories in the station, with some basement construction necessary for the steam-heating apparatus required during building, the oil tank and the many cable conduits which are to convey the current in distribution. The ground floor is chiefly devoted to the huge oil transformers, of

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

314 Front St. West, TORONTO

EMBOSSSED ALUMINUM NUMBERS



REGISTERED

Our Signs and Numbers are made of Aluminum and riveted with Aluminum Rivets to a Black Japanned Steel Plate. The great benefit of our Numbers and Signs is, that being made of Aluminum they will never crack, rust or tarnish, and can be seen much better both by day and night than any other manufactured. The Light, Glistening Aluminum Figure, standing out on the Black Background makes a perfect Contrast between the Number and the Plate.



DRAFT WITHOUT A CHIMNEY

is the order of the day. A fan does the business and costs far less than a chimney. It burns the cheapest fuels, increasing the steaming capacity of the boilers, is independent of wind or weather, and possesses a host of other advantages which are presented in our catalogue No. 110. Send for it.

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 Exhausters; Steam Engines, Electric Motors and Generating Sets; Fuel Economizers; Forges, Exhaust Heads, Steam Traps, etc. 517

which nine are already in position, and the second story contains all the intricate and complicated contrivances by which the current is received, divided and subdivided, transformed and switched to the various consumers.

Everything in this apartment in its 200 feet of extent has the neatness and precision and spick-and-span quality of a first-class man-of-war, the lower decks of which in

many ways it suggests. The floor is concreted, and looks sufficiently plain and simple, but concealed beneath the concrete are myriads of wires and cables, the nerve-system of the station. Photographs of these before they were covered in look like the dissections of some titan neurotologist.

There are still a few people who do not quite understand the operation of electric currents. In a word, they are due to the

disturbance of electric balance, the current always seeking to restore the lost equilibrium and endeavoring to reach this end by the easiest and shortest conducting route. It is therefore imperative that the cables or wires carrying the current should be kept perfectly insulated.

The revolving of a coil of wire in the field of influence of a magnet has been found to produce a current of electricity in the coil. This is the method of the production of so-called currents of electric force, though no one can yet explain why it is so. The power derived from Niagara or any other source is applied to the revolution of great coils of wire in the magnetic field of huge magnets, generally electro-magnets, known as armatures, but the source of the magnetism has nothing to do with the electricity produced. The process may be reversed and frequently is, the huge magnets being revolved in presence of the coils. The effect is the same in either case, the mechanical energy being converted into the energy of an electric current.

An alternating current is one in which the current is periodically changing its direction, a result brought about in the dynamo or current generator. The time taken for one complete alternation to and fro is called the period, and the number of complete alternations per second is called the frequency. A current of what is called 25-cycle frequency is used by the Electrical Development Co.

By a simple expedient an alternating current can be changed to a continuous current, going always in the same direction, the brushes which collect the current from the coils being placed so that they change contacts the same instant that the current reverses.

If the armature of any alternator be wound with two sets of coils, one ahead of the other, and each connected with a separate outside circuit, two alternating currents may be generated alike in period and intensity, but differing in the position of maximum value, or phase, as it is termed, by an amount depending upon how much one set of coils is ahead of the other. Three sets of coils beget a three-phase current, and this is the current that has been found to give the most satisfactory results in practice.

The three-phase current is received along two circuits, or distinct sets of cables. This requires in the transforming station six separate sets of transforming apparatus or one for each wire, and a spare set is installed for each circuit. There are nine sets in all. As already said, there is room for six more sets when they are required.

The cable, and what is true of one is true of each, upon entering its own chamber is connected with a lightning arrester. As lightning is a different kind of electricity, or static, from dynamic electricity, it is only necessary to say that a medium is provided which conducts one and not the other. The current enters at a tension, or pressure, of 60,000 volts, and has to be reduced to one of 12,000 volts for delivery to the railway or light companies, who further reduce the pressure for their own needs. The current is generated at Niagara at 12,000 volts and is raised to 60,000 in a similar transforming station there. The process in one case is called stepping-up, in the other stepping-down. The Toronto station is, therefore, a step-down station.

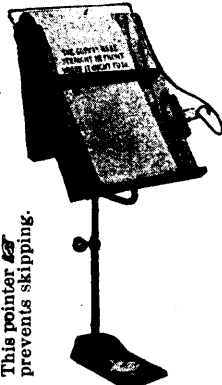
By means of oil switches, which are automatically operated when necessary, and are

FREE with Typewriter Ribbons

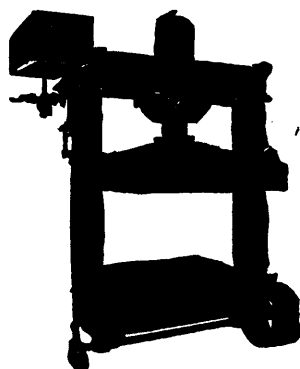
Order two ribbons at the regular price and get a

\$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 "bobbing" 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. Is 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.



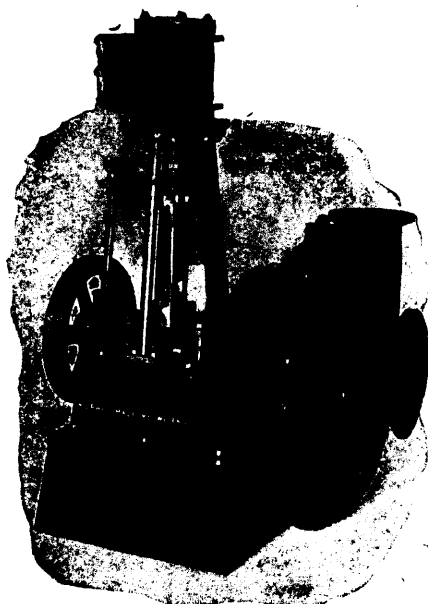
CLEVELAND RIBBON & MFG. CO., - 2741 CARNEGIE AVE., CLEVELAND, OHIO



Presses

**HYDRAULIC
KNUCKLE-JOINT
FILTER PRESSES**

**WILLIAM R. PERRIN & COMPANY, Limited
TORONTO**



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.

