

Technical and Bibliographic Notes / Notes techniques et bibliographiques

Canadiana.org has attempted to obtain the best copy available for scanning. 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 scanning are checked below.

Canadiana.org a numérisé 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 numérisation sont indiqués ci-dessous.

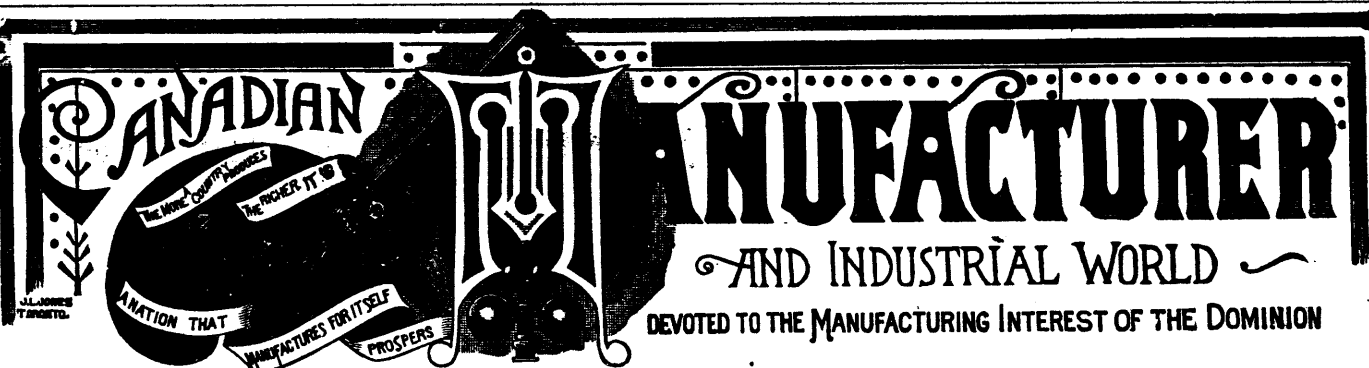
- Coloured covers /
Couverture de couleur
- Covers damaged /
Couverture endommagée
- Covers restored and/or laminated /
Couverture restaurée et/ou pelliculée
- Cover title missing /
Le titre de couverture manque
- Coloured maps /
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or 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
- Only edition available /
Seule édition disponible
- 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.

- 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

- Includes supplementary materials /
Comprend du matériel supplémentaire

- Blank leaves added during restorations may
appear within the text. Whenever possible, these
have been omitted from scanning / 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 numérisées.



Vol. 42.

TORONTO, MAY 17, 1901.

No. 10.

STEAM BOILERS

FOR ALL PURPOSES

ECONOMY

DURABILITY

SAFETY

HEATERS, SUPERHEATERS,
ECONOMIZERS
AND STEAM ACCESSORIES

BABCOCK & WILCOX LIMITED

202 ST. JAMES ST., MONTREAL

Toronto Office—114 King St. West

MILL SOAPS

For all TEXTILE PURPOSES

MANUFACTURED BY

Dominion Dyewood and Chemical Company,
TORONTO

Steel Plates

TANK, BOILER, FIRE BOX
AND OTHER GRADES.

Steel Sheets

LYSAGHT'S MAKE
UNEXCELLED
FOR QUALITY AND FLATNESS.

Low Prices for Import to
Wholesale Buyers.

A. C. LESLIE & CO.,
MONTREAL

Sanderson's Tool Steel in Stock.

RUBBER INSULATED WIRES AND CABLES

OF EVERY DESCRIPTION for

Telephone, Telegraph and Electric Lighting Purposes.

MAGNET WIRES

ANNUNCIATOR WIRES

The WIRE AND CABLE COMPANY, Montreal.

Fensom's

**ELECTRIC
HYDRAULIC
STEAM
HAND-POWER**

All made of the best
material and
Finest workmanship.

The Fensom
Elevator
Works...
82, 54, 56
Duke Street,
Toronto, Ont.

Elevators

RUBBER GOODS OF ALL KINDS.



61 and 63 FRONT ST. WEST, TORONTO.

THE....

Walkerville Malleable Iron Co., (Limited)

Manufacturers of .

REFINED AIR FURNACE

Malleable Castings

ALSO LIGHT GREY IRON CASTINGS.

WALKERVILLE, ONTARIO.

WRITE FOR PRICES
From the Finest Brass
Sand to the Coarsest
Pipe and Core Sand.
MOULDING SAND
FIRE BRICK, FIRE CLAY
and FIRE SAND,
also Extra Fine Quality
Shipper to
FOUNDRY SUPPLIES
AND—
Foundry Facings
Ceylon Plumbago
Manufacturers of
HAMILTON, ONT.
The Hamilton Facing Mill Co., Limited,

PATENTS
CAVEA
ETC.
EGERT
R.
GAS
Register
Solicitor
of Patent
Notary
Public;
Member
of the
Canada
Manufacturers'
Associat
HEAD
OFFICE
TEMPL
BUILDI
TORONT
OFFICE
OTTAWA
AND
WASHIN
TON, D

JOHN J. KELLER & CO., 104 and 106 Murray St.
NEW YORK
220 Church St., Philadelphia.
135 Pearl St., Boston. 18 Pryor St., Atlanta, Ga.

**Aniline Colors, Dyewood Extracts,
Sumac and Nutgall Extracts. . .**

FAST COLORS for Wool Dyeing, One Dip Cotton Colors,
Novelties and Specialties for Calico Printing.

MANUFACTURED BY

JOHN R. GEIGY & CO.
BASEL, SWITZERLAND.

ANILINES

St. Denis Dyestuff and Chemical Co.,
(A. POIRRIER), of Paris, France.

Manufacturers of

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

A Complete Assorted Stock of the above always on hand.

W. T. Benson & Co.,

Sole Agents for Canada.

164 St. James St., MONTREAL

PORTLAND CEMENT SAMSON BRAND MAGNET BRAND

Made at **SHALLOW LAKE, ONT.**

Our Celebrated **Samson Brand** has been before the public for many years, and has made hosts of friends among Contractors and Municipal Corporations until it has become one of the leading Cements on the market to-day, being excelled by none. This year we have decided to place the **Magnet** on the market, and respectfully ask consumers to give it a trial. It will, we think, do its own advertising.

The OWEN SOUND PORTLAND CEMENT CO., Limited

Correspondence invited.

GEO. S. KILBOURN, Sec'y-Treas.

Works, **SHALLOW LAKE, Ont.**

Head Office, **OWEN SOUND, Ont.**

New Black for Cotton

Colonial Black

Double Strength. Unequaled for Depth of Shade.
Users of Black should investigate
Fastest Black on the Market.

F. E. ATTEAUX & CO.,

BOSTON, MASS., U.S.A.

CANADIAN BRANCHES:—63 Colborne Street, TORONTO.

13 Lemoine Street, MONTREAL.

CANADA CHEMICAL MANUFACTURING CO.

— MANUFACTURERS OF —

Sulphuric, Nitric, and Muriatic Acids—Commercial and
Chemically Pure.

Mixed Acids for Explosives.

Liquid Ammonia, Glauber Salts, Copperas, Muriate Tin
Tin Crystals, Acetic Acid, Nitrate Iron, Bisulphite
Soda, Acid Phosphate for Baking Powders
and General Chemicals, Fertilizers, etc.

LONDON, - ONTARIO.

HAMILTON COTTON CO.,
HAMILTON, ONTARIO.

**Yarn Manufacturers,
DYERS AND BLEACHERS.**

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

Twines, Lampwicks, Webbing, Etc.

Dyeing of all Colors, including **GENUINE FAST BLACK.**

CANADA IRON FURNACE CO., LIMITED
Montreal, Radnor and Three Rivers

Manufacturers of the well-known

"C.I.F." Three Rivers Charcoal Pig Iron

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

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

Offices: *Canada Life Insurance Bldg., Montreal.*

MONTREAL PIPE FOUNDRY CO...

SUCCESSORS TO

(Limited)

DRUMMOND-McCALL PIPE FOUNDRY CO.

(Limited)

Manufacturers of



"Specials," Hydrants, Valves, Etc.

Offices: - - - **Canada Life Building,
MONTREAL**

<p>We Make...</p> <p>Wheelock Engines, Ideal Engines, Gas and Gasoline Engines, Boilers, Pumps, Water Wheels, Oatmeal Mill Ma- chinery, Flour Mill Machin- ery, Wolf Gyrotors, Wood Working Ma- chinery, Shingle Machinery,</p>	<h2>EMERY STONE CHOPPERS</h2> <p>For Grinding all kinds of Grain, Feed and Pro- vender. Will grind fast and fine. Keeps its edge a long time. Write for Booklet and particulars.</p> <p>ADDRESS DEPARTMENT "D."</p> <h3>THE GOLDIE & McCULLOCH CO., Limited,</h3> <p>GALT, - ONT.</p>	<p>We Make...</p> <p>Heading and Stave Machinery, Wood Rim Split Pulleys, Iron Pulleys, Shafting, Hangers, Gearing, Couplings, Friction Clutch Couplings, Friction Clutch Pulleys, Chain Tackle, Safes, Vaults and Vault Doors.</p>
--	---	--

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, machin-
ery, cylinder oils, &c. And solicit opportunity to compete against any oil on the market. Write for prices and samples.

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

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

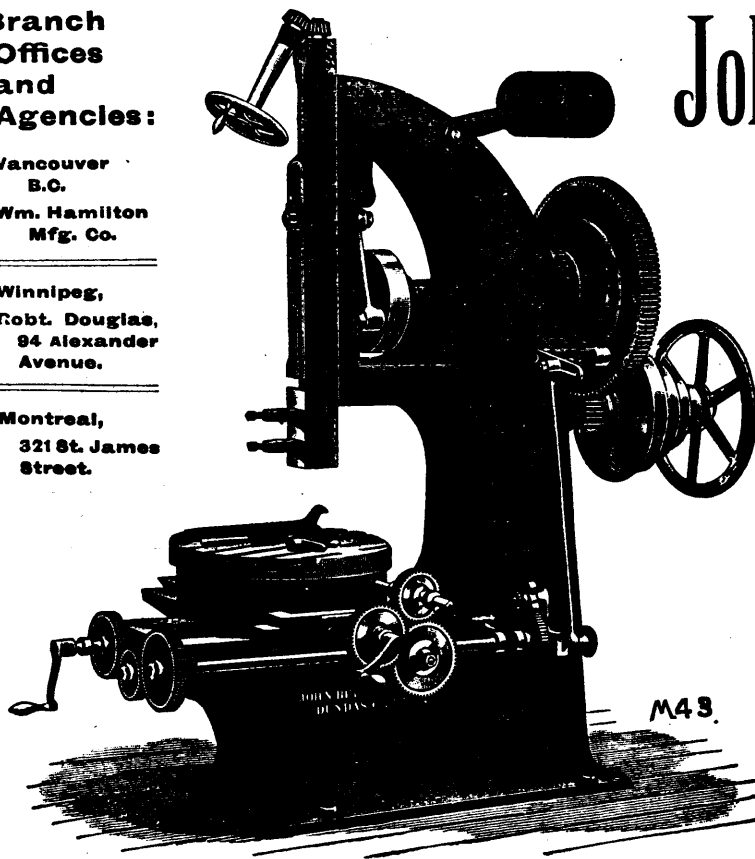
**Branch
Offices
and
Agencies:**

Vancouver
B.C.

Wm. Hamilton
Mfg. Co.

Winnipeg,
Robt. Douglas,
94 Alexander
Avenue.

Montreal,
321 St. James
Street.



John Bertram & Sons

DUNDAS, ONTARIO.

— Canada Tool Works

MANUFACTURERS AND BUILDERS OF

METAL-WORKING MACHINE TOOLS

—FOR—

Machine Shops,
Ship Yards, Boiler Shops
Rolling Mills,
Locomotive and Car Shops,
Brass Shops.

PAPER MILL MACHINERY.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

THE NOVA SCOTIA STEEL CO., LIMITED

MANUFACTURERS OF

BRIGHT COMPRESSED STEEL SHAFTING

FROM $\frac{1}{4}$ TO 6 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

Tree 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

GALT Machine Knife Works

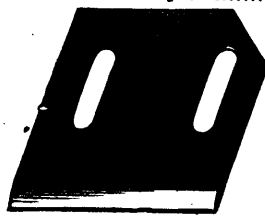
PETER HAY,



GALT, ONT.

Manufacturers of Every Description of.....

KNIVES, For Wood-Working, Paper Cutting and Leather-Splitting Machines



BARK KNIVES
PULP KNIVES
RAG KNIVES
Etc., Etc.



Shear Blades, Straw Knives, Paper Knives, Etc., Etc.



Quality Guaranteed. Special Knives Made to Order. Send for Price List

DOMINION BRIDGE CO., Limited,



MONTREAL AND LACHINE LOCKS, P.Q.

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

A large Stock of **ROLLED STEEL BEAMS, JOISTS, GIRDERS, CHANNELS, ANGLES, TEES, Z BARS and PLATES**

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

ALWAYS ON HAND IN LENGTHS TO THIRTY-FIVE FEET.

Post Office Address, **MONTREAL.**

GEORGE E. EVANS, Agent, 38 Canada Life Building TORONTO ONT.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

BRUNNER, MOND & CO., Limited, NORTHWICH, ENGLAND.

PURE ALKALI

48% and 58% (Light and Heavy)

BLEACH^g PWD.

35% to 37% (Hardwood Casks)

CAUSTIC SODA

60% to 77%.



TRADE MARK.
Winn & Holland,
MONTREAL,
Sole Agents for Canada.

SODA CRYSTALS

Lump and Crushed. Brls. and Bags.

CON^{CTD} SAL SODA

DOUBLE STRENGTH

BICARBONATE SODA

ABSOLUTELY PURE

Also for Mineral Water Manufacturers.

Wm. J. MATHESON & CO., LIMITED

NEW YORK

BOSTON

PHILADELPHIA

PROVIDENCE

CHARLOTTE, N.C.

MONTREAL, CANADA

DYE . . .

STUFFS

The Polson Iron Works, TORONTO CANADA.

THE BEST EQUIPPED BOILER AND ENGINE WORKS IN CANADA.

We Manufacture—

STEEL BOILERS

The BROWN AUTOMATIC ENGINE, MARINE ENGINES (SINGLE, COMPOUND AND TRIPLE), Hoisting and Mining Engines

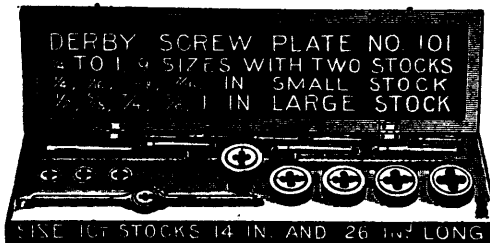
STEEL STEAM VESSELS OF EVERY DESCRIPTION.

STEAM YACHTS AND LAUNCHES.

GET OUR PRICES BEFORE ORDERING.

ESPLANADE EAST, Foot of Sherbourne St., - - Toronto, Canada

The universal satisfaction given by our DERBY and REECE SCREW PLATES, cutting from 1/16 to 1/2 inch, including all the machine screw sizes, has created a demand for a plate made on the same principle, to cut bolts to 1 inch in diameter. To meet this demand we have brought out these sizes.



BICYCLE SCREW PLATES, REECE SCREW PLATES, DERBY SCREW PLATES, BLACKSMITH'S STOCKS AND DIES, BLACKSMITH'S IMPROVED SCREW PLATES, HAND TAPS, MACHINE TAPS, PIPE TAPS, EVERY KIND OF TAPS AND DIES.