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

controlled through an independent local plant from the switchboard, the 60,000 volt current is thrown into the huge oil transformers. These when full weigh 40 tons each, and a movable crane is installed. The process of transforming a current is one of induction. Any coil of wire carrying an electric current brought near a similar coil will induce in it another current almost equal in value. If two secondary coils are used the current in each will be about half of the original; if five are used about one-fifth. Coils equal to five times the resistance of the original coil are, therefore, necessary to reduce the 60,000 volts to the 12,000 required. These coils are contained in the great cylinders and immersed in a mineral oil of very high flashing point, with special characteristics of viscosity, containing no acids or alkalis, and absolutely free from water, one per cent. of which would ruin its quality. This perfectly neutral oil serves as a complete insulator, and also has the effect of cooling the coils, which become very hot from the intensity of the current. The oil is cooled in turn by the circulation of cold water in pipes, and a constant supply of this is provided for by the erection of a standpipe containing nearly 350,000 gallons, so that in case of a break-down in the city service the plant would not be endangered. The utmost care is taken to watch the temperature of the oil tanks, automatic thermometric devices being installed. There are nine of the transformers, with provision for six more, and the oil tank which feeds them is specially fitted up. Each transformer is placed in a separate chamber, and asbestos doors are furnished for every aperture.

From the transformers the current is conducted, always through separate cement cells and guarded by asbestos doors, to the 12,000-volt switches, which are also controlled by the local plant, and from the main switchboard. There is a spare set of these switches, and one, of course, for each distributing cable. The banks of switches are set in Kittaning brick and present a very handsome appearance.

The switchboard is the great feature of every power station, but for the uninitiated is an incomprehensible series of mysteries. Ample room is left for further development, but at present on the north end of the upper story are to be found the transmission line switches and the outgoing power switches for the 20,000 h.p. at present contemplated. Twelve of the switches are devoted to the Toronto Railway and the Toronto Electric Light Co., contracts with whom have been arranged. Two meters for each switch are attached, one for the purchaser and one for the vendor and also a third graphic meter. The meters are accurate to about 1 per cent. When too much power is registered an automatic device opens the switch. A synchronism indicator, or phase indicator, shows when things are running smoothly, and the three currents on each circuit of about equal strength. The switch indicators are all triple in construction.

The Canadian General Electric Co., Toronto, are the manufacturers of almost every portion of the complex machinery. The design of the whole building is of the latest character and embodies the most complete development in the world. There is no other construction elsewhere like it. The cost of the station, exclusive of machinery, is in the neighborhood of \$200,000.



"IMPERIAL"

Canadian Manufacturers

who wish to

Reduce Costs

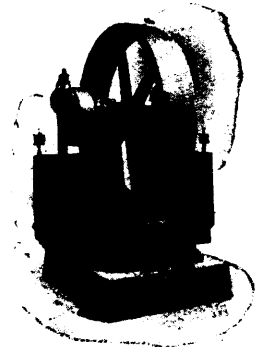
should seriously consider

THE QUESTION OF LABOR-SAVING DEVICES.

IMPERIAL PNEUMATIC TOOLS

Stand for the highest development in this line.

ASK FOR CATALOGUE.



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.



**How to
 Keep Your
 Belting
 In Good
 Condition**

The occasional application of Dixon's Solid Belt Dressing will prevent slipping, increase driving power, and lengthen the life of the belting. Put up in convenient one-pound bars. Send for our new circular No. 33-O.

Joseph Dixon Crucible Co.
 JERSEY CITY, N.J., U.S.A.

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.

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.

CASSELLA COLOR COMPANY

(American Branch of Leopold Cassella & Co.)

ARTIFICIAL

DYE STUFFS

New York, 182-184 Front Street.

Boston, 88 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

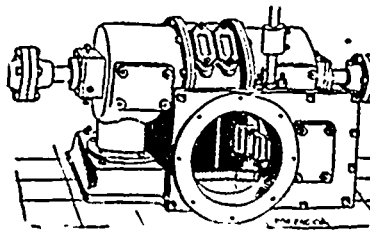
Aniline Colors, Aniline Oil and Salt, Archil Extracts
Cudbear, Cuchou de Laval, Thiocatechines, etc.

A Complete Assorted Stock of the above always on hand.

W. T. Benson & Co.,

Sole Agents for Canada.

164 St. James St., MONTREAL



Horizontal Type.

"LITTLE
GIANT"
Turbine

FOR ALL PURPOSES

HORIZONTAL AND VERTICAL. BUILT IN 44 SIZES.

We guarantee a higher percentage of power from water used
than any other wheel on the market.

Water Wheel Governors, Machine Dressed Gearing, Pulley Shafts
and Bearings.

Catalogue and Gear List mailed on application. Correspondence to

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

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.

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.

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 oil, &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. MONCTON, N.B. STRATFORD, ONT. KINGSTON, ONT. WINDSOR, ONT.



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 1/2 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.

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.

A FINE STEAM PLANT.