BUTTERFIELD & CO., - Rock Island, Que.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

ALBERT MANUFACTURING CO.

MANUFACTURERS OF THE
WELL-KNOWN

"HAMMER BRAND"

Calcined Plaster

AND

Patent Rock Wall Plaster

HILLSBOROUGH, N. B.,
CANADA.

KEMP MNFG. CO.

TORONTO.

Galvanizing

DONE FOR THE TRADE.

GET OUR PRICES.



For IRON FENCING,
BANK and OFFICE RAIL-
INGS and all kinds
of IRONWORK

Address:

Toronto Fence & Ornamental Iron Works
99 Queen St. East, Toronto.

BROWN & CO.

Manufacturers of

Square and Hexagon

HOT PRESSED NUTS.

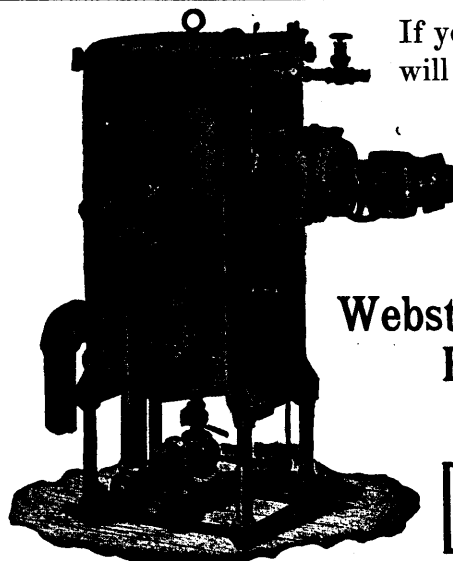
PARIS, - ONT.



Send for Catalogue and Price
List to

THE JOHN MORROW MACHINE SCREW CO.
INGERSOLL, ONT.

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



If you find your Fuel Account high it
will pay you to send for our literature.

ASK ESPECIALLY ABOUT OUR

WEBSTER SYSTEM OF STEAM HEATING

FOR HEATING BUILDINGS
BY THE WASTE EXHAUST STEAM

—AND THE—

Webster Vacuum Feed Water Heater and Purifier

And we will explain HOW
you can reduce your COAL BILL.

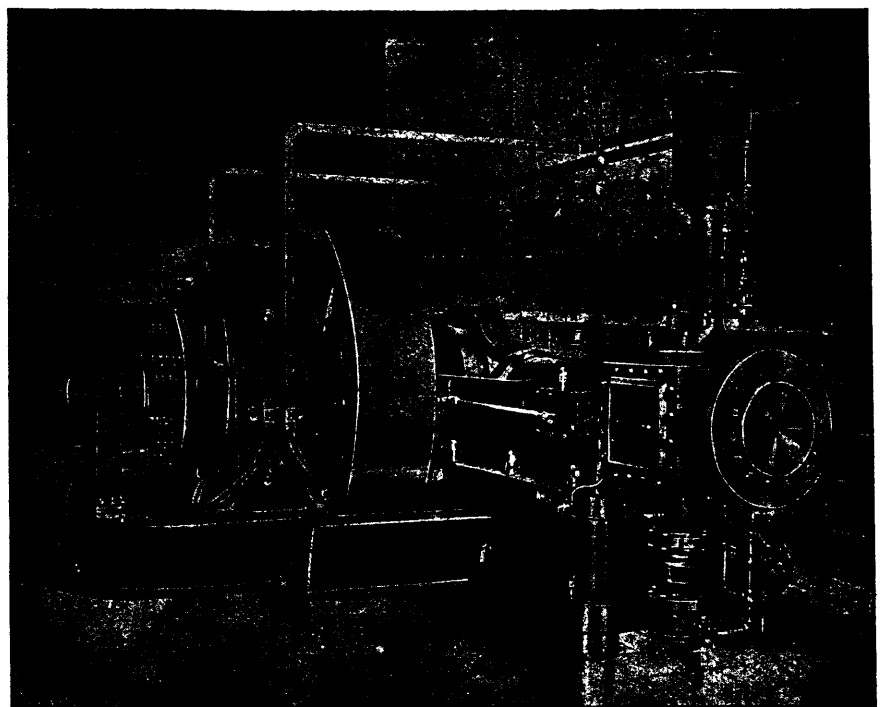
DARLING BROS. RELIANCE WORKS,
7 OTTAWA ST.
Montreal.

A. KLIPSTEIN & CO. 122 Pearl St. New York

Anilines, Dyestuffs & Chemicals

DELIVERY MADE AT NEW YORK, MONTREAL OR HAMILTON.

AGENTS,
WRIGHT & DALLYN, HAMILTON, ONT.



**"Robb-Armstrong" Engine at
City Hall, Toronto.**

BUILT BY

ROBB ENGINEERING CO., LIMITED, Amherst, N.S.

Agents: WILLIAM McKAY, 19 McKenzie Crescent, Toronto
WATSON JACK & CO., 7 St. Helen Street, Montreal

Lighting, Heating and Motive Power BY GAS

GAS FROM WOOD—A rich permanent Gas almost equal to that of Coal Gas, can be made by using the

RICHÉ GAS GENERATOR

at a mere nominal cost per thousand cubic feet.

The Generator is simple in construction, and does not require skilled labor to work it. **No Purifiers required. Products being a Rich Permanent Gas and Charcoal.**

These Generators are extensively used in Europe, and are on exhibit at the Paris Exposition. Particulars by applying to

JULES DE CLERCY, Gas Expert,
ROOM 501 CARLAW BUILDING, 30 Wellington St. W., Toronto

GEORGE WARD

LASKAY, ONT.

MANUFACTURER OF

Acetylene GAS Generators

WRITE FOR PARTICULARS

RUBBER BELTING

"Your Belting has given us uniformly good satisfaction."

W. C. EDWARDS
& Co.

THE
CANADIAN RUBBER CO.
MONTREAL * TORONTO
WINNIPEG

BUYERS' GUIDE OF CANADA

Book 8 x 10 inches. 488 Pages.

Price, - \$5.00

SENT ON RECEIPT OF PRICE.

THE CANADIAN MANUFACTURER PUBLISHING CO.,
TORONTO.



DODGE PATENT WOOD SPLIT PULLEYS

WITH INTERCHANGEABLE BUSHING SYSTEM.

Standard of Excellence Everywhere.

OVER 2,000,000 IN DAILY USE

Sales Agencies all over the World.

SOLE MAKERS . . .

Dodge Mfg. Co. TORONTO
ONT.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Pumps

"FOR ALL DUTIES"

We invite enquiries from engineers in need of any description of Pumping Machinery. We manufacture over five hundred varieties and sizes of Steam and Power Pumps for stationary and marine purposes. We will be pleased to furnish plans and specifications for any special types. Our Catalogue, giving a good idea of our standard patterns, sent free to all enquirers.

Northey Gas and Gasoline Engines

To anyone requiring a compact, thoroughly reliable engine, especially suited for users of intermittent power, we recommend our Gas and Gasoline Engine. We shall be glad to furnish estimates for Gas or Gasoline operated pumps, electric light plants, etc., etc. Explanatory Booklet free on request.

Northey Mfg. Co., Limited, 1000 KING ST. SUBWAY, **Toronto, Ont.**

THE MASON REGULATOR CO.

ESTABLISHED 1883

Standard Steam Specialties

Reducing Valves, Damper Regulators, Pump Governors and Automatic Appliances of all Descriptions for the Regulation and Control of Steam, Water and Air Pressures.

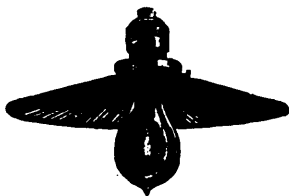
158 Summer St., Boston, Mass.

Works at MILTON, MASS., U.S.A.

RODERICK J. PARKE,

CONSULTING ENGINEER TO
Temple Bldg., - TORONTO.
Long Distance Telephone.

MANUFACTURERS:—Competent and impartial advice on Industrial Electrical Systems of Lighting, Power Distribution, Heating and Welding, Etc. Plans, Specifications, Tests, Reports, Valuations.



Reflectors, Shades, Lamps

We Stock a Large Variety of SHADES and REFLECTORS in

ALUMINUM, MIRROR, CELLULOID, PAPER, PORCELAIN,
FOR FACTORY AND OFFICE.

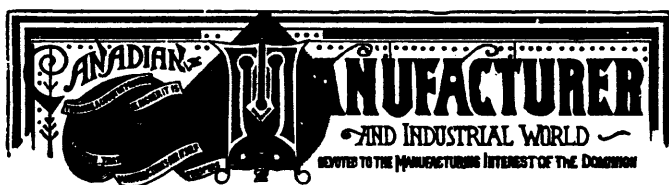
Imperial Lamps and Helios Upton Enclosed Arcs Give BEST LIGHT with LEAST CURRENT

ELBRIDGE Sparking Dynamos, SAMSON Batteries and IMPERIAL Salts, for Gas or Oil Engines.

Write us about Lighting
your Factory or Office.

JOHN FORMAN, 708 and 710 Craig St., MONTREAL

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



ESTABLISHED IN 1880.

PUBLISHED ON THE FIRST AND THIRD FRIDAYS OF EACH MONTH

SUBSCRIPTIONS:

CANADA AND UNITED STATES, - - - \$1.00 PER YEAR.
 ALL OTHER COUNTRIES IN POSTAL UNION, EIGHT SHILLINGS
 STERLING PER YEAR, INCLUDING POSTAGE.

The Canadian Manufacturer Publishing Co., Limited.

McKinnon Building, Cor. Melinda and Jordan Sts., Toronto.
 Cable address: "CANAMAN." Western Union Telegraphic Code used.

MESSRS. DAVISON & CO.,

164 Federal Street, - Boston, Mass.

AGENTS FOR UNITED STATES.

Index to AdvertisersPage 42

J. J. CASSIDEY, - - - Editor and Manager

A SPECIAL EDITION.

THE CANADIAN MANUFACTURER of June 21 will be enlarged with special reference to the textile and allied trades, and will contain a number of interesting articles and statistics relating thereto.

THE CANADIAN MANUFACTURER has always been in close touch with the textile industries of Canada. It has always been a persistent advocate of their interests, and has always kept the attention of its readers directed to the importance of them as compared with the other industrial enterprises of the country.

There is no other Canadian industry as widely diffused as that which produces materials for clothing the people. There are many large mills which convert the cotton of the South into yarns and cloth; and there are many other large mills which produce the warmer woolen fabrics, but there are hundreds of smaller concerns where the fleeces of Canadian sheep are carded and spun into yarns for knitting, and woven into blankets and other textiles for warming and comforting the inhabitants of the land. In every section of the land, from the Atlantic to the Pacific, these carding, spinning and weaving establishments exist. They provide a close-at-hand home market for the wool of the farmer, and they afford employment to thousands of men and women, boys and girls. Like many other manufacturing industries, the larger of our cotton and woolen mills imply large congregations about them of operatives and their families—unlike them the smaller woolen mills are to be found in almost every neighborhood, and they are not affected to the extent their larger congeners are by labor and other social questions.

All these mills require to be equipped with modern, up-to-date machinery and appliances to enable them to produce goods of acceptable quality, and at prices which can withstand the competition of imported goods. Natural advantages in many directions are strongly in favor of these Canadian enterprises, but they cannot operate to the best advantage without the use of first-class machinery, and, where required, of the best qualities of modern dye stuffs; and the demands in this direction open up a market of very great value to manufacturers of and dealers in such articles. It is to bring these two

elements of trade into close touch each with the other—the buyer and the seller—that our efforts are directed.

This special edition of THE CANADIAN MANUFACTURER will go to every textile establishment in Canada. It will reach every cotton mill, every woolen mill, every yarn mill, every knitting mill, every carding mill and every dye house in the Dominion. It will go to every manufacturers' agent who handles textile fabrics, to every manufacturer of textile machinery, to every machinery and supply house, and to all who manufacture or handle dye stuffs. In this way it will be possible for every buyer of such goods in Canada to learn just where and from whom such goods can be bought.

To those who are interested in supplying goods to the Canadian textile industry, who do not already advertise their business in this paper, we suggest that it would be to their advantage to make their announcements in this special edition. Every number of it will be provided with a loop by which it can be suspended in the office and kept as reference for the information it will contain.

TECHNICAL EDUCATION AND MODERN INDUSTRIAL METHODS.

Prof. J. B. Johnson in a recent address, urging that technical education is an essential feature of modern industrialism, and speaking of the importance of scientific training, said:

Man became man only when he had learned the use of tools, and throughout history material and intellectual supremacy has always accompanied the people who devised the most efficient tools. These had all been hand-tools until James Watt so greatly improved the steam engine in the last quarter of the eighteenth century. Now the steam engine does in America in one year as much as all the men in this land could do in a century. This one tool, therefore, has not only changed man from a brutish worker to a brainy overseer, but it has brought upon us with great suddenness a host of unsolved problems.

Since the general introduction of this labor-saver, the world has made more progress than in all its former history put together. By modern industry is meant the entire productive activities of the machine-using nations. By science is meant the organized and correlated knowledge of the laws, forces, and materials of the world. That cannot be knowledge which is not true. Many things nowadays go under the name of science which is merely organized theory, or systematized imaginings of various and sundry kinds. The astonishing accomplishment day by day, of the presumably impossible, has now led to the most omniverous credulity, so that the unscientific are prepared to believe any preposterous claim if it only wear the garb and come in the name of science. To avoid these delusive snares one must not only have a knowledge of scientific matters, but this knowledge must be quantitative, and not qualitative only.

Not how, but how much, and how far, and at what cost and to what purpose, are the practical questions. The law of gravity includes more than the fact of a universal attraction. Newton did not discover the fact, but the law of its action, which is quantitative.

It is not necessary, however, to know all about a subject in order that our knowledge shall be scientific. It is only necessary, that, so far as it goes, it shall be true and demonstrable, and shall be consistent with all other knowledge. The real essence of things we seldom know and may never know. We do not know what gravity and heat, and light, and electricity, and the impalpable ether and the life principle really are, but we know the laws of their action to some degree, and these are demonstrable and unchanging. So far as such knowledge goes, therefore, it is scientific.

We have discovered, also, certain interdependencies between things formerly supposed to be unrelated, and certain fundamental and all inclusive laws which are far-reaching in their application. Thus the law of the conservation of energy, and the fact that it cannot be created, but can only be transformed, serves at once as a royal road to intelligent designing and as

a great Chinese wall of limitation about many problems, which formerly were considered unlimited.

The effect of this scientific progress upon industry has been revolutionary. The skillful mechanic, who with great manual dexterity, and with a complete knowledge of his art, fashioned a product from the raw material to the finished state, is no more. His like is no longer found outside of Asia. Such workers were first reduced to single manual operations and then to attendance upon a more or less automatic machine. They are not mere manual attachments to such machines, however, as literary and clerical observers often assume. On the other hand they now find time and ease in which to devise further improvements to the mechanical embodiments of genius which they are privileged to operate. These curious and all but living mechanisms are a perpetual challenge to the mind of the attendant to comprehend them and to devise further improvements. The body being now unwearied, the mind is free to work at its own problems, both when on and when off duty. Our laboring classes have thus been vastly improved by these devices, the frequent statements being made from the pulpit and the press to the contrary notwithstanding.