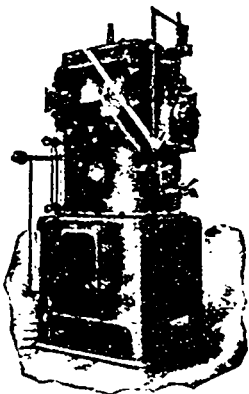
"I will say without qualification that it is as fine a boiler and engine plant as I have ever had the pleasure of seeing for its size. The engine was working without heating and absolutely without any noise. I wish to congratulate you on your success in building this class of engine and hope that we may have pleasure in dealing with you again."

The above refers to a 350-horse power Robb-Armstrong Corliss Engine and two 175-horse power Robb-Mumford Boilers installed by us.

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

AGENTS (WILLIAM McKAY, 320 Ossington Ave., Toronto.
WATSON JACK & COMPANY, Bell Telephone Bldg., Montreal
J. F. PORTER, 355 Carlton Street, Winnipeg.

THE WEBSTER VACUUM FEED WATER HEATER PURIFIER and FILTER



Requires less exhaust steam to heat a given amount of feed water than any open or closed type heater in the market.

Made in Sizes from 50 to 6,000 Horse Power.

Our Catalogue "H" giving full particulars will be mailed on application.

DARLING BROS., Limited
MONTREAL

Branch Offices—2 Toronto Street, TORONTO.
412 McIntyre Block, WINNIPEG.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

CLASSIFIED INDEX.

Abrasives

Williams, A. R. Machinery Co. Toronto

Acids

Canada Chemical Co., London, Ont.
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 Hand 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.
Casella Color Co., New York City.
McArthur, Cornelle & 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, Oh.

Antimony

Syracuse Smelting Works, Montreal.

Anvils and Vises

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

Architects

Gearing, H. Toronto.
Parko, 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.

English Card Clothing

FULL STOCK ON HAND

"GENUINE OAK" Leather Belting

OUR PRICES ARE LOW

Rubber Belting

D. K. McLAREN

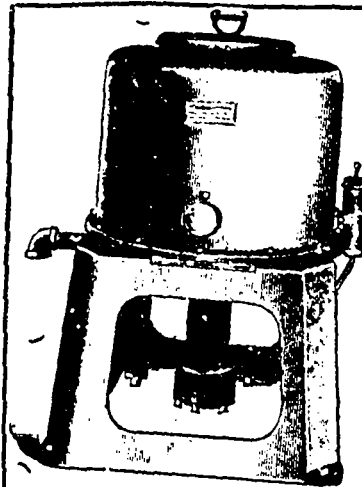
751 Craig Street,	MONTREAL
196 King Street West,	TORONTO
31 St. Peter Street,	QUEBEC
109 Prince William St.,	ST. JOHN, N.B.



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

JAS. T. BURKE, Parliament Buildings, Toronto.
 THOMAS KELTY, 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

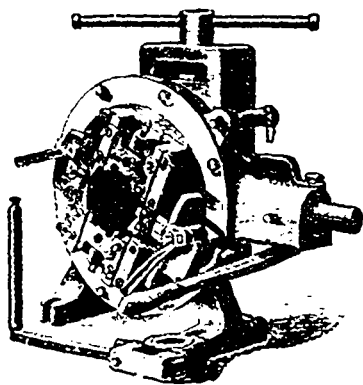
THE GLOBE MACHINE & STAMPING CO.
977 Hamilton Street, - Cleveland, Ohio.

GASOLINE ENGINES

FOR LAUNCHES AND CANOES.

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

M. O. CROSS ENGINE CO.
DETROIT.



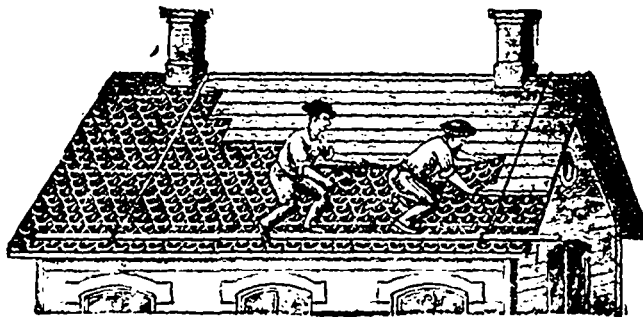
A GOOD INVESTMENT AN ARMSTRONG PIPE CUTTING AND THREADING MACHINE

often pays for itself in two or three months. As a labor saver it has no equal. Made in various sizes for hand or power. Write for complete catalogue.

THE ARMSTRONG MFG. CO.,
BRIDGEPORT, CONN., U.S.A.

"OSHAWA" STEEL SHINGLES

WIND,
WATER,
STORM
and
FIRE-
PROOF



LOCKED
ON ALL
FOUR
SIDES

Made from Painted or Galvanized Steel at prices varying from \$2.85 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.	Ottawa, Ont.	Toronto, Ont.	Winnipeg, Man.	Vancouver, B.C.
767 Craig St.	123 Sussex St.	11 Colborne St.	75 Lombard St.	615 Pender St.

WRITE YOUR NEAREST OFFICE.

Head Office and Works, OSHAWA, ONTARIO, CANADA

Advertise in the
Canadian Manufacturer.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

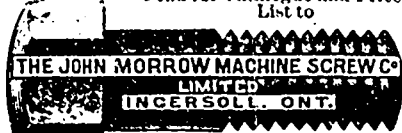
Special Announcement

An invitation is extended to any white merchant outside of New York City, or their representative, whose name appears in Bradstreet's or Dun's Commercial Agency Book, to accept the hospitality of our Hotel for three days without charge. Usual rates, apartment with private bath \$3.00 per day up, without meals. Parlor, bedroom and private bath \$35.00 per week and up, with meals for two. New York Merchants and Editors are requested to call the attention of their Out-of-Town Buyers and subscribers to this advertisement.

GALLATIN HOTEL,

70 W.46th St., NEW YORK CITY.

Send for Catalogue and Price List to



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

WM. BARBER & BROS.

Georgetown, Ont.

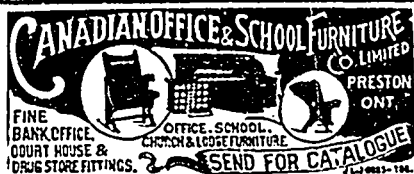
Manufacturers of.....

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.

A WORD TO OUR READERS!

The line at the bottom of our advertising pages requests you when writing to Advertisers, to mention THE CANADIAN MANUFACTURER. Compliance with the request costs nothing, but would mean a great deal to us. As the manufacturer usually grades the salary of his sales-man according to the value of the orders he turns in, so the advertiser values space according to inquiries received. The only way for this journal to receive full credit for sales influenced is for our readers, when writing to advertisers, to kindly mention THE CANADIAN MANUFACTURER.

CLASSIFIED INDEX.

(CONTINUED).

Beltting (Rubber)

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

Beltting 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.
Sadler & Haworth, Montreal and 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., Lock Haven, 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.
Hamilton Facing Mill Co., Hamilton, Ont.

Boiler Inspection

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

BOILERS (See Engines and Boilers)

Boils 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., Lock Haven, 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.
Peillar 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.
Peillar 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.

Canoes

Peterborough Canoe Co., Peterborough, Ont.

Caps

McCullough-Dalzell 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 Bronze)
International Harvester Co., Hamilton, Ont.
Jenckes Machine Co., Sherbrooke, Que.
Kerr Engine Co., Walkerville, Ont.
McDougall, John, Caledonian Iron Works Co., Montreal.
Smart-Turner Machine Co., Hamilton, Ont.

Cement Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
Bradley Pulverizer 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 Coll Chain)

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

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.
Nichols Chemical Co. of Canada, Montreal

Chemists

Archbold, Dr. Geo., Prescott, Ont.
Heys, Thomas & Son, Toronto.

Clay Working Machinery

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

Coal, Coke and Charcoal.

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

Coal Cutting Machines

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

Coal Tipples

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

Coll Chains

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

Coke Oven 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.
Von der Osten, E. & Co., Toronto.
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.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

CLASSIFIED INDEX.

(CONTINUED).

Corrugated Iron

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

Cotton Banding and Rope

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

Covers

McCullough-Dalzell 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-Dalzell Crucible Co., Pittsburg, Pa.
Syracuse Smelting Works, Montreal.

Crucible Caps

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

Crucible Covers

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

Cutter Grinding Machines

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

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.
Cassella Color Co., New York City.
Geigy Aniline & Extract Co., New York City.
McArthur, Cornelle & Co., Montreal.
Nichols Chemical Co. of Canada, Montreal.
Winn & Holland, Montreal.

DYNAMOS (See Motors and Dynamometers)

Electric Motors 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.

Electrical Repairs

Keystone Engineering Co., Toronto.

Electrical Supplies

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

Elevators and Conveyors

Allis-Chalmers-Bullock, Limited, Montreal.
Darling Bros., Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Sherbrooke, Que.
Link-Belt Engineering Co., Philadelphia, Pa.

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)

Heys, 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.
Von der Osten, E. & Co., Toronto.

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.
United Electric Co., Toronto.

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)

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

Engineers (Municipal)

Von der Osten, E. & Co., 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.

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.

WOOLLEN MILL For Sale

Water and steam power; one set Woollen Mill. Three story brick and stone 36 x 52 feet. Two story brick and stone addition 30 x 36 feet.

Good locality; wool plentiful.

Address,
S. M. HUTCHESON,
PAISLEY, ONT.

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

Advertisers

will thank you if, when you write them, you will say that you saw their announcement in

The Canadian Manufacturer

PATENTS
IN ALL COUNTRIES

ENGINEERING, ELECTRICAL and SCIENTIFIC CASES a SPECIALTY

Experience in such cases makes smaller cases easy as A. B. C. All kinds welcome as we are well equipped with special associates, assistants and facilities. CHARGES MODERATE. Preliminary advice free.

WRITE FOR SCHEDULE OF CHARGES AND HOW TO PROCEED.

We particularly invite inventors to make use of our PATENT LIBRARY and of our SPECIAL SEARCH FILES containing thousands of patents properly classified.

Patents procured through Marlon & Marlon RECEIVE SPECIAL NOTICE without CHARGE in over 100 newspapers distributed throughout the Dominion.

SPECIALTY:—Patent business of Manufacturers and Engineers.

MARION & MARION
Graduate Engineers & Registered Patent Attorneys

Offices: 1 New York Life Building, Montreal.
1 and 907 G Street, Washington, D. C.

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.

Advertise in

THE CANADIAN MANUFACTURER.

CLASSIFIED INDEX.

(CONTINUED).

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.

Explorer and Geologist

Evans, Horace F., Ashcroft, B.C.

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.

Finals

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., Pittsburg, Pa.
Pennsylvania Fire Brick Co., Lock Haven, 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 Economisers

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

Hardware

Batterfield & 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.

Industrial Plants

Von der Osten, E. & Co., Toronto.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

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. G. & 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., Belting 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.
 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. Belting Co., Montreal.
 Petrie, H. W., Toronto.
 Robb Engineering Co., Amherst, N.S.
 Smart-Turner Machine Co., Hamilton, Ont.
 Spence, R. & Co., Hamilton, Ont.
 Wilson, J. C. & Co., Glenora, 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.
 United Electric Co., Toronto.