All this industrial revolution has been wrought by the discoveries of our pure scientists and by the inventions of our mechanics and applied scientists. These have now so obliterated time and space on this little globe as to make of all the world a common market place, and so all the world is in open competition. The race is now as ever to the maker of the most efficient tools, and as the making of these rests on the application of scientific principles to the ever new conditions, we reach the conclusion that scientific and technical education is to-day the foundation of all material prosperity. The more extended and thorough such an education is conferred upon the youth of this generation, the more prosperous will be the generation to come.

Bismark saw this clearly when he said: "The nation which has the schools has the future." Germany has acted on this policy for the past thirty years, and her recent marvelous development, without either foreign dependencies or great natural resources, has been made possible only through her vast system of scientific, technical, trade, and commercial schools. While the German technical colleges have heretofore ranked decidedly below the universities in privilege and in public esteem, a year ago, at the centennial anniversary of the great technical school at Berlin, the Kaiser proclaimed that hereafter the technical colleges of Prussia should rank equal to the universities, and would be allowed to grant the doctors' degrees. This practice is sure to be followed soon by the other German states.

Thus the engineers, or applied scientists, are coming to be better understood and more highly appreciated as they become more numerous and better trained. They are to the pure scientists what the pilgrim fathers were to Columbus. Columbus found a new world, but the pilgrim fathers put it to a noble use. The benefits coming from the high service of the latter to the people of this country have very properly replaced very largely, in the minds of our people, the service of the former in the original discovery. So in science. The man who puts to good use a scientific principle has a claim to our honor and gratitude along with him who discovered the principle itself. In fact the applied scientist must needs be a broader man than the pure scientist. He must have a wide knowledge of scientific principles, must have a working knowledge of mechanical means and methods, must be a man of affairs so as to know what needs to be done, and finally he must be a born inventor so as to devise the best means of accomplishing any given purpose or of solving any given new problem. For it is only in the solving of new problems that this new profession finds its proper field of operations. The performing of processes once standardized is the work of the mechanic and not of the engineer.

On the other hand the scientist must needs be a specialist if he is to stand as a discoverer on the outer verge of the known and push back by ever so little the mantle of ignorance which still hides nearly the whole world of truth from our mental vision. To be effective in this pioneer work he must confine his labors, and limit his working knowledge to but a very narrow field of investigation. This, of necessity, makes of him a narrow man. The applied scientist takes his pure science at second hand, it is true, but he is the first to adapt it to par-

ticular uses, and so becomes in his way also a discoverer and an equal benefactor. To fit such men for their tasks our technical schools are established. Here they are thoroughly grounded quantitatively in the pure sciences, in which mathematics, mechanics, physics, chemistry, geology, mineralogy and metallurgy find leading places. In addition to these, mechanical drawing and the fundamental ways and means of the leading manufacturing industries are taught in suitable shops and laboratories, and some knowledge of the ways and laws of business is imparted. He then goes forth to serve an apprenticeship in the actual business of turning scientific principles to practical account. When we see what miracles have been accomplished in the past century in this field of applied science, with little technical education to direct the work, what may we not expect from the coming century when thousands, yes, hundreds of thousands of men have been schooled in this fertile field of science, invention and practice. Truly such men are the greatest benefactors and the truest and most potent missionaries. The race is now a rapid one, and to fall behind means industrial suicide. The race now is and will in future ever be to the most scientifically competent and to the most ingenious adapter of scientific knowledge to human needs. Let us also not be afraid of too much material prosperity. We are learning the generous uses of wealth. In fact I believe this form of education in the physical realities of life is the only form which will win the interest of the man of business and of affairs as against that of money making and money spending. It is only by the concentration of great wealth in the hands of individuals that it may be turned into the channels of scientific discovery and of social benefaction where the cost of the investigation and experiments is great and the outcome uncertain. By encouraging in every way, therefore, a general diffusion of knowledge of pure and applied science, we may hope not only to bring to our people a vast increase of wealth, but may we not also hope that this wealth will then lead mainly to lives devoted to higher purposes, which will lead in turn to a greater dissemination of love and happiness, of truth and righteousness, and of these things there can never be a surplus.

UNEXPLORED CANADA.

The director of the geological survey of Canada, in his last report, makes the amazing statement that practically nothing is known of one-third of the Dominion. He says:

There are more than 1,250,000 square miles of unexplored lands in Canada. The entire area of the Dominion is computed at 3,450,257 square miles, consequently one-third of this country has yet been untraveled by the explorer. Exclusive of the inhospitable detached Arctic portions, 954,000 square miles is for all practicable purpose entirely unknown.

A careful estimate is made of the unexplored regions. Beginning at the extreme northwest of the Dominion, the first of these areas is between the eastern boundary of Alaska, the Porcupine River, and the Arctic coast, about 9,500 square miles in extent, or somewhat smaller than Belgium, and lying entirely within the Arctic Circle. The next is west of the Lewes and Yukon rivers and extends to the boundary of Alaska. Until last year, 32,000 square miles in this area was unexplored, but a part has since been traveled. A third area of 27,000 square miles—nearly twice as large as Scotland—lies between the Lewes, Pelly, and Stikine rivers. Between the Pelly and Mackenzie rivers is another large tract of 100,000 square miles, or about double the size of England. It includes nearly 600 miles of the main Rocky Mountain range. An unexplored area of 50,000 square miles is found between Great Bear Lake and the Arctic coast, being nearly all to the north of the Arctic Circle. Nearly as large as Portugal is another tract between Great Bear Lake, the Mackenzie River, and the Western part of Great Slave Lake, in all 35,000 square miles. Lying between Stikine and Laird rivers to the north and the Skeena and Peace rivers to the south is an area of 81,000 square miles, which, except for a recent visit by a field

party, is quite unexplored. Of the 35,000 square miles south-east of Athabasca Lake, little is known, except that it has been crossed by a field party en route to Fort Churchill. East of the Coppermine River and west of Bathurst Inlet lies 7,500 miles of unexplored land, which may be compared to half the size of Switzerland. Eastward from this, lying between the Arctic coast and Black River, is an area of 31,000 square miles, or about equal to Ireland. Much larger than Great Britain and Ireland, and embracing 178,000 square miles, is the region bounded by Black's River, Great Slave Lake, Athabasca Lake, Hatchet and Reindeer lakes, Churchill River, and the west coast of Hudson Bay. This country includes the barren grounds of the continent. Mr. J. B. Tyrell recently struck through this country on his trip to Fort Churchill, on the Churchill River, but could only make a preliminary exploration. On the south coast of Hudson Bay, between the Severn and Attawapishkat rivers, is an area of 22,000 square miles in extent, or larger than Nova Scotia; and lying between Trout Lake, Lac Seul, and the Albany River is another 15,000 square miles of unexplored land.

South and east of James Bay, and nearer to large centers of population than any other unexplored region is a tract of 35,000 square miles, which may be compared in size to Portugal.

The most easterly area is the greatest of all. It comprises almost the entire interior of the Labrador peninsula or Northwest Territory, in all 289,000 square miles, or more than twice as much as Great Britain and Ireland. Two or three years ago, Mr. A. P. Lowe made a line of exploration and survey into the interior of this vast region, and the same gentleman also traveled inland up the Hamilton River, but with these exceptions the country may be regarded as practically unexplored.

The Arctic islands will add an area of several hundred thousand square miles of unexplored land.

The Government, during the past year, has made a great effort in the direction of exploring and developing this vast territory. It has recognized the fact that railroads are essential to the development of a new country, and liberal inducements for their construction are made by granting millions of acres of land as a bonus.

The proposed Manitoulin and North Shore Railway has been granted 2,500,000 acres. The act awards 10,000 acres per mile to the southern end of the road as an extra inducement to the early completion of this section. The northern end grant is at the rate of 7,500 acres per mile. The proposed road will be of great value to this part of Ontario. Stratford, for instance, will then be only 365 miles from Sault Ste. Marie, or 183 miles nearer than via North Bay, as at present; Palmerston, another railroad center, will be 332 miles distant, or 245 miles nearer; and other places in this district will likewise be favorably affected.

The opening up of the Bruce peninsula will be stimulated by the new line running its entire length to Tobermory, which will become prominent as a railway terminus and lake port. Manitoulin Island, hitherto isolated from the rest of the world except during the season of navigation, will have the great obstacle to its development removed. The outside world seems to know but very little of this great island in the northern lakes. A prominent Manitoulin merchant, in a recent interview, made the following interesting statement about the island:

Make no mistake about the importance of Manitoulin alone. That island, with its population of 15,000, is exporting \$1,000,000 worth of products a year. That is but a fraction of what

may be done. We have pasture lands sufficient to raise beef stock that will eclipse in numbers and quality the output of your three best beef counties; we could raise lambs enough to supply both Toronto and Buffalo; and we could, with proper railway facilities, put Manitoulin at the head in the butter and cheese products as well.

Then, there is all the rest of New Ontario behind this. What does that mean? Look at the Sault, which has jumped from 700 to 7,000 in a few years. And that is but the beginning. With its wealth of minerals, pulp wood, and possibilities in electrical energy developed from water power, New Ontario undoubtedly possesses wonderful resources.

Mr. A. G. Seyfert, United States Consul at Stratford, Ont., reporting the foregoing facts to the Government, says:

The indications are that, during the next five years, at least 5,000 miles of new railroad will be completed throughout the Dominion, most of which will run through the unexplored wilderness.

The mineral wealth of this unknown region is undoubtedly immense, and perhaps almost inexhaustible; while the dense forests of hard wood, now of so little value, will, when brought to the markets of the world, become a source of large profit.

PREMIER ROSS ON PREFERENTIAL TRADE.

On a recent occasion The Buffalo Courier published an article entitled The Problems of Canada, written by Hon. George W. Ross, Premier of Ontario, in which, after discussing other important questions, Mr. Ross said:—

Another question that has grown out of that imperial spirit that I am discussing is that of the commercial relations between the colonies and the mother country. British goods are admitted through our customs at a rate of 33½ per cent. lower than similar goods from other countries. We get the benefit in the way of cheaper goods, although the treasury is the loser to the extent of about a couple of millions of dollars. Now it is eagerly asked, shall we stop here? Shall we establish free trade relations among ourselves with protection against the world, as you have free trade in the United States between the States of the Union, with a heavy duty against all foreign nations? We are not prepared for such a comprehensive reconstruction of colonial tariffs in Canada, though many of us claim to be free traders of the old school. Our manufacturing industries would not stand competition with the industries of Great Britain, if all custom duties were abolished. To be protected against competition with the United States would not be enough. Such an arrangement might suit the Australian colonies, but it would not suit us. It is doubtful even if it would suit Great Britain. Nations, like individuals, speedily organize themselves for defense as well as attack. A combination between Great Britain and her colonies for commercial purposes, against the world, would very likely prove disastrous to British trade. So long as Great Britain sells to every nation of the world, she could hardly afford to antagonize her customers for the sake of the trade of her colonies which is not more than one-fourth of her whole trade.

But if such a compact is possible, inasmuch as Canada gives Great Britain a preference in the Canadian market, why should not Great Britain give Canada a preference against the world in the British market? If the Canadian seller in the British market had a preference of 10 per cent., or even 5 per cent. over the American seller, the effect upon Canadian trade would simply be incalculable. Apply it to the millions of bushels of wheat which England buys with which to feed her subjects and let the Canadian agriculturalist on the prairie feel that he has an advantage over the American agriculturalist, then you would speedily see our prairies filled with a teeming population and the wheat trade of America change its course. The same would apply to the products of our forests and our mines. There is no reasonable expectation that such preference will be granted to us. The laboring classes of Great Britain would protest because it would in-

crease the price of bread; public men would be likely to protest because of the irritation likely to arise with other countries. I know of nothing that Britain could do that would be more helpful to us in building up Canada, and I know of nothing that would do more to strengthen the relations between us and the mother country.

As regards the relations of the people of this continent, I think Canadians understand the temperament of the Americans better than it is understood in Great Britain, and this strengthens the hope that never so long as time endures shall the armies of Great Britain and the United States confront each other in battle array or their navies plough the intervening ocean for purposes of mutual destruction. We are closing the nineteenth century in a most significant conflict between the forces of civilization and barbarism. You are endeavoring to establish a higher grade of citizenship in your Spanish possessions. Britain is similarly employed in South Africa. Should the nineteenth century close with a victory in both cases, as I trust it may, the new century now so near will open its portals to many thousands of the human race to whom liberty was heretofore a mere phantasy of the imagination.

THE AUSTRALIAN ELECTIONS.

Returns of the first general election in the Commonwealth of Australia are now complete, and we may form an estimate of the character or of the probable policy of the body which will assemble in the presence of the Duke of Cornwall on May 9. As was a foregone conclusion, the election turned chiefly on the issue of the tariff. Hitherto one of the chief States has been protectionist and another has practiced free trade. The difficulty of harmonizing divergent tariff views or forming a compromise between them was the chief obstacle to the union of the States into a commonwealth. And so it naturally and inevitably came to pass that the first electoral battle in the new nation was fought over that issue.

The result of the election is somewhat complex, but on the whole must be considered a decided victory for protection. Certainly Mr. Reid, the free trade leader, is left in a minority, while Mr. Barton, the head of the present Government, will meet Congress with a good working majority at his back, and he is pledged to the enactment of a protective tariff. In the Senate, which contains thirty-six members, there will be sixteen free traders, nine protectionists, three moderates, three high tariff men, two labor free traders, and three labor protectionists. Classing the moderates on the side of a tariff for at least incidental protection, the alignment will be: Free traders, eighteen; protectionists, eighteen—a tie. In the House of Representatives, which contain seventy-five members, there will be twenty-four free traders, twelve protectionist, five labor free traders, one labor protectionist, seven moderates, four labor men, and twenty-two high tariff men. Holding in abeyance the four labor men as unknown quantities on the tariff issue, we have a general alignment of twenty-nine in favor of free trade and forty-two in favor of a protective tariff.

It has been agreed on both sides that, for the sake of industry and commerce, which are now half paralyzed with uncertainty, the tariff shall be taken in hand and enacted during the first session of Congress. We may expect to see no more obstruction on the part of the free traders, who will exercise merely the critical and restraining functions of a legitimate opposition. It is, moreover, realized by all that, with a revenue of more than \$40,000,000 absolutely necessary to keep the young nation in a solvent state, free trade is practically impossible. It seems practically certain that the new British nation will begin its career under a protective tariff.—New York Tribune.

THE YUKON TRADE.

Mr. I. J. Hartman, postmaster at Dawson City, while in Toronto a few days ago pointed out the many opportunities for trade development in the Yukon, which Canadian manufacturers and merchants seem to have overlooked. The great trading companies in the territory are the Alaska Commercial, the North America Trading & Transportation Co., and similar American concerns, which monopolize a large part of the supply trade. It is natural that these companies should buy in the United States, where their interests are, but Mr. Hartman thinks that if Canadian manufacturers and merchants would send their travellers to Dawson City, as the Americans do, large orders would result. The first step towards mending existing conditions is to send up good representatives to see what the people want, and how it should be put up. Particularly is this the case in regard to food supplies. Butter for use in the Yukon Territory has to be manufactured from sterilized cream, and put in sealed tins. Canadian producers have heretofore not been able to supply it in this form, and the result is that the trade has gone to United States firms. Prof. Robertson, to whom Mr. Hartman mentioned this, says that the North-west creameries have now the facilities for entering into this trade.

American canned meats are used almost exclusively, there being some prejudice against Canadian meats, on account of the style of packing. That Canadian meats could be sold very largely is proved by the fact that the bacon used is almost entirely Canadian. The market is a very large one, for the Yukon Territory produces practically no eatables.

The Alaska Commercial Co. alone, at the close of navigation last season carried a stock worth \$2,000,000, the bulk being foodstuffs.

In machinery, chiefly boilers, piping for thawing purposes, hydraulic pumps and rubber hose, there is a tremendous market, and this, Mr. Hartman believes, will steadily increase, for the country, in his opinion, is still in its infancy. He is very sanguine that quartz mining will shortly begin on a large scale. The mineral resources are not confined to gold, however. President S. H. Graves, of the White Pass Railway, told Mr. Hartman recently that he believed there would be a smelter within two years at White Horse Pass to handle the large copper deposits there. Conditions are most favorable, as the coal and copper are only a few miles apart. Coal from up the Klondike will be used to a considerable extent in Dawson City next winter, and there should be a large market for coal stoves, the stoves used heretofore being suitable for burning wood. In all lines of general hardware there are big opportunities for doing business. Two firms, which have made a solid footing in this trade are Canadian, Adair Bros., formerly of Toronto, and McLellan & McFeely. Owing to the settling of partitions through the thawing of the ground in summer time, it is difficult to do any plastering, and cotton and paper are used very largely now to fill the chinks. Sheet metal, if introduced, would fill the demand admirably, and make a neat interior. There should be a big trade in it. Brick houses will be built this summer, the practicability of this having been tested, and a large brick-making plant went in over the ice during the winter. Brick houses will become common, and furnaces will be needed for them. Canadian manufacturers should supply all that is needed in this respect. In goods for personal wear, clothing is still largely American, while Canadians control the boot and shoe trade.

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

The Shareholders of the Canadian Manufacturer Publishing Co., Limited, are hereby notified that a General Meeting of the Company will be held on Monday, the 3rd day of June, 1901, at the hour of 11 o'clock in the forenoon, at the Head Office of the Company, Room 408 McKinnon Building, corner Jordan and Melinda Streets, Toronto, for the purpose of receiving and considering a report from the Directors upon the affairs of the Company, to elect a Board of Directors for the ensuing year, and generally to consider other business of importance to the Company.

ARTA CASSIDEY,
Secretary.

Dated at Toronto, this 17th day of May, A.D. 1901.

EDITORIAL NOTES.

The Commissioner of Customs has issued a memorandum instructing collectors of customs throughout the Dominion that when registered postal packages from outside Canada are received they are to be treated as under registration until receipted for by the persons to whom addressed. Unless delivered by the customs officer to the proper person after examination for duty purposes, the package is to be returned to the postmaster, to be forwarded to destination by registered mail.

A telegram from London states that "In reply to a request from the Governor-General of Canada, one of the King's carriages will be sent over to the Dominion for the use of the Duke and Duchess of Cornwall during their approaching visit. The vehicle will not be one of the semi-State conveyances, similar to that sent to the Antipodes, but a plain road landau, such as the late Queen ordinarily used when driving privately in London." It is this sort of snobbishness that is wearisome. There are many establishments in Canada which can manufacture as good carriages as "the plain road landau" spoken of, and yet, instead of patronizing some of them, one must be imported for the occasion.

The Supreme Court of the United States, in the case of the United States vs. Fairbanks, has decided that "A stamp tax on a foreign Bill of Lading is in substance and effect equivalent to a tax on the articles included in that Bill of Lading and therefore a tax or duty on exports and in conflict with the constitutional prohibition." By this decision stamps on foreign Bills of Lading are no longer required.

In view of prevailing spring breezes and dusty times in town, The Toronto Globe brings out that sterling old rhyme that has so often comforted the feminine heart in such emergencies:

The devil sends the wicked wind
That blows our skirts knee-high;
But God is just, and he sends the dust
To blind the bad man's eye.

A decision of considerable interest to manufacturers and the trade was given at Ottawa a few days ago in respect to

the seizure of some packages of paint in a Toronto store by an officer of the Weights and Measures Department. A few samples of the paint were seized for investigation, the belief being that they did not comply with the regulations in force in Canada. Mr. W. A. Campbell, representing the Chicago makers of the paint, presented the company's case to the Minister of Inland Revenue, Hon. Mr. Bernier. The paints are put up in the United States standard measure tins, which fall short of the Canadian standard, the Imperial measure, and it was thought that some \$20,000 worth of paints were liable to seizure. It was, however, shown that, while the paint was put up in wine measure cans, it was sold in Canada by the package, and not by measure, and consequently did not infringe on the Canadian regulations.

The reported volume of exportations of manufactured products from the United States for the fiscal year which will end June 30, 1901, is not likely to equal that of the preceding year for three reasons. First, the exporters engaged in commerce with the Hawaiian Islands were not required to furnish to the Bureau of Statistics of the Treasury Department statements of their exports, as in former years when Hawaii was a foreign country. In the second place, exports to Porto Rico were separately classified and not included in the general statement of foreign commerce. The third reason of this decline is to be found in the fact that exports to China have temporarily fallen off about one-half on account of the unsettled conditions of that country.

The return of French-Canadians from the manufacturing centers of the United States to the province of Quebec is assuming very large proportions this spring. All the railways running from the New England States northward report a remarkable increase in this class of travel. It is not unusual nowadays for trains passing through Sherbrooke on their way from the south of the international boundary line to the French parishes of the province, to carry from 100 to 200 French-Canadians, who expatriated themselves some time ago, and who are now returning to the land of their birth. Among the principal causes of this repatriation movement are the improved condition of things in the agricultural districts of Quebec, due to the better quality and higher prices in England of Canadian dairy produce, the inducements in the shape of free grants of land to the returning Canadians, offered by the Government of Quebec, the great demand for labor by the many new pulp and paper mills going up in all parts of the country, and the depressed condition of the cotton market, which has thrown many operatives out of work in the manufacturing towns of the New England States. Several of the returning factory hands complain also that wages have fallen very considerably in Lawrence, Mass., and other New England towns on account of the competition offered by Syrians, Arabs, Poles and other foreigners, who are described as literally swarming there, and who work for such low wages and under such conditions, that even the comparatively cheap and easily satisfied French-Canadian operatives cannot afford to compete with them.

We are in receipt of an invitation from the American Society of Mechanical Engineers to attend their forty-third meeting, which is to be held in Milwaukee, Wis., on May 28-31 instant. The programme includes the reading of professional papers

from W. S. Aldrich, on "Requirements of Electricity in Manufacturing Work"; John Riddell, on "Portable versus Stationary Machine Tools"; George A. Hutchinson, on "The Practical Application of Superheated Steam"; E. H. Foster, on "Superheated Steam"; F. O. Ball, on "Drafting Room and Shop System"; H. G. Reist, on "Blue Printing by Electric Light"; A. W. Robinson, on "Rules for Drawing Office"; and many others. The ladies' committee of the Milwaukee branch will take the visiting ladies in charge and entertain them in good style, while there will be many other entertainments in which the members generally will participate. Mr. W. G. Starkweather is secretary of the local committee.

Hay, as well as cotton, is now being compressed into cylindrical bales for shipment, a standard round hay bale being eighteen inches in diameter and thirty-six inches in length. Such a bale, packed at the pressure under which it is shipped for domestic use, weighs about 200 pounds; as packed for export, such a bale would contain about 275 pounds. There is put up for Army use a bale of the same diameter, but only eighteen inches in length, which contains approximately 140 pounds of hay. In the cylindrical bale a given quantity of hay is got into less than half the space that it would occupy in a square bale; while there are, it is asserted, other advantages, including freedom from mould, preservation of the sweetness of the hay, and greatly reduced combustibility. Thousands of tons of hay in cylindrical bales have been shipped to the American army in the Philippines, and large quantities of it have been used by the British army in South Africa.

Canadians, generally, will be well pleased at the action of the Government in deciding that May 24th, so long celebrated as a public holiday on account of it being the birthday of the late Queen Victoria, is to be made permanently a holiday. Dr. Horsey, M.P., North Grey, introduced a bill early in the session, to continue celebrating the day as a holiday, and to call it "Victoria Day." The bill was allowed to stand over until the Government had time to look into the matter, and the Premier has now announced that the decision of the Administration is favorable to the proposition.

In 1897 the horse reached low water mark in value. There were 14,364,667 horses in the country in that year, and they were worth \$452,649,396. The Spanish war sent prices up, and in 1899 the number had been reduced to 13,665,307, worth \$511,074,813. The Boer war decreased the number still further, and the valuation increased to \$603,969,442. During the same period there was a like decrease in the number of mules, and their value increased from \$92,302,090 in 1897 to \$111,717,092 in 1899. The two wars came just in time to counteract the depressing effect of the bicycle, the trolley car and the automobile.—Bradstreet's.

Speaking of United States trade, The New York Journal of Commerce says:—"The check to our export trade is suggestive. The last two months have witnessed declining export totals, and figures are now obtainable showing the decreases in our exports of manufactured articles. Our Washington advices indicate considerable losses in a number of important articles of export, such as agricultural implements, cycles, cars, cotton goods, steel wire, machinery, etc. There were important gains in steel rails and electrical apparatus. The loss in cotton goods was, of course, chiefly due to the Chinese

trouble. Nevertheless, our exports of manufactures have been increasing for several years without any interruption, and these continued and widespread losses may be attributed to declining prosperity and lower prices abroad as against prosperity and high prices here. How long this disparity will continue nobody can foresee, but these figures certainly suggest that a turn in the current is not far away, if not already at hand."

Reports received from the various committees which have in hand the perfecting of arrangements for the Annual Convention of the Canadian Electrical Association at Ottawa, are most satisfactory. A splendid list of papers has been secured, and interesting reports will be presented by special committees appointed at last year's meeting to consider certain matters affecting the welfare of the electrical industry. The constitution of the Association has been carefully revised and improved in many particulars and rendered more workable. The Local Committee are exerting themselves to the utmost to give visitors to the convention an interesting, enjoyable and profitable time. Late information from Ottawa states that a satisfactory turn-out of the members is now the only requirement for the success of the meeting. The dates selected for the convention are June 19, 20 and 21, the most enjoyable season of the year, when most persons are looking forward to an outing. All the conditions are therefore favorable to a large attendance and a successful meeting.

The most significant feature of the Parliamentary elections recently held in the new Australian Federation is the attitude of the members-elect with respect to the tariff question. The returns indicate the election of twenty-one low tariff members to the Senate, and of fifteen who favor high tariffs. In the House of Representatives, on the other hand, the situation is reversed. There the low tariff members number thirty-five while forty are high tariff men. The following summary shows the position of the members on the tariff question, taking the States separately:

	Senate.		House.	
	High.	Low.	High.	Low.
New South Wales.....	1	5	10	16
Victoria.....	3	3	19	4
Queensland... ..	4	2	6	3
South Australia.....	3	3	3	4
Western Australia.....	1	5	1	4
Tasmania	3	3	1	4
Total.....	15	21	40	35

The foregoing statement shows that Victoria and Queensland furnished seven out of the fifteen members of the Senate in favor of a higher tariff, and twenty-five of the forty in the House who are expected to support that policy. Victoria, which heretofore has been a free trade colony, has sent a delegation to the Senate evenly divided on the tariff question, but is overwhelmingly committed to the low tariff policy in its delegation to the House. Of the three smaller colonies, South Australia appears to be pretty evenly divided on the tariff question, while Western Australia and Tasmania are strongly in favor of reduced duties. From this analysis it seems probable that the outcome will have to be a compromise measure, since considered both by individual membership and by States, the Houses of Parliament are too evenly divided on the question to admit of any radical action by the advocates of either policy.

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 on these pages, and to every concern in Canada interested in any manufacturing industry whatever, this interest extending to supply houses also.

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

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

Vickers, Sons & Maxim, the largest manufacturers in the world of war material, who have immense works in England and supply all the foreign governments, have recently equipped their plant with Cross oil filters manufactured by the Burt Mfg. Co., Akron, Ohio.

The World Furnishing Co., Orillia, Ont., has been incorporated with a capital stock of \$40,000, to manufacture furniture and undertakers' supplies. The provisional directors include T. H. World, H. M. Christie and J. B. Tudhope, all of Orillia.

Messrs. Seneca Jones, C. A. Birge, Dr. Alton and E. McIntyre, all of Hamilton, Ont., are about to form a company for the manufacture of paint from animal oil. By this process, it is said, good paint can be made from the oil of nearly all kinds of animals. Old dead horses, dogs, cats and other animals will be boiled up for their oil.

An order has been passed by the Ontario Government authorizing the Niagara-Welland Power Co., St. Catharines, Ont., to commence operations. The idea is to tap the Welland River east of the canal and by means of a cut to carry the water to the Niagara and Welland rivers to the high bluff near St. Catharines, where a fall of over 180 feet may be obtained, and thence waste into Lake Ontario. This route also gives three other falls of thirty-three feet and fifty-six feet below the bluff, or a total fall of about 300 feet. The capacity of the waterway will be over 100,000 w.h.p., which at the first fall alone will produce over 75,000 e.h.p. at the wheel, still

leaving three falls for latter development. There would be a primary installation of 30,000 e.h.p., of which 20,000 e.h.p. will be transmitted to Toronto, leaving 10,000 e.h.p. available at once for St. Catharines, which has had a disappointing experience in the transmission of the whole of the Decew Falls product to Hamilton, and will at the same time leave the water of the canal free for the purpose for which it was intended, viz., navigation, and avoid all questions of the interference with navigation by diverting the canal water for uses never contemplated.

The mill of the Whaley Lumber Co., Huntsville, Ont., was destroyed by fire May 9. Loss about \$8,000.

The Wabash Railway Co., will erect their Canadian shops at St. Thomas, Ont., to cost about \$100,000, where they will employ about 150 men.

To give our readers an idea of what quantity of cargo it takes to load a great ocean steamship of the capacity of the Belgian, we append a list of the stuff which she has taken:—42,813 bushels corn, 126,000 bushels oats, 400 standards deals, 4,514 bales wood pulp, twelve cases hardware, 922 cases match splints, 240 bags asbestos fibre, 600 bags crude asbestos, 7,647 packages chair stocks.—Quebec Telegraph.

The elevator of R. F. Lyons, Carberry, Man., was destroyed by fire May 11, together with a large quantity of wheat, oats and barley.

Raney's Specialty Mfg. Co., Kingston, Ont., have sent us a circular having

reference to the Bronzite anti-friction metal manufactured by them. Bronzite, we are told, is a superior anti-friction metal, the result of extensive experiments by a practical metallurgist, whereby a combination is attained producing a metal having all the desired qualities necessary to perfection. Easy flow, malleability, toughness, durability, and anti-friction qualities, it is highly recommended to all mill owners, manufacturers, electric, steamship, and railroad companies for machinery bearings and journals of all kinds.

Robert Bell, Esq., Seaforth, Ont., proprietor of the Seaforth Engine & Machine Works, has sent in his new illustrated catalogue having reference to his new "Bell" automatic engine, which, we are informed, is up-to-date in all respects; some of the advantages claimed for it including absolute uniformity of speed at any and all loads; very high speed, permitting direct connection to rapid motion machinery without the intervention of gearing or counter shafts; great compactness, simplicity and entire accessibility of all working parts; economy in fuel and economy in the no less important matter of repair bills, etc. The catalogue is very nicely gotten up, and Mr. Bell will, no doubt, take pleasure in sending it to any who might desire further information.