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.

Novelty Manufacturers

Worth & Martin, Toronto.

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

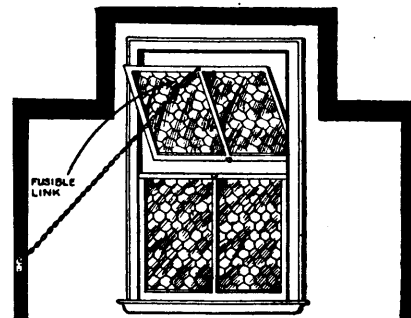
Dixon, Jos. Crucible Co., Jersey City, N.J.
 Hamilton Facing Mill Co., Hamilton, Ont.
 Imperial Oil Co., Petrolia, Ont.
 Queen City Oil Co., Toronto.

Oil Cloth

Dominion Oil Cloth Co., Montreal.

Paints and Colors

Berry Bros., Walkerville, Ont.
 McArthur, Cornelle & Co., Montreal.



FIRE-PROOF GLASS WINDOWS.

They give absolute security—resisting intense fire heat, as well as the action of water.

Arranged to open with this "fusible link" attachment, they close and lock automatically if a fire occurs—150° melts the link—thus giving complete and perfect protection.

This "wired glass" admits the light as freely as plain glass—is rather ornamental in effect, and greatly lessens insurance rates.

Full information if you write
METALLIC ROOFING CO.,
 Wholesale Mfrs. LIMITED,
TORONTO, CANADA.

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

The Engineering Review

A High-Class Illustrated Monthly Technical Record.

The largest sale circulation throughout the Empire.

SUBSCRIPTION RATE:
 12/6 per annum (post free).

For Advertising Rates apply to General Manager.

104 High Holborn, LONDON W.C., ENGLAND.

— or —

THE INTERNATIONAL NEWS CO., Limited
TORONTO and MONTREAL.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER

A COMPLETE ELECTRICAL LIBRARY

By PROF. T. O'CONOR 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).

Paper Manufacturers

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

Patents

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

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-Dalzell Crucible Co., Pittsburg, Pa.
Pittsburg Crucible Works, 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-Dalzell 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.
United Electric Co., Toronto.
Wilson, J. C. & Co., Glenora, 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., Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Smart-Turner Machine Co., Hamilton, Ont.
Wilson, J. C. & Co., Glenora, Ont.

Pumps and Pumping Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
American Steam Pump Co., Battle Creek, Mich.
Canada Foundry Co., Toronto.
Darling Bros., Montreal.
Downie Pump Co., Downieville, Pa.
Goldie & McCulloch Co., Galt, Ont.
Jenckes 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.

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.

CLASSIFIED INDEX.

(CONTINUED).

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.
Wilson, J. C. & Co., Glenora, Ont.

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.

Jenckes 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.
Jenckes Machine Co., Sherbrooke, Que.
Wilson, J. C. & Co., Glenora, Ont.

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 Hollinders (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.

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 Ropes

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.

THE CANADIAN MANUFACTURER

J. J. CASSIDY, Manager.

PUBLISHED TWICE A MONTH.

Devoted to the Industrial Interests of Canada.
\$1.50 a Year. Sample Copies Free.

Advertising Rates on application.

Canadian Manufacturer Publishing Co., Limited,
TORONTO, CANADA.

Keep Posted on Coal

You will save money by reading THE RETAIL COALMAN. We guarantee the largest paid circulation of any coal trade paper. That's the best proof of its practical worth and genuine merit.

A Whole Year for only \$1

Sample Copy free for the asking.

Special attention given Canadian news.

THE RETAIL COALMAN,

1536 Monadnock Building,
CHICAGO, ILL.

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,
NEW YORK OFFICE: PHILADELPHIA
Hartford Building.

OUR CLUBBING LIST.

The publishers of THE CANADIAN MANUFACTURER have made arrangements with a number of the leading popular publications of Canada, Great Britain, and the United States by which all new and renewing subscribers may obtain THE CANADIAN MANUFACTURER and any one of the publications named in our Clubbing List for about the price of one. Among the large number of periodicals named one cannot but find just what he would like to have; and if there are any periodicals which are not here listed, no matter where published, our quotations therefor will be sent without delay.

The Clubbing List shows the names of the periodicals which we offer; where published; the publishers' regular subscription price, and the price at which we offer it clubbed with THE CANADIAN MANUFACTURER.

Any publication desired will be sent to the subscriber post-age paid direct from the office of publication or distribution.

Any subscriber who desires more than one of the publications named would have no trouble in disposing of the duplicate copies of THE CANADIAN MANUFACTURER by presentation to intelligent employes or others.

Remittances which must always be in advance, should be made payable to THE CANADIAN MANUFACTURER PUBLISHING Co., Limited, Toronto, Canada, by Post Office or Express Money Order, or registered letter. If cheques are used, payable elsewhere than at par in Toronto, add fifteen cents for cost of collection. Acknowledgment of every remittance made promptly.

Receipt of the first number of a publication with correct address, is evidence that the publishers have received the money and recorded the subscription. If publications do not reach subscribers in reasonable time, write us, always giving full particulars, name of publication, name of subscriber, etc.