The National Iron Works, Wingham, Ont., of which W. C. Bullock is manager, has sent us a descriptive circular having reference to Kennedy's patent water meters, made by Glenfield & Kennedy, Kilmarnock, Scotland, who are claimed to be perhaps the largest hydraulic engineering concern under the British flag. Mr. Bullock informs us that the Kennedy meter has a record of half a century's progress, with many improvements added, and stands to-day unexcelled for accuracy of measurement, reliability, efficiency and durability.

The Western Elevator Co., Winnipeg, Man., has applied for incorporation with a capital stock of \$100,000. The applicants include T. B. Baker, F. M. Morse, and J. H. Munson, all of Winnipeg.

The Iroquois Electric Light & Power Co., Iroquois, Ont., has been incorporated with a capital stock of \$10,000. The provisional directors include Patrick Keefe, R. D. Keefe and W. S. Keefe, all of Iroquois.

INGERSOLL-SERGEANT Rock Drills

FOR MINES, TUNNELS AND QUARRIES

PISTON INLET Air Compressors

STRAIGHT LINE
DUPLIX and
COMPOUND.

FOR ALL DUTIES.

... COMPLETE MINE EQUIPMENT ...

JAMES COOPER MANUF'G CO., Limited, - 299 St. James St., Montreal.

Other Offices - - - ROSSLAND, B.O. RAT PORTAGE, ONT. HALIFAX, N.S.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Among the many hardware novelties now being offered to the Canadian trade by Raney's Specialty Mfg. Co., Kingston, Ont., is the Hoffman spring butt hinge, and the Hoffman Perfection clothes line hook, and the Halo self-heating flat iron and heater, made by them. The Hoffman hinge, we are told, has no more parts than an ordinary hinge; renders spring catches unnecessary, and requires only a screw knob with which to open; holds the door firmly closed; permits the door to stand open; will close automatically, and make a dust proof compartment. The Perfection clothes line hook does away with tying of lines; requires no tools to put up, has a strong steel screw, and can take care of four lines from a single hook. Some of the advantages of the Halo flat iron, made in two popular sizes, are: It can be run for one half cent per hour, and will save in fuel twice its cost in one year; can be heated ready for use in a few minutes; can be used as a stove; is clean, handy, and one filling of the tank will last nearly three hours, which will do the average ironing. The heat can be regulated as easily as the light of a lamp, so can be used for all kinds of work without scorching. There is nothing about it that will wear out

with ordinary care. It is ornamental as well as useful, being nickel plated. It saves working over a hot stove, as well as the toilsome work of walking to and from the stove, changing irons, and building fires.

The Burt Mfg. Co., Akron, Ohio, have just entered an order for Burt exhaust heads from the British Government.

The F. Smith Pork Packing Co., Toronto, has been incorporated with a capital stock of \$40,000, to carry on a pork packing business. The provisional directors include F. A. Smith, J. W. Lawrence and Edward Burns, all of Toronto.

The dry kiln of the wood-working establishment of Wm. Cane & Sons Co., Newmarket, Ont., was destroyed by fire May 2. Loss about \$5,000.

La Compagnie de Pulpe Quiatchouan, Quiatchouan, Que., has been incorporated with a capital stock of \$150,000, to manufacture pulp and paper, etc. The incorporators include Joseph Brassard, Roberval, Que., Etienne Paradis and A. B. Dupuis, both of Quebec city.

The British Government have just sent their third order to the Burt Mfg. Co., Akron, Ohio, for Cross oil filters.

The Bell Organ & Piano Co., Guelph,

Ont., have increased their facilities for piano manufacturing by the purchase of the Palmer Piano Co's factory. The latest deal on the part of the Bell Co., was recently consummated in the purchase of McIntosh Bros. controlling interest in the Compensating Pipe Organ Co., Toronto.

Mr. J. R. Booth intends to move his saw mill and other industries outside the limits of the city of Hull, Que. It is understood his primary object in establishing his mill elsewhere, is to secure ample accommodation for the mill cut, where it can be properly seasoned if necessary before shipment is made. Since the fire a year ago, the question of lumber piling within the city limits has been a burning issue in municipal politics. Mr. Booth proposed to solve the problem by establishing his mill and yard beyond the scope of the city by-laws.

The Tetrault Sewing Machine Co., Montreal, has applied for incorporation with a capital stock of \$25,000, to manufacture sewing machines, etc. The applicants include Amedee Tetrault, Georges Tetrault and Cleophas Dignard, all of Montreal.

The Blanche River Pulp & Paper Co., will erect a pulp mill at Mattawa, Ont.

Transfer Ornaments, AMERICAN MADE.

Guaranteed Quality.

TRADE MARKS, DECORATIONS, NAME PLATES, ETC.

For HARDWARE, BICYCLES, VEHICLES, POTTERY, FURNITURE, etc.

Sketches and samples submitted free of charge. Being American manufacturers enables us to make prompt delivery. Write us.

—MAIN OFFICE—

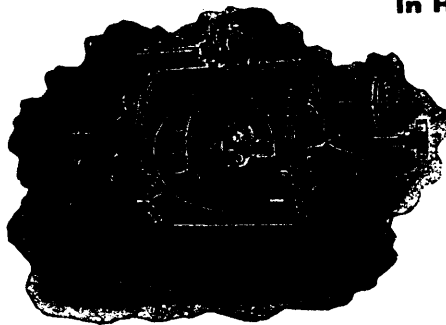
THE MEYERCORD CO., Inc., CHAMBER OF COMMERCE, - CHICAGO,

Canadian Travelling Representative,
CHAS. H. JAGGER, Hamilton, Ont.

Largest Makers in the World of Guaranteed Decalcomania Transfers.

THE Crocker Patent Turbine

In Horizontal Setting, with Quarter Turn Elbow.



Where the nature of the location will permit its use this type has many advantages. It is very suitable for direct connection to dynamos, and many are in operation in this class of service.

Notice how complete and compact this arrangement is, and how easily it may be installed. Can you use anything of this kind? Your inquiries will receive prompt attention.

WATER POWERS examined and
Reports made. Estimates
submitted for Complete Equip-
ments.

The JENCKES MACHINE CO.,
42 Lansdowne St., Sherbrooke, Que.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

The Calumet & Red River Mica Mining Co., Montreal, has applied for incorporation with a capital stock of \$10,000. The applicants include P. A. Delvecchio, Longueuil, Que., J. W. Crevier and J. A. Karch, both of Montreal.

The McLennan Paint Co., Toronto, has been incorporated with a capital stock of \$500,000, to manufacture paints, oils, varnishes, etc. The provisional directors include C. J. McLennan, F. A. Lane, both of Buffalo, N. Y., and Andrew Dods, Toronto.

Millichamp, Coyle & Co., Toronto, have been incorporated with a capital stock of \$100,000, to manufacture textile goods. The provisional directors include Reuben Millichamp, R. W. Millichamp, both of Toronto, and E. J. Coyle, Montreal.

The Aylmer Drill Mfg. Co., Montreal, has been incorporated with a capital stock of \$50,000 to manufacture rock drills of every description. The charter members include Hon. Henry Aylmer, Sherbrooke, Que., E. J. Fetherstonhaugh and A. G. B. Claxton, both of Montreal.

La Compagnie Electrique de Plessisville, Plessisville, Que., has increased its capital stock to \$60,000.

The advantages of employing mechanical draft in place of a chimney in a small plant are well displayed in connection with the boiler plant of the large country estate of Mr. F. G. Bourne, at Oakdale, L.I., as described in the Engineering Record. It is stated that as it was necessary to prevent the formation of

smoke, not only on the score of general appearance, but because of the proximity of the greenhouse, grates were provided for burning anthracite coal and a forced draft apparatus was installed, thus obviating the construction of a tall and possibly incongruous chimney. The mechanical draft apparatus consists of a twenty-four inch diameter steel plate fan, of the Sturtevant make, electrically driven at 1,500 revolutions per minute. The smoke stack extends about thirty feet above the roof, as a square chimney, forty-five feet approximately above the level of the grate bars.

The Boston & Lockport Block Co., 142 Commercial street, Boston, Mass., have sent us an exceedingly useful desk convenience, consisting of a number of sheets of blotting paper attached to of celluloid card upon which is printed the business card of the concern and representations of several of the articles manufactured by them, including rigging blocks, store trucks, etc.

Mr. E. A. Wallberg, Canadian representative of the Buffalo Forge Co., has removed his Montreal office to the Merchant's Bank Building that city, retaining his present Toronto office at 410 Temple Building.

The B. F. Sturtevant Co., Boston, Mass., is rapidly recovering from the effects of the fire of April 14, which affected only the engine and electrical departments. With only a days delay incident to the renewal of belts the remainder of the plant has been running as

usual. Already a complete new equipment of improved machine tools is nearly installed in other buildings. As the Sturtevant Company employs electric transmission for the driving of a considerable portion of its tools, this work of installation has been a comparatively simple matter. Further delay in shipment of engine and electrical work is unlikely, for no patterns or drawings were destroyed, and the foundry with a large stock of castings is intact.

Mr. Chas. E. Archbald, who for over twelve years has been favorably known in connection with the typewriter business, and for the past year as resident manager in Toronto, of the Remington Typewriter Co., has severed his connection with that company for the purpose of entering into co-partnership with Messrs. W. J. Robertson and W. G. VanWinckel, doing business under the name of the Canadian Typewriter Co., with offices in Toronto and Montreal.

The machine shop of Delahey & Co's foundry, Pembroke, Ont., was destroyed by fire May 3.

The Imperial Oil Co., Petrolea, Ont., will build a large oil tank, warerooms and offices at Amherst, N.S.

Hegler & Calder, Beaverton, Ont., have been offered a bonus of \$2,500, to establish a flour mill at Cartwright, Man.

The Montreal Cotton Co., Montreal, will build two new cotton mills at Valleyfield, Que., which when completed will give employment to over 600 hands.

W. A. FLEMING & CO.,

771 CRAIG STREET, - - MONTREAL.

THE STRONGEST AND MOST DURABLE



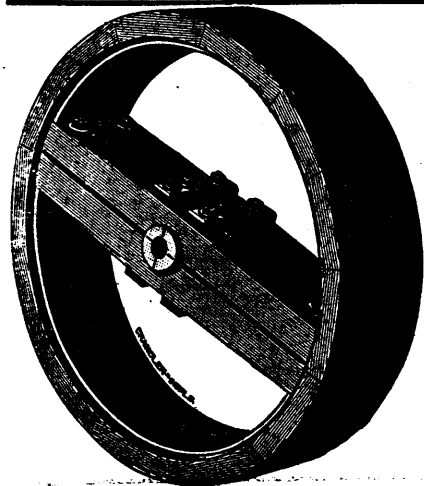
NOT AFFECTED BY DAMPNESS, HEAT OR STEAM
MOST DURABLE THE BEST FOR MAIN DRIVES

"REDDAWAY"

BALATA BELTING

STRONG, DURABLE AND NOT AFFECTED BY DAMPNESS.

WRITE FOR SAMPLES AND PRICES



"The Reeves" A HIGH GRADE
BUILT HONESTLY Wood-Split PULLEY
BUILT RIGHT

It Does the Work. No Trouble. No Worry.

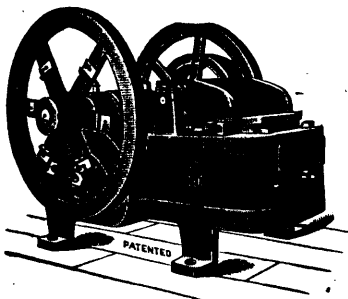
SEND FOR CATALOGUE

REEVES PULLEY MANUFACTURING CO., Limited

14 Pearl Street, - Toronto, Ont.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

ROLL JAW CRUSHER.



Crushes

Large Rock

to

4 inch.

Send for Circular.

STURTEVANT MILL CO.,

104 Clayton St.
Boston, - Mass.

At the workshop of the Canadian Pacific Railway Co., at Hochelaga near Montreal, twelve heavy switching engines and two engines for burning weeds are being constructed. The latter are the first of the kind made in Canada. They are operated by two men, one acting as fireman and engineer, while the other attends to the burners, regulating the oil, etc. In this manner the machine will burn from twelve to fifteen miles of weeds a day.

The Ontario Wind Engine & Pump Co., Toronto, have just shipped a sixteen foot Canadian Airmotor to England, and it is interesting to note that this is destined for the steamer "Discovery" now being fitted up for an exploring expedition to the South Pole. The "Airmotor" will be used in driving a dynamo, presumably to economize fuel, storage batteries being utilized. By the way, storage batteries have a future before them, as they undoubtedly are only in their infancy as yet. We understand an electrical engineer in this city has been working on a special accumulator for four years, and is now about to bring it on the market. Its advent will be watched with interest. The Ontario Wind Engine & Pump Co's foreign trade is growing, as they received an enquiry last week from Italy. A large shipment to the Orient was made a week or two ago.

Messrs. J. D. King & Co., Toronto, will erect a six-storey addition to their boot and shoe factory.

The United States Ferrol Co., Toronto, has been incorporated with a capital stock of \$1,000,000, to manufacture medicine. The provisional directors include J. L. Davison, G. A. Bingham and Benjamin Madill, all of Toronto.

The Kay Electric Dynamo & Motor Co., Toronto, has been incorporated with a capital stock of \$40,000, to manufacture electrical and other machinery, etc. The provisional directors include T. L. Kay and Orlando Kellond, both of Toronto, and W. E. Mulholland, Lynden, Ont.

The Government will build a private car to be from seventy to eighty feet long and cost about \$20,000, for the convenience of the Duke and Duchess of Cornwall and York during their visit to Canada.

Hanover, Ont., has granted the Knechtel Furniture Co., a bonus of \$10,000, to erect a furniture factory there.

Work on the new Roman Catholic church and presbytery in St. Edouard parish Montreal, has been started. The structures will cost \$100,000.

The Canadian Steam Carriage Co., will erect a factory at London, Ont. Then will employ fifty hands.

The Toronto Railway Co., has taken out a permit to erect a two-storey brick and iron motor-house and blacksmith shop. at a cost of \$22,000.

The Dominion Bridge Co., Montreal, has received the contract for the iron work of the new Canadian Pacific Railway bridge across the Red River at Winnipeg, Man., to cost about \$200,000.

The owners of the Tremont House, Toronto, will make improvements at a cost of about \$6,000. The interior will be entirely remodeled and an up-to-date front put in.

The foundry of I. E. Shantz & Co., Berlin, Ont., was damaged by fire May 3, to the extent of about \$4,000.

The mineral output of the Dominion of Canada for 1900 amounted to \$63,775,090, a heavy increase over the figures of 1899, when the minerals produced were estimated as being worth \$49,584,027. Details for 1900: Copper, \$3,063,119; gold \$27,916,752; pig iron, \$583,158; lead \$2,760,521; nickel, \$3,327,707; silver, \$2,730,598; zinc, \$9,342; total, \$40,391,197. To the above must be added \$23,083,893 for non-metallic products and \$3,000,000 for miscellaneous items.

Iroquois, Que., will spend \$20,000 on its waterworks system.

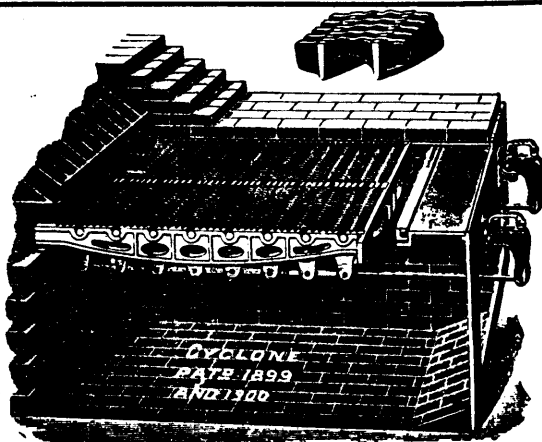
The factory of the Alaska Feather & Down Co., Montreal, was destroyed by fire May 5. Loss about \$50,000.