NAMES.	Place.	Fre- quency.	Their Price.	Com- bina- tion.	NAMES.	Place.	Fre- quency.	Their Price.	Com- bina- tion.
American Architect.....	New York..	Weekly	\$6 00	\$6 25	Illustrated London News.....	London....	Weekly	\$6 00	\$6 25
American Electrician.....	New York..	Monthly	1 00	1 25	Inter-Ocean.....	Chicago....	Weekly	1 00	1 25
American Federationist.....	Washington.	Monthly	1 00	1 25	Iron Age.....	New York..	Weekly	5 00	5 25
American Inventor.....	New York..	Monthly	1 50	1 75	Ladies' Home Journal.....	Philadelphia	Monthly	1 25	1 50
Architect and Builders Magazine	New York..	Monthly	2 00	2 25	Leslies' Monthly Magazine....	New York..	Monthly	1 00	1 25
Architectural Record.....	New York..	Monthly	3 00	3 25	Literary Digest.....	New York..	Weekly	3 00	3 25
Architectural Review.....	London....	Monthly	4 00	4 25	Machinery (Engineering Edition)	New York..	Monthly	2 00	2 25
Atlantic Monthly.....	Boston....	Monthly	4 00	4 25	McClure's Magazine.....	New York..	Monthly	1 00	1 25
Boys' Own Paper.....	London....	Weekly	1 75	2 00	Mines and Minerals.....	Scranton..	Monthly	2 00	2 25
Brick-Builder.....	Boston....	Monthly	5 00	5 25	Modern Methods.....	Detroit....	Monthly	50	1 50
British Architect.....	London....	Weekly	6 00	6 25	Montreal Herald.....	Montreal..	Daily...	3 00	3 25
Buffalo Express, Illustrated....	Buffalo....	Weekly	2 00	2 25	Montreal La Presse.....	Montreal..	Daily...	3 00	3 25
Builders' Journal.....	London....	Weekly	3 50	3 75	Montreal Witness.....	Montreal..	Daily...	3 00	3 25
Camera.....	Philadelphia.	Monthly	1 00	1 25	Motor Age.....	Chicago....	Weekly	2 00	2 25
Canada First.....	Toronto....	Monthly	1 00	1 25	Motoring, Illustrated.....	London....	Weekly	2 25	2 50
Canadian Magazine.....	Toronto....	Monthly	2 50	2 75	Municipal Journal.....	New York..	Monthly	3 00	3 25
Cassiers' Magazine.....	New York..	Monthly	3 00	3 25	National Builder.....	Chicago....	Monthly	2 00	2 25
Chemical News.....	London....	Weekly	5 25	5 50	National Monthly.....	Toronto....	Monthly	1 00	1 25
Colliers' Weekly.....	New York..	Weekly	5 20	5 25	New York Clipper.....	New York..	Weekly	4 00	4 25
Commercial Intelligence.....	London....	Weekly	5 00	5 25	New York Commercial.....	New York..	Daily...	6 00	6 25
Compressed Air.....	New York..	Monthly	1 00	1 25	North American Review....	New York..	Monthly	5 00	5 25
Cooking School Magazine.....	Boston....	Monthly	1 00	1 25	Our Dumb Animals.....	Boston....	Monthly	50	75
Cornhill Magazine.....	London....	Monthly	2 50	2 75	Outing.....	New York..	Monthly	3 00	3 25
Delineator.....	New York..	Monthly	1 00	1 25	Ottawa Citizen.....	Ottawa....	Daily...	3 00	3 25
Electrical Engineer.....	London....	Weekly	4 50	4 75	Ottawa Free Press.....	Ottawa....	Daily...	3 00	3 25
Electrical Magazine.....	London....	Monthly	2 25	2 50	Pearson's Magazine.....	New York..	Monthly	1 00	1 25
Electrical Review.....	London....	Weekly	5 75	6 00	Photographic Journal.....	London....	Monthly	2 00	2 25
Electrical World and Engineer..	New York..	Weekly	3 00	3 25	Photographic Times.....	New York..	Weekly	1 00	1 25
Electrician.....	London....	Weekly	7 30	7 50	Photography.....	London....	Weekly	2 25	2 50
Electro-Chemical Industry.....	New York..	Monthly	2 00	2 25	Popular Science Monthly.....	New York..	Monthly	3 00	3 25
Engineering and Mining Journal.	New York..	Weekly	5 00	5 25	Power.....	New York..	Monthly	1 00	1 25
Engineering Review.....	New York..	Monthly	1 00	1 25	Queen, The.....	London....	Weekly	10 00	10 25
Engineering Review (Fieldens)..	London....	Monthly	3 05	3 25	Review of Reviews.....	London....	Monthly	2 00	2 25
Everybody's Magazine.....	New York..	Monthly	1 50	1 75	Scientific American.....	New York..	Weekly	3 00	3 25
Field and Stream.....	New York..	Monthly	1 50	1 75	Scribners' Magazine.....	New York..	Monthly	3 00	3 25
Forest and Stream.....	New York..	Weekly	4 00	4 25	Sporting Times.....	London....	Weekly	3 00	3 25
Four Track News.....	New York..	Monthly	1 00	1 25	Street Railway Journal.....	New York..	Monthly	3 00	3 25
Gentleman's Magazine.....	London....	Monthly	4 00	4 25	Toronto Saturday Night....	Toronto....	Weekly	2 00	2 25
Girl's Own Paper.....	London....	Weekly	1 75	2 00	Toronto Sunday World.....	Toronto....	Weekly	2 00	2 25
Good Housekeeping.....	Toronto....	Monthly	1 00	1 25	Youth's Companion.....	Boston....	Weekly	1 75	2 00
Good Road's Magazine.....	New York..	Monthly	1 00	1 25	Weldon's Ladies' Journal.....	London....	Monthly	1 25	1 50
Hardware Dealers' Magazine....	New York..	Monthly	1 00	1 25	Winnipeg Free Press.....	Winnipeg..	Daily...	3 00	3 25
Harpers' Magazine.....	New York..	Monthly	4 00	4 25					
Harpers' Weekly.....	New York..	Weekly	4 00	4 25					

The Canadian Manufacturer Publishing Co., Limited,
TORONTO, CANADA.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

INDEX TO ADVERTISEMENTS.

Where the follo is not given the Advertisement appears at intervals.

See Classified Index Beginning on Page 87

ofc outside front cover.

obc.....outside back cover.

A	PAGE		PAGE		PAGE
Agriculture, Ontario Minister of, Toronto.....	36	Canadian Casualty & Boiler Insurance Co. Toronto.....	obc	Engineering Review, London, England.....	41
Aitken, K. L., Toronto.....	10	Canadian Copper Co., New York, N.Y.....	5	Evans, Horace F., Ashcroft, B.C.....	10
Albert Mfg. Co., Hillsborough, N.B.....	9	Canadian General Electric Co., Toronto.....	13	Expanded Metal & Fireproofing Co., Toronto... ..	8
Algoma Steel Co., Sault Ste. Marie, Ont.....	4	Canadian Manufacturer Pub. Co., Toronto.....	43		
Allis-Chalmers-Bullock, Ltd., Montreal.....	47	Canadian Office & School Furniture Co., Preston, Ont.....	38	F	
American Carpet & Upholstery Journal, Philadelphia, Pa.....	43	Canadian Oil & Waste Saving Machine Co., Brockville, Ont.....	37	Factory Inspectors, Ontario.....	39
American Steam Pump Co., Battle Creek, Mich..	3	Canadian Rand Drill Co., Sherbrooke, Que.....	33	Factory Locations.....	39
Archbold, Dr. Geo., Prescott, Ont.....	10	Canadian Westinghouse Co., Ltd., Hamilton, Ont.....	47	Fensom, C. J., Toronto.....	10
Armstrong Mfg. Co., Bridgeport, Conn.....	37	Canadian White Co., Montreal.....	14	Ferguson, J. D., Hamilton, Ont.....	6
		Carter Publishing Co., London, Eng.....	12	Fetherstonhaugh & Co., Toronto.....	ofc
		Cassella Color Co., New York and Montreal....	34	Firstbrook Box Co., Toronto.....	10
		Central Ontario Power Co., Peterboro, Ont....	14	Forman, John, Montreal.....	13-34
		Chapman Double Ball Bearing Co., Toronto....	14		
B		Chicago & North-Western Railway, B. H. Bennett, General Agent, Toronto.....	30		
Babcock & Wilcox, Limited, Montreal.....	ofc	Clark-Demill Co., Hespeler, Ont.....	2		
Bank of Hamilton, Hamilton, Ont.....	40	Cleveland Ribbon & Mfg. Co., Cleveland, Ohio..	32	G	
Barber, Wm. & Bro., Georgetown, Ont.....	38	Conduits Co., Limited, Toronto.....	obc	Gallatin Hotel, New York City.....	38
Becker-Brainard Milling Machine Co., Hyde Park, Mass.....	11	Continental Iron Works, New York, N.Y.....	3	Gartshore, John J., Toronto.....	10
Bell Telephone Co.....	34	Crocker-Wheeler Co., St. Catharines, Ont.....	12	Gartshore - Thomson Pipe & Foundry Co., Hamilton, Ont.....	33
Benson, W. T. & Co., Montreal.....	34	Cross, M. O., Engine Co., Detroit, Mich.....	37	Gearing, H., Toronto.....	10
Berry Bros., Walkerville, Ont.....	28			Globe Machine & Stamping Co., Cleveland, Ohio	37
Boiler Inspection & Insurance Co., Toronto....	obc	D		Goldie & McCulloch Co., Galt, Ont.....	3
Bourne-Fuller Co., Cleveland, Ohio.....	4	Darling Bros., Montreal.....	36	Greening, B. Wire Co., Hamilton, Ont.....	5
Bradley Pulverizer Co., Boston, Mass.....	35	Department Public Works, Ottawa.....		Gutta Percha & Rubber Mfg. Co., Toronto.....	ofc
Bradstreets, Toronto and New York.....	40	Dixon, Jos., Crucible Co., Jersey City, N.J.....	33		
Bristol Co., Waterbury, Conn.....	obc	Dominion Belting Co., Hamilton, Ont.....	ofc	H	
Brunner, Mond & Co., Northwich, England....		Dominion Oil Cloth Co., Montreal.....	ofc	Hamilton Brass Mfg. Co., Hamilton, Ont.....	12
Budden, Hanbury A., Montreal.....	10	Dominion Wire Rope Co., Montreal.....		Hamilton Facing Mills Co., Hamilton, Ont.....	obc
Butterfield & Co., Rock Island, Que.....	11	Downie Pump Co., Downieville, Pa.....	33	Hamilton, Wm. Mfg. Co., Peterborough, Ont....	8
		Drummond, McCall & Co., Montreal.....	4	Harbison-Walker Refractories Co., Pittsburg, Pa.	29
		Dun, R. G. & Co., Toronto.....	40	Hay, Peter Knife Co., Galt, Ont.....	9
		Dunbar Fire Brick Co., Pittsburg, Pa.....	9	Heys, Thomas & Son, Toronto.....	10
				Hopkins, F. H. & Co., Montreal.....	8
C		E		Hore, F. W. & Son, Hamilton, Ont.....	10
Canada Chemical Mfg. Co., London, Ont.....	34	Electrical Construction Co., London, Ont.....	13	Hunt, Robert W. & Co., Chicago, Ill.....	10
Canada Foundry Co., Toronto.....		Elk Fire Brick Co., St. Mary's, Pa.....	9	Hutcheson, S. M., Paisley, Ont.....	39
Canada Iron Furnace Co., Montreal.....	4				

When Arranging for Your Next Advertisement

Don't Forget the CANADIAN MANUFACTURER!
 Give us a chance to show you that Advertising Pays.
 For sample Copies, advertising rates, etc., address,

THE CANADIAN MANUFACTURER PUBLISHING CO., Limited
 MCKINNON BUILDING, TORONTO, CANADA.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



Westinghouse Induction Motor Driving Triplex Pump.