The Trout Creek Lumber Co's Mills, at Nipissing, Ont., were destroyed by fire May 6. Loss about \$7,000.

Owen's saw and planing mills were destroyed by fire May 5. Loss about \$4,000.

There are 102½ miles of electric road in the city of Montreal; as motor power, there are available six engines of 600 horse-power each, one engine of 3,000 horse-power, twelve 200-kilowatt generators, six 300-kilowatt generators, and one 1,500-kilowatt generator. The rolling stock consists of 372 closed and 370 open cars. The company's capital at present is \$5,500,000 paid up. In 1900, the company carried 43,862,262 passengers. Last year's business showed a net profit of \$647,246.64, as compared with \$630,870.61 for the year 1899. The above does not include the suburban roads.

The Osgoode Glove Works, Preston, Ont., was destroyed by fire May 6.



USE CYCLONE GRATE BARS AND PRODUCE

CHEAPER STEAM

No individual consumer can regulate the price of coal, but you can regulate the amount of coal burned for a given power by installing Grate Bars that will produce perfect combustion. Write us for particulars.

E. J. PHILIP, Manager,

404 TEMPLE BUILDING, - - TORONTO, ONT.

PHONE 2682

A POWERFUL HYDRAULIC DREDGE.

There is at the present time being built at the Polson Iron Works, Toronto, the most powerful and complete dredging machine in the Dominion. It is a self-propelling hydraulic dredge, which has been ordered by the Government, for the improvement of the Fraser River, and the Pacific Coast ports of British Columbia.

The rapid advancement of that Province has made it necessary to deepen its harbors and channels, so that ships of large capacity can navigate with safety; and after long and careful study of the question, it was decided to build a powerful dredge of the special type referred to, which although primarily intended for the Fraser River, can steam itself to any other point and do a great variety of work.

The dredge has a capacity of 1,000 tons per hour, dredged and delivered at a distance of 4,000 feet. This is accomplished by an immense centrifugal pump about eleven inches in diameter, having a steel suction pipe, which can be lowered to a depth of forty feet. At the end of the suction pipe is a powerful rotary excavator of steel, which can cut or disintegrate any material short of rock or large boulders. This material is then sucked up by the pump with sufficient water to carry it along at the rate of fifteen feet per second, and discharged through a pipe. The dredge is arranged so that it can discharge in any desired way, either into scows, or over an embankment, or to a long dis-

tance through a flexibly connected floating pipe.

The boilers and engines on the dredge are of 1,000 horse-power. The engines are of the triple expansion surface condensing type, with water tube boilers capable of carrying 225 pounds working pressure.

The dredge is fully equipped for either fresh or salt water service, with complete appliances of the latest pattern and fully up-to-date. The hull has a steel frame throughout, and will be shipped from Toronto in sections, and put together in British Columbia, where it will be sheathed with wood.

The main deck of the dredge is entirely devoted to machinery, while the upper deck contains accommodation for the officers and crew. Here are several staterooms, separate mess rooms for the officers and crew, kitchen, pantry, bath room, etc. The dredge is fitted with electric light, and has a complete machine shop for making ordinary repairs while in remote places. The dredge is also a complete self-propelling steamboat, with pilot house and steering gear, so that when her work is completed at one locality, (which will not take long owing to her large capacity), she can pick up her anchor and go to another.

The designer of the dredge is Mr. A. W. Robinson, M. Am. Soc. C. P., a Canadian mechanical engineer, whose work in this line is well-known not only in Canada, but in the United States, and other countries.

It is a matter of congratulation that

this dredge is entirely a Canadian production, and that we possess sufficient enterprise, and have the manufacturing facilities to execute the entire work in one establishment. The Polson Iron Works not only build the hull, but also the main pump, triple expansion engines, propelling engines, auxiliary engines, and water tube boilers, and in fact the complete dredge, set up and delivered under steam at its destination, ready for work.

The construction of this dredge marks a new era in the method of carrying on our public works, in which dredging is required. The modern demands of increased capacity and economy, have developed high-powered dredges capable of doing from six to ten times the work of the old-fashioned machines of a few years ago, and at a fraction of the cost.

Mr. Robinson has also designed a still larger dredge for the St. Lawrence ship-channel. This dredge is also being built by the Polson Iron Works, and will be one of the most powerful in the world. The hull is entirely of steel 160 feet long, 42 feet beam and 12 feet 6 inches deep.

It has a thirty-six inch floating discharge pipe 2,000 feet long, carried by cylindrical pontoons wholly of steel, which will weigh 400 tons.

Mr. Robinson has been commissioned to examine the seaport channels of Nova Scotia and New Brunswick, with a view to designing a large self-propelling dredge, which will be suitable to the conditions there existing.

Mr. Robinson has designed and built over one hundred dredges of all kinds,

COWAN & CO.

GALT, - ONT.

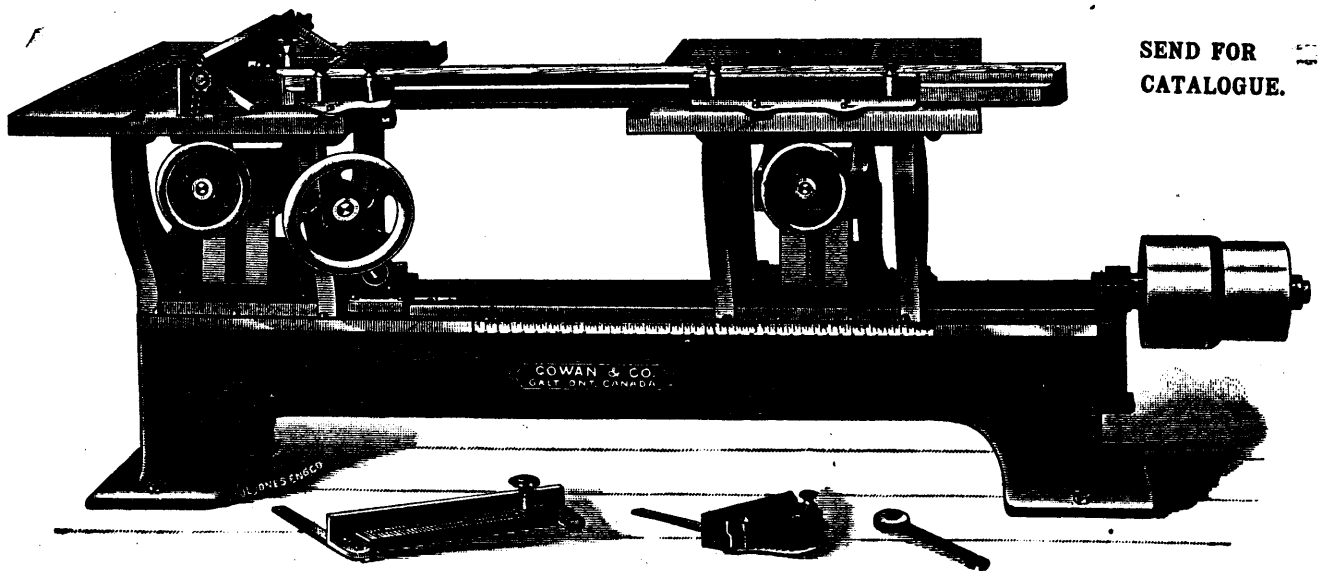
Wood-Working Machinery

Patent Feed Water Heaters and Purifiers

Engines AND Boilers

SAW MILL MACHINERY,

Etc., Etc.



SEND FOR CATALOGUE.

NEW IMPROVED PATENT RIP AND CROSS-CUT SAW.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

and his experience has enabled him to bring them to a high state of perfection. Mr. Robinson, is now engaged as consulting engineer on a contract for deepening the ship-channel of New York harbor, and has just completed a dredge for that work, having a capacity of 40,000 cubic yards per day.

INCREASING THE EFFICIENCY.

In a recent issue of the Engineering Magazine, Mr. W. W. Christie shows advantages of mechanical draft in place of a chimney when economizers are used. He states that from four tests made by Mr. G. H. Barrus, we have results showing that the evaporative efficiency of the boiler may be increased from 7 to 12.8 per cent. by the use of an economizer, as follows:

	1	2	3	4
Temp. of gases lost it economizer, deg F.	145	107	104	156
Temp. of feed water raised in economizer, deg. F..	80	66	58	92
Temp. of gases leaving economizer, deg. F	231	254	299	279
Per cent. of increase in evap. due to economizer..	10½	7	9.3	12.8

The temperature of the gases leaving the economizer, it will be noticed, varies from 231° F. to 299° F. If the gases passed immediately to a chimney, the intensity of draft would be in proportion to the absolute temperatures, or for the 500° F. case 961° F.; for the 231° F., 692° F.; and for the 299° F., 760° F. In a general way the intensity of the draft is diminished by the economizer by about thirty per cent. of what it would have been had the gases gone direct to the chimney; so that to produce the same draft in the economizer plant we should need a chimney say forty-one per cent. taller than with the economizer omitted.

On account of this loss of heat, mechanical means are frequently used when economizers are installed, to bring the draft up to what it should be, without increasing the height of the chimney. Sometimes the chimney is cut out entirely, as would be done by some in designing a new plant. The Cheney Bros., South Manchester, Conn., having a chimney ninety feet high, wished more draft than it would produce; they installed a forced draft outfit, to be used in connection with it, and an economizer. The gases enter the economizer at 475° F., and leave it at 275° F.

TECHNICAL TRAINING.

The absolute necessity of thorough technical training as a foundation for the successful heating and ventilating engineer is clearly presented in a recent article by Prof. S. H. Woodbridge, of the Massachusetts Institute of Technology, who says as an applied science, ventilation involves the movement of air through supply and discharge conduits, and either such effective diffusion of air within enclosures as to furnish air to and remove impurities from all their parts, or else such concentration of air movement as shall prevent the diffusion of impurities locally produced, and as shall effect their removal without diffusion through the enclosures. So considered, ventilation is a department of mechanics and mechanical engineer, a distinctly technical field. Without technical knowledge training, the questions of simple mechanics which are involved in such problems become mysterious in theory and vagaries in practice, and results become a matter of chance rather than of precision. Ventilation deals with air, an invisible substance; with vitiation, and invisible impurity; with unseen motions; with motive forces often intangible; with courses of motion which are limited within invisible bounds. The field is a wide one for the play of fantasy in its mild and in its most erratic form. The capricious art can become an established science only in the hands of those who are too well grounded in the funda-

mental principles of ventilation involved to make it possible for them to entertain any theory, advance any explanation, or advocate any practice in matters of ventilation which is not clearly based on the demonstrable laws and well-known phenomena of the mechanics of gases, all of which demands a technical training of no mean order.

MINERAL PRODUCTION OF BRITISH COLUMBIA.

A recent United States Consular report from Consul A. E. Smith, at Victoria, shows the value of the mineral products of British Columbia in 1899 and 1900, supplied to him by the Provincial Minister of Mines:

Product.	1899.	1900.	Increase.	Per Cent.
Total mineral.....	\$12,393,131	\$16,407,645	\$4,014,514	25
Total metal.....	8,096,504	11,340,756	3,244,252	40
Total lode mines.....	6,751,604	10,062,032	3,310,428	49
Lode gold.....	2,857,573	3,461,087	603,514	21
Silver.....	1,663,708	2,295,099	631,391	38
Copper.....	1,351,453	1,615,289	263,836	19.5
Lead.....	878,870	2,690,557	1,811,687	206
Coal and coke.....	4,053,651	5,066,889	1,013,238	25
Placer gold.....	1,344,900	1,278,724	*66,176	*5
Total.....	\$39,391,344	\$54,218,078	\$14,826,684

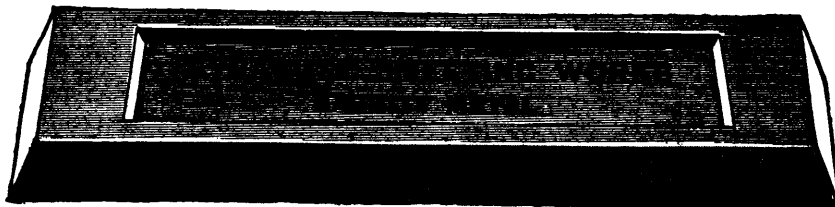
*Decrease.

THE BEST IS NONE TOO GOOD.

The largest machinery builders in Canada and United States use our Babbitt Metal. Is this not sufficient proof of its superiority over other anti-friction metals? If the largest users are satisfied with our Babbitt Metals, why should it not suit you? We can furnish you with numbers of testimonials.

Importers and Dealers in

**PIG TIN, ANTIMONY
INGOT COPPER
ALUMINUM
NICKEL, BISMUTH
IRON AND STEEL
SORAP**



Manufacturers of

**BABBITT METALS, SOLDER
TYPE METALS
COLUMBIA PHOSPHOR TIN
AND
ALL OTHER WHITE METAL MIXTURES**

SYRACUSE

BABBITT

**BEATS
THEM ALL**

SYRACUSE SMELTING WORKS

WILLIAM AND ST. THOMAS STREETS, - - MONTREAL

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

A decrease is shown in the product of placer gold, which, the Minister of Mines says, is accounted for by the Cape Nome excitement of last year, which drew away a number of the miners of the province, and by the fact that some of the hydraulic plants which have been installed in the Atlin country have not yet commenced work. The number of shipping mines in the province is given as one hundred, which, it is expected, will increase next year with the establishment of smelters.

The quantity of ore mined in British Columbia in 1899 was 287,343 tons; in 1900, 554,796 tons—increase, 267,453 tons, or ninety-three per cent. The number of mines shipping over 100 tons each per year was in 1899, only forty-three; in 1900, there were sixty.

The number of miners employed underground during 1900 in the Province was 2,426; number of miners employed above ground at same time, 1,305—making a total of 3,731 miners employed in British Columbia last year.

TINSMITHS' PATTERN MANUAL.

The American Artisan Press, Chicago, have sent in a copy of their new edition of this very excellent manual of patterns, for tinsmith's work, the first edition of which was published some eight years ago. It is a vade mecum for tanners, coppersmith's, plumbers and sheet metal workers generally. The purpose of the work is not to furnish a lot of isolated patterns in general use as to lay down

general geometrical principles, each one of which will enable the workmen to draw a number of different patterns, whose principle of construction is essentially the same. The book is handsomely bound in red cloth, has 280 pages and is fully indexed.

STEEL SHIP BUILDING IN CANADA.

Mr. W. E. Redway, of the Polson Iron Works, Toronto, has written an article upon the subject of steel ship building in Canada. He begins his discussion by asking the following question: "Why cannot steel ships be built as cheaply in Canada as in Great Britain? There is no duty on the plates or bars imported for ship building and the extra freight cannot add much to the cost of a Canadian over a British-built ship." He says that a concise, but comprehensive answer can readily be given as follows:

In the first place, a steel ship is composed of something more than the mere framework and plating forming her hull. She contains within herself probably a greater diversity of manufactured materials than any other structure. Into the completion and perfection of a first-class passenger boat go the united productions of almost every manufacturing industry, from the coal and iron mine down through the whole engineering world, from the main engines and boilers to the captain's sextant and chronometer, from the trees in the forest down through the wood-working section, from the main deck to the high-art furniture and carvings in the

saloon. Her equipment cannot be provided without the assistance of the cloth-maker, the potter, the glass-worker, the cutler and without the hundred-and-one other members of the world's industrial organization, contributing each his share to the production of the finished article. The cost of almost every article in the ship, coming under either of the above headings, is at least one-third higher in Canada than in Britain. Next, heavy forgings, such as stern frames, rudder frames, connecting rods, propeller shafts, steel engine castings, etc., are considerable items in the cost of a modern steamship. All have to be imported and pay a heavy customs duty, because the larger sizes which are made in Canada and even the smaller sizes which are made here are excessively costly, owing to the extremely limited demand for them. The same remark applies to steam windlasses, steam winches, electric lighting machines, steam steering gears and scores of other items too numerous to mention.

In all these matters the British ship builder is twenty-five to thirty-five per cent. ahead of the Canadian. The latter cannot lay down his raw material (plates, bars and rivets) at so low a price as the former by ten per cent., exclusive of freight charges, if he desires to save time by purchasing in the United States. However desirable it may be that Canadian makers of these goods should be protected to the extent of this preference during the earlier stages of manufacture, and until an increased demand will justify its discontinuance, that does not make it

WE MANUFACTURE ONLY

HIGH GRADE

STEAM AND WATER GOODS



Headquarters for the Celebrated... **J. M. C. Valves**

—AND—

Keintz Steam Saver

INTERESTING BOOKLET MAILED TO ALL STEAM USERS UPON REQUEST.

The Jas. Morrison Brass Mfg. Co.

LIMITED, TORONTO

At the Pan-American

Every engineer, every person interested in oil economy, should visit the power houses of the Pan-American Exposition. You will see four

CROSS OIL FILTERS



in operation. The filters that save 50 per cent. of your oil bills were the ones chosen.

THE BURT MFG. CO.

AKRON, OHIO, U.S.A.

Largest Mfrs. of Oil Filters in the World. We also make the Burt Exhaust Head.

PERSISTENCE IN ADVERTISING..

In the expansion of business now bringing profit to so many manufacturers, advertisers who have made themselves regularly prominent in past years have been notable in reaping the rewards of persistent publicity by advertising in **The Canadian Manufacturer.**

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

any easier in the meanwhile for the ship builder who has to compete with those who can obtain the same articles at twenty-five or thirty per cent. less cost. It is true that a customs tariff of twenty-five per cent. on machinery and ten per cent. on the hull is levied on new ships purchased abroad and registered in Canada, which, apparently, is so much in favor of the Canadian builder, but this is purely a negative concession, and is really operative only as to ships purchased in the United States, because British ships registered in Britain or Newfoundland are not subject to the tariff, and, consequently, are brought in freely, clear of duty.

Then, as to labor: It was recently shown at the meeting of naval architects in New York that the difference in cost of wages paid by day work between American and British ship builders averaged twenty-five per cent. throughout all trades in favor of Britain. Now, the wages paid in Canada for mechanics and laborers differ but little from the wages paid on the other side, certainly not more than from 10 to 12½ per cent., consequently the British ship builder is also 12½ to 15 per cent. ahead on his cost of labor. Even

assuming that the Canadian mechanic, although paid higher wages, can, by reason of his superior energy and ability (which is at least questionable), perform the labor of building the hull at as low cost per ton of material used as the British mechanic, it is still manifestly impossible for the Canadian ship builder to produce the finished ship at the same cost as the British ship builder.

Many steamers have been brought into Canada during the past ten years from Britain, sufficient in number and importance to have permanently established steel ship building had conditions been favorable for building them here, but the industry has been carried on since the building of the first steel ship, the Manitoba, in May, 1889, in a desultory and perfunctory manner, producing only a class of vessels mostly too small or otherwise unsuitable for crossing the Atlantic; in fact, although the business has had a precarious existence for twelve years, only two cargo steamers have been built during that time. It will be argued that the manufacture of plates and bars in Canada, which is at last within measurable distance, will give the Canadian

manufacturer a better chance to compete with the British, and to a limited extent this is true, but it will not go far to offset the wide difference that exists in the general conditions.

Canada as a manufacturing nation is just emerging from the age of swaddling clothes, but, even after arriving at maturity, she will never be in a position to compete economically with Great Britain in the building of ships, until fiscal and other conditions are so equalized that the Canadian and British ship builder can meet on equal terms. By a wise policy of fostering the manufacture of steel she has laid the foundation stone of her future greatness and prosperity (and no nation in these days can become great before making iron, for that is the condition precedent in this industrial age), but it must not be forgotten that a foundation without a superstructure is of little utility.

The future development of the iron and steel industry in Canada will require cargo steamers to handle its raw materials and finished products to an extent that cannot be gauged at this moment, and the possibilities of future requirements for moving the products of the northwest, which will be equally in proportion to the growth of the country, are simply incalculable. The coming century will probably witness in Canada a gigantic industrial development similar to that which occurred on the other side of the line during the last century, and the Canadian ship builder is wondering how he is to be able to participate. The only way to create a flourishing and successful industry is to encourage the establishment of works in which everything necessary for the building and equipment of a ship from keel to truck shall be made right here in Canada and to provide some means whereby the Canadian ship builder can obtain an equivalent for the superior conditions enjoyed by his British rival.

Our astute friends and neighbors to the south realize the magnificent possibilities foreshadowed by the creation of a merchant marine, and are organizing a national attempt to place the ship builders of the United States upon an equal footing with those of Great Britain and Germany (other nations do not count in this connection), and they propose to spend \$20,000,000 a year for the next nine years to achieve that object. Who can doubt that such a step will prove a profitable investment, or that its effect will have world-wide reaching consequences? What better precedent can be found for similar action on this side when the conditions are so nearly alike? Until something of the kind is accomplished, steel ship building will continue to languish in Canada, for capitalists are naturally conservative, prone rather to embark in undertakings where a moderate return is certain, than to venture into the realm of experiment where the alluring brightness of possible results is too often obscured by events unforeseen and unprovided for. This subject forms an essential portion of the still unsolved transportation problem, the most vital public question of this generation to the people of Canada. The construction and enlargement of the canals of the Dominion have cost over \$70,000,-



Tenders for Coal, 1901.

Sealed tenders addressed to the Provincial Secretary, Province of Ontario, Parliament Buildings, Toronto, and marked "Tenders for Coal," will be received up to noon on MONDAY, MAY, 20th, 1901, for the delivery of coal in the sheds of the institutions named below, on or before the 15th day of July, next, except as regards the coal for London, Hamilton and Brockville Asylums and Central Prison, as noted.

Asylum for Insane, Toronto.
Hard coal—1,200 tons large egg size, 150 tons stove size, 150 tons nut size. Soft coal—450 tons lump, 150 tons soft screenings.

Asylum for Insane, London.
Hard coal—2,250 tons small egg size, 250 tons stove size, 60 tons chestnut size. Soft coal—40 tons for grates. Of the 2,250 tons, 850 may not be required till January, 1902.

Asylum for Insane Kingston.
Hard coal—1,350 tons large egg size, 250 tons small egg size, 25 tons chestnut size, 500 tons hard screenings, 500 tons soft screenings, 15 tons stove size (hard).

Asylum for Insane, Hamilton.
Hard coal—3,760 tons small egg size, 200 tons stove size, 100 tons chestnut size, coal for grates, 75 tons; for pump house, 200 tons imported slack; 120 tons imported screenings. Of the above quantity, 2,068 tons may not be required until January and February, 1902.

Asylum for Insane, Mimico.
Hard coal—1,550 tons large egg size, 140 tons stove size, 10 tons coal for grates, 100 tons soft screenings, 50 cords green hardwood.

Asylum for Idiots, Orillia.
Soft coal screenings or run of mine lump, 1,700 tons; 75 tons hard coal, stove size; 150 tons hard coal, grate; soft lump, 10 tons.

Asylum for Insane, Brockville.
Hard coal—1,750 tons large egg size, 200 tons stove size, 50 tons small egg. Of the above quantity, 1,050 tons may not be required until January and March, 1902.

Asylum for Female Patients, Cobourg.
Hard coal—300 tons, large egg size.

Central Prison, Toronto.
Hard coal—50 tons nut size, 100 tons small egg size. Soft coal—2,500 tons soft coal screenings or run of mine lump. The soft coal to be delivered monthly, as required.

Institution for Deaf and Dumb, Belleville.
Hard coal—775 tons large egg size, 100 tons small egg size, 12 tons stove size, 14 tons No. 4 size; soft coal for grates, 4 tons.

Institution for Blind, Brantford.
Hard coal—400 tons large egg size, 150 tons stove size, 15 tons chestnut size.

Reformatory for Boys, Penetanguishene.
Eighty tons egg size, 57 tons stove size, 19 tons nut size, 800 tons soft coal screening or run of mine lump. Delivered at institution dock.

Mercer Reformatory, Toronto.
Soft coal screenings or run of mine lump, 550 tons; stove coal, 110 tons.

Tenderers are to specify the mine or mines from which the coal will be supplied, and the quality of same, and must also furnish satisfactory evidence that the coal delivered is true to name, fresh mined, and in every respect equal in quality to the standard grades of coal known to the trade.

Delivery is to be effected in a manner satisfactory to the Inspectors of Prisons and Public Charities and the said inspectors may require additional amounts, not exceeding twenty per cent. of the quantities hereinbefore specified, for the above-mentioned institutions to be delivered thereat at the contract prices at any time up to the 15th day of July, 1902.

Tenders will be received for the whole quantity above specified, or for the quantities required in each institution. An accepted check for \$500, payable to the order of the Honorable the Provincial Secretary, must be furnished by each tenderer as a guarantee of his bona fides, and two sufficient sureties will be required for the due fulfillment of each contract. Specifications and forms and conditions of tenders may be obtained from the Inspectors of Prisons and Public Charities, Parliament Buildings, Toronto, or from the Bursars of the respective institutions. The lowest or any tender not necessarily accepted. Newspapers inserting this advertisement without authority from the department will not be paid for it.

May 6th, 1901, J. R. STRATTON, Provincial Secretary, Parliament Buildings, Toronto.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

000, but where are the Canadian cargo steamers which should be utilizing them on the great lakes? Unfortunately they can almost all be counted on one's fingers, and those mostly British-built ships. Until means are adopted for fostering the construction of steel ships in Canada the transportation problem will remain unsolved, and the first story of the super-structure of Canada's future greatness (to be raised upon the foundation laid by the manufacture of iron and steel) will remain unbuilt.

SYDNEY IRON.

The success which has attended the establishment of the iron furnaces at Sydney, C.B., is not only encouraging to those engaged in the venture, but gratifying to the people of the Dominion. The iron produced has proved to be of a first-class quality, having been tested by a large number of foundries which had given orders for it. As soon as the second furnace will be in working order, which it is expected will be about August 1 next, the management expects to be able to turn out from 1,000 to 1,500 tons of pig iron per day, at which rate it will soon be in a position to engage in the export business, and to compete with other countries. In addition to the iron furnaces, the company is preparing for the construction of a steel rail mill, the completion of which will be effected in time to enable the production of steel rails in October next. This accomplished, Canada will be prepared to

become a seller in the world's markets of her own productions instead of as hitherto being a buyer of those of other countries. The energy which has been displayed in the direction noted will do much to elevate the Dominion in the opinion of the older countries, while those who now control those markets will find that they have in Canada a competitor whose products are fully equal to those with which they have been brought into competition. When we consider the possible, as well as the probable, results of the undertaking at Sydney, C.B., we cannot be too deeply impressed with the important position which they occupy in the development of the country's resources, and the grand opportunity which is thus afforded to bring the industries of this country more prominently than ever before the attention of the industrial and commercial communities of the old world.—The Shareholder.

BRITISH COLUMBIA SALMON INDUSTRY.

As this is the fourth year since the phenomenal run of 1897, cannery men confidently expect—as has been the case every fourth season for some time—a good run of salmon, and great preparations are in progress for the anticipated catch. Last year, the total yield was much smaller than that of any season since 1895, and, as there are no stocks left on hand, it is hoped that good demands and high prices will prevail.

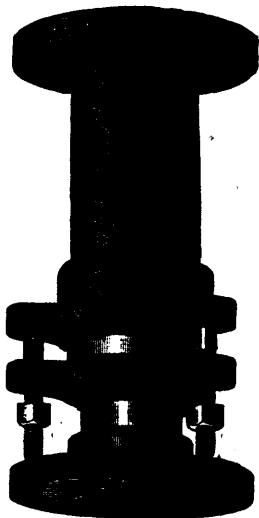
The total pack of salmon on the coast last year is placed in round figures at 2,500,000 cases. Of this number, British Columbia furnished 583,413 cases, which realized the handsome sum of \$2,187,000.

It is known that the salmon caught on Puget Sound originate in the Fraser River in British Columbia. With a view to securing a continuation of the supply of this valuable fish, the catching and preparation of which furnish employment for thousands, and in which millions of dollars are invested in both British Columbia and the United States, the legislature of Washington, on February 27, 1901, adopted a joint resolution appointing a committee of three to confer with a similar committee appointed by the provincial parliament of British Columbia "relative to the establishment of and maintenance upon Fraser River, and its tributaries in the Province of British Columbia of a fish hatchery for the artificial propagation of salmon."

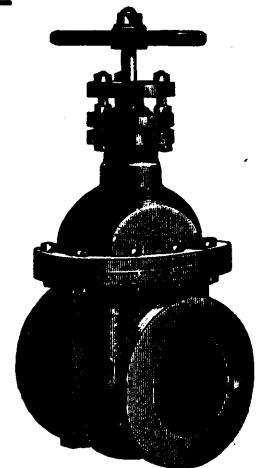
This resolution was forwarded to the consul of the United States at Victoria, and by him brought to the attention of the government of British Columbia. In reply, Premier Dunsmuir said that the control of the fisheries of the Province rested solely with the Dominion authorities, and that the provincial legislature could therefore take no action in the premises without special authority granted by the Government at Ottawa. It is understood that an effort will be made to establish the hatchery by private parties.

STEAM AND WATER FITTINGS

WE CARRY A COMPLETE LINE OF ENGINEERS' SUPPLIES.



Safford's Steam and Hot Water } RADIATORS.
 Steam Traps. Wrought Iron Pipe.
 Cast and Malleable Fittings, ALSO
 Galvanized Pipe and Fittings,
 Brass and Iron Body Valves, etc.,
 Boilers for Steam and Water,
 Expansion Joints, Brass and Iron Cheek Valves.



Can Ship Goods same Day as we receive Order. Write for Price List and Discounts.

THE **DOMINION RADIATOR CO.** Limited, TORONTO, ONT.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

There was considerable trouble on the Fraser River last year with regard to the price paid fishermen for salmon—no traps being allowed in British Columbia waters. The business was largely controlled by the Japanese, in spite of the fact that British subjects only are allowed to take out fishing licenses.

Heretofore, the tin used in the manufacture of salmon cans has been brought in sailing vessels from England around Cape Horn, but some of the proprietors of canneries are now using the American product, and next year it is expected that many of the British Columbia canneries will purchase their tin in the United States.

CANADA'S LEAD MINES.

The mining of Canadian lead has grown into a most important industry. The production in 1900 amounted to 60,000 tons of silver lead ore, containing silver to the value of \$2,295,099 and about 30,000 tons of metallic lead of the value of \$2,690,577 or a total of \$4,985,676, and the total production for all years to date has been \$20,000,000.