Westinghouse Motors

Alternating and Direct Current.

**A Successful Record
is the best guarantee**

Westinghouse Motors have proven their superior capacity and efficiency in every kind of service, and under the most severe conditions.

Canadian Westinghouse Co., Limited

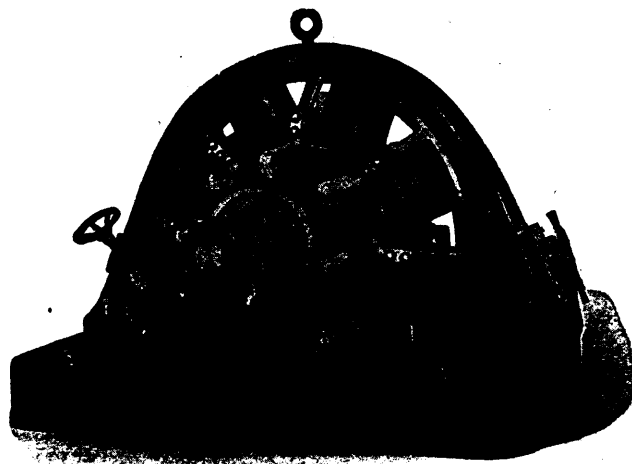
General Office and Works, HAMILTON, ONTARIO.

Lawlor Bldg., King and Yonge Sts.,
TORONTO.
162 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 four 300 K. W. rotary converters built for the Shawinigan Water & Power Co., Montreal.

HEAD OFFICE AND WORKS - MONTREAL

Branch Offices - NEW GLASGOW

TORONTO

WINNIPEG

NELSON

VANCOUVER

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Do It Now

Send for Advertising Rates Canadian Manufacturer, Toronto

Don't waste it advertising the other fellow
by unkind remarks or invidious comparisons
Advertising Space Costs Good Money.

M^cARTHUR, 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

Stratford, Ont., April 29th, 1902.
THE BOILER INSPECTION & INSURANCE CO.,
Toronto, Ont.

Dear Sirs:—

Your cheque to hand for \$2,000, in full payment of Policy No. 8020, covering our loss on account of Boiler explosion. Your prompt payment of same is highly commendable.

Expect to rebuild at once, and instead of carrying \$2,000 in your Company on our new plant, will increase it considerable.

Should we never have another boiler explosion, we feel that we are amply repaid by always having our boiler under your inspection and examined three or four times a year.

Again thanking you,

We are, yours respectfully,

THE HODD & CULLEN MILLING CO.,
LIMITED.

per JAMES PRINGLE, JR., Sec. & Treas.

CONDUITS COMPANY LIMITED

SUCCESSORS TO

The Richmond Conduit and Mfg. Co.
Limited

Sole Manufacturers

Under U.S. and Canadian Patents

GALVADUCT

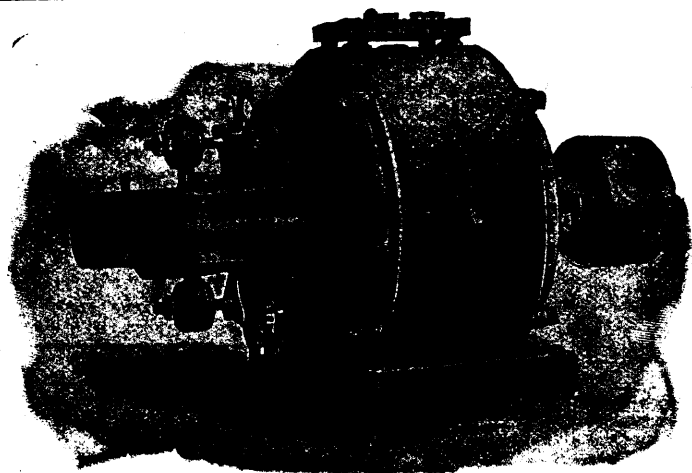
AND

LORICATED

CONDUITS

For Interior Construction

TORONTO, CANADA



WE MANUFACTURE GENERATORS AND MOTORS

All sizes up to 1,000 H.P. (slow speed)
and 2,000 H.P. (high speed)

"Johnson" (Patented) Multispeed Motors

Are the only efficient variable speed motors for driving machine tools, printing presses, and all machinery requiring variable speed motive power

"SUPERIOR" ALTERNATING CURRENT APPARATUS

The United Electric Co., Limited, Toronto, Ont.

Sprinkler Leakage Insurance

is indemnity paid for losses sustained by the accidental discharge 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. DINNIK, Managing Director.

Head Offices:
22-24 ADELAIDE ST. E. and 55 VICTORIA ST.
Phone Main 4091

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 C

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

Smith's Falls Malleable Castings Company, Limited

CAPACITY 4,000 TONS

MANUFACTURERS
OF

**MALLEABLE
IRON
CASTINGS**

Sir *Malleable* Ont., Can.
Labor Gazette

You Must Buy Well to Sell Well

CONSULT OUR CLASSIFIED
INDEX,
BEGINNING ON PAGE 27.

HAMILTON, ONT. Manufacturers of Ceylon Plumbago Service & See Extra Fine Quality Moulding Sand