At the first of the present year it was estimated that an output of more than 100,000 tons of ore, containing 50,000 tons of lead would be reached in 1901. An expectation, which, in consequence of events that have since occurred, will be greatly disappointing. The bulk of all of this class of ores, hitherto mined in British Columbia, has been smelted in the United States, and the portion of it

that has been smelted in Canada has also gone to the United States to be refined. At the beginning of 1901, the American Smelting & Refining Co., a trust which has absorbed nearly all the smelters and refineries in the United States, gave notice that it had withdrawn from the British Columbia market and that until further notice it would make no contracts for the treatment of British Columbia ores. The capacity of the smelters in operation in British Columbia, and of the independent smelters in the United States, is totally inadequate to treat the normal output of the British Columbia mines, and many of them have in consequence closed down, and others have lessened their output.

It is still possible to have bullion smelted in Canada refined in the United States, but the refining charge has been greatly increased, and there is no tendency observable toward increasing the smelting capacity in the districts now suffering. Nor is there likely to be while the danger of the imposition of excessive rates for refining continues. Representations have been made to the Dominion Government that for the relief of the distress at present existing, the surest and best remedy is the establishment, in some accessible situation, within Canada, of a lead refinery. Inasmuch as the establishment and successful operation of such a refinery would require the employment of a large amount of capital, not only in the construction and equipment of the refinery, but also in the purchase, treatment, transportation and marketing of

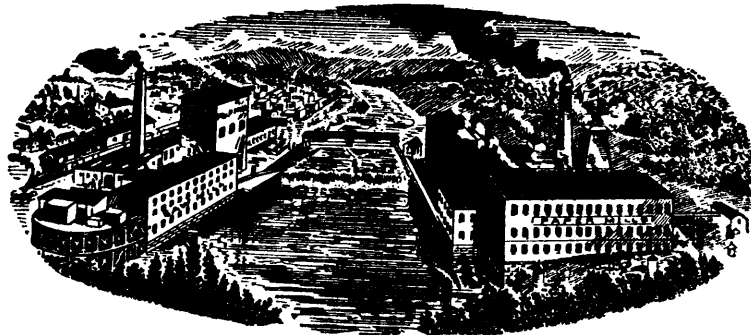
the product, the investment would be exposed to the danger of destructive competition from the American Trust, whenever it chose to reopen its works to Canadian lead. It is, therefore, asked that the Dominion Government should grant a bounty, to be paid for a term of five years, at the rate of \$5 per ton upon pig lead, the product of ores smelted and refined in Canada. It is also submitted that the transfer to Canada of the industry for working up, as far as possible, the stock of raw lead, into manufactured forms, and the opening of an outlet through Canadian channels to the world's market for the whole of the product is a matter of importance to the Dominion at large; that the product of silver and lead in British Columbia is capable of great expansion; that the employment of labor afforded will attract to the mining districts a large population, a population of consumers upon a lavish scale, of the supplies and products of Eastern Canada; and that in all respects the measure of development liable to follow the removal of the obstacles that now retard the industry, will amply justify the expenditure of public funds that would be involved in the request.

It is also requested that the rates to be charged for refining by any refining company, proposing to take advantage of any bonus provided by the Government, be made subject to approval and revision by the Governor General in council, and that full power be reserved by the Government to withhold the payment of any money claimed to have been earned by the refin-

Royal Paper Mills Company, Limited

Mills —AND—
Head
Office:

East Angus,
QUE.



F. P. BUOK, - - - PRESIDENT AND GENERAL MANAGER.

WAREHOUSES:

763 Craig Street,
MONTREAL, QUE.

52 and 54 Front St. W.
TORONTO, ONT.



Paper

Fine News, Book, Lithograph, Tub and Engine
Sized Writing, and Colored Cover Papers.

Pulp and

ROYAL CANADIAN BRAND
Soda and Mechanical Pulp

Lumber

SPRUCE, PINE and HARDWOOD (Dressed and
in Rough.)
CLAPBOARDS and SHINGLES.

CABLE ADDRESS—“OBBAPER,” EAST ANGUS—A.B.C. and Lieber's Code.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

COAL JAS. H. MILNES & CO. COKE

WHOLESALE DEALERS IN
Best Grades of STEAM COALS.
Best Grades of BLACKSMITHS' COALS.
Best Grades of FOUNDRY COOKS.
 Shipments made direct from Mines to any point in Canada. Write for quotations.

Head Office: 78 QUEEN ST. EAST TORONTO. Docks: Esplanade, Foot of Yonge

ery company, if it be at any time made to appear to the satisfaction of the Governor-in-Council that any excessive charges have been imposed, or unjust discrimination practiced by such refinery company, as against any Canadian product treated by them or offered to them for treatment.

The inequality of the duties levied upon lead products coming into Canada has been repeatedly brought before the Government by special delegations and by the boards of trade, and dealt with by the convention of the liberal party in their platform. It appears that the schedule of lead duties stands as it was framed many years ago when there was no production of lead in Canada. It is inconsistent with itself and with the tariff upon other goods of a similar class, and it operates to discourage the manufacture of lead in Canada, so that when miners are producing and sending abroad a large quantity of lead in crude forms the Canadian market is supplied with the manufactured article from abroad. The Government is therefore asked to revise this tariff and put it upon an equitable basis, which would be reached by an increase of the duty upon pig lead from fifteen per cent. to twenty per cent. and upon dry white lead from five per cent. to twenty-five per cent.

The Hespeler Furniture Co., Hespeler, Ont., will establish a factory in that town.

ELECTRIC ROADS.

From returns received from the thirty-five electric railways of Canada, Mr. George Johnson, Dominion Statistician, makes up the following statement:—

At the end of December, 1900, the number of miles of electric railways in Canada increased to 681 miles, or forty-nine miles over the number in 1899.

The thirty-five electric railways in Canada carried 113,129,862 passengers in 1900, an increase of 14,097,203. This is equal to carrying every man, woman, and child in the country twenty-one times.

The car mileage run was 30,924,355 miles, an increase of 1,277,508 miles over 1899.

The mileage run and the passengers carried show that for each mile run the roads carried 3.8 passengers, against 3.5 in 1899.

The amount of paid-up capital invested in electrics on December, 31, 1900, was \$20,633,000, and the bonded debt was \$12,619,422.

The number of cars in active service in 1900 was 1,642, an increase of ninety-eight over the previous year. The employees numbered 4,493, showing an increase of 164 over 1899.

The total receipts for the year were \$5,422,540, and the expenses \$3,263,001.

The steam railways carried 17,122,193 passengers in 1900, so that the total passengers transported by rail was 135,252,055. Between them steam and electric

railways carried the whole population of Canada twenty-five times in the year, and the proportion was a little over eighty-seven by electric and a little under thirteen by steam in every hundred persons carried.

Since 1895 the number of passengers carried by the electric railways increased from 83,811,000 to 118,130,000, an increase of 34,319,000, which is equal to forty-one per cent. while those carried by steam-using railways increased from 13,742,454 to 17,122,193, an increase of twenty-five per cent.

The expenses form about 67.50 per cent of the gross earnings of the steam-using railways, and about 60.27 per cent. of the gross earnings of the electric railways.

SUGAR vs. SACCHARINE.

When the artificial article began to make its appearance in the markets of the European sugar producing countries, the sugar-beet raisers and beet-sugar manufacturers were startled by the thought that the new sweetening material might displace the natural product altogether, and thus ruin their industry. If we consider the immense vastness of the interests concerned in this question, especially in Germany, Austria-Hungary, Belgium, France and Russia, the importance of this alleged danger will readily be understood. So they went to work and induced their various Governments

THE CANADIAN COLORED COTTON MILLS COMPANY.

Cottonades, Tickings, Denims, Awnings, Shirtings, Flannelettes, Gingham, Zephyrs, Skirtings, Dress Goods, Lawns, Cotton Blankets, Angoras, Yarns, etc.

Only Wholesale Trade Supplied.

D. MORRICE, SONS & CO.
 AGENTS
 MONTREAL and TORONTO.

IF YOU ARE DISSATISFIED WITH YOUR

Brass, Copper, Phosphor-Bronze, OR Composition Castings

Send us a Trial Order. We can please you.

J. N. Callman & Sons
Brass Founders,
 HAMILTON, CANADA.

All interested in South and Central American Trade should read

THE SOUTH AMERICAN JOURNAL

Founded 1863

The recognized organ of South American interests and business in the Anglo-Saxon World.

SUBSCRIPTION . . . 25s. PER ANNUM.

Specimen copy post free; also the pamphlet, "South America as a Field for Enterprise," giving much information with regard to the countries, moneys, weights, measures, mails, etc.

OFFICES
DASHWOOD HOUSE,
 New Broad Street,
 LONDON, E.C., ENG.

IF YOU CAN'T COME, WRITE

to our nearest
office for in-
formation about

"E. HOWARD & CO." Watchman's Clocks.

THEY WILL SAVE YOU 10 ON YOUR INSURANCE

Established
1842

The E. HOWARD CLOCK CO.

395 to 403 Washington St. BOSTON
41 and 43 Maiden Lane NEW YORK

DIXON'S

**DOES
TWO THINGS**

**SOLID
Belt Dressing.**

**AND DOES THEM
THOROUGHLY**

**STOPS THE BELT
FROM SLIPPING.**

**NOTHING
EQUALS IT.**

**PLEASES THE MAN
WHO USES IT.**

AMPLE SENT FREE.
SEND FOR ONE.

**Joseph Dixon Crucible Co., Jersey City, N. J.
U.S.A.**

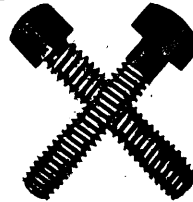
The Diamond Machine and Screw Co., Limited

MANUFACTURERS OF

CAP AND SET SCREWS, STUDS, Etc.

Finished and Semi-Finished Nuts

TORONTO, - CANADA



**"Zanzibar
Anti-Rust
Paint"**

MADE TO ENDURE

GARFIELD PAINT CO.

WINDSOR, ONT.

Canada.

Write for
Booklet

"A STUDY
IN BLACK."

For Roofs
of all kinds,
Bridges,
Iron Work.

THE SMART-EBY MACHINE CO.

LIMITED,

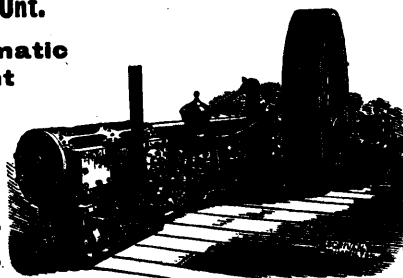
191 Barton Street East, Hamilton, Ont.

High Speed Engines, Brown Automatic
Engines, Boilers, Rogers' Patent

Shaking and Dumping Grate Bars,
Pumping Machinery,

Electric and Hand Power Travelling
Cranes, Shafting, Pulleys,
General Machinery, Etc.

Western Office—419 Hasting St., Vancouver, B.C.



to enact laws by which the sale of saccharine was subjected to very rigorous restrictions. It was easy enough for them to prove to the Governments the advisability of this policy, for every reduction in the amount of sugar sold meant a loss to the Governments themselves by the reduction of the internal revenue resulting therefrom.

At the fiftieth annual Convention of the German Association of Sugar Manufacturers, held at Magdeburg, it was stated that the saccharine produced in Germany in 1899 was equivalent in sweetness to over 50,000 metric tons of sugar, and that, consequently, the consumption of sugar was prevented, causing a loss to the Imperial Treasury of £500,000. Without going into any discussion of the very doubtful correctness of this statement, considering the fact that a great deal of the saccharine produced in Germany has been exported, and therefore has not replaced, to this extent at least, any sugar in the home market, we only wished to show to our readers what pressure has been used, and is still used, by the European sugar manufacturers to obtain their point.

At present the importation of saccharine into Italy, Portugal, Austria-Hungary and France, is prohibited. In the latter country, at the beginning of this year, a law has been placed before the Assembly by which it is intended to subject saccharine to a number of restrictions which will allow its use for medical purposes. The most important articles of this law are as follows:

1. The use of saccharine or any other sweetening material which possesses a higher sweetening power than cane sugar is prohibited for any purpose, except for therapeutical or pharmaceutical purposes.
2. The manufacture of these substances has to be carried on in factories which are continuously controlled by the internal revenue authorities. The expenses connected with this control are to be paid by the manufacturers.
3. The amount produced is to be registered, and the product must be sold only to apothecaries.
4. The apothecaries have to keep an account of the amount received; they are allowed to sell or use the saccharine only upon a prescription of a physician; they have to keep a detailed account of their sales. Any violations are punishable according to the general laws regulating the pharmaceutical trade.
5. A person who manufactures or delivers any of the substances mentioned in article 1, in violation of the regulations above, or who knowingly sells or offers for sale foodstuffs as drinks, syrups, preserves, etc., which have been mixed with saccharine, is liable to imprisonment of from three months to two years and a fine of from 500 to 10,000 francs.

In Russia the manufacture of saccharine is prohibited, and the importation permitted only for pharmaceutical purposes. In Germany a law has been enacted forbidding the use of saccharine and similar materials as a sweetening stuff in fruit extracts, jellies, preserves and similar articles.

The main reason given for promulgating

these different laws is the harmful character of saccharine. The danger of the disastrous effect upon the home sugar industry which might result from the free sale of the artificial article, or the threatening reduction of the internal revenue, we do not find mentioned. Of course, it is the duty of every Government to protect an old-established industry, and to look for means to defray the public expenses, but it would be bad policy to let people openly know that a certain law is made in favor of a special industry. This might rouse the hatred of the other classes. Therefore, thoughtful as the Governments always are about the public welfare, they assert that only for reasons of public health these laws have been necessary. —Kuhlow's.

AN ENTERPRISING CONCERN.

Our representative was last week shown through the fine new premises of Messrs. R. A. L. Gray & Co., electrical contractors, 85 York street, Toronto. This firm makes a specialty of supplying electric light and power plants for towns, factories, etc. They do not manufacture; nor are they connected with any manufacturer of electrical apparatus, so that when installing plants, they are able to supply any one of the better grades of machines. Messrs. Gray & Co's work has earned a reputation for the firm by its lasting worth. Their business has been built up, not by cutting prices; but by installing only good work, work which lasts, and is thoroughly efficient. This success has not come without much hard work and "stick-at-it-iveness." It has not always been easy to convince prospective buyers that there is much difference in the ways of installing electrical work.

The new premises, which are next door to the old, have about twice the latter's capacity. The offices and fixture showroom are handsomely furnished; particular care having been spent in the decoration of the latter. As the fixtures are all shown by their own light, a customer is enabled to judge the effect much better than in the ordinary showroom. In the store-room everything is complete, even to the automatic wire-measuring machine. Messrs. Gray & Co. are to be congratulated on the enterprise and good taste, which they have shown in their new premises.

BLACK ZANZIBAR PAINT.

The Garfield Paint Co., sole manufacturers of Zanzibar Anti-Rust Paint, are in receipt of the following letter from what is probably the largest or second largest glass factory in the world:—

Muncie, Ind., April 15, 1901.

The Garfield Oil Co., Cleveland, O. Gentlemen,—We used your "Black Zanzibar Paint" last year, and it has given us very good satisfaction. You may please send us two barrels at once to

do our patching with this spring. We will place our order with you for the full amount of paint we will require for this season, later on.

Yours truly,
BALL BROS. GLASS MFG. CO.

The best recommendation is a personal test, but companies like Ball Bros. never adopt anything until satisfied of its worth, and this unsolicited order testimonial of Zanzibar Paint certainly denotes merit.



ECO MAGNETO WATCHMAN'S CLOCK

- T has no chemical batteries,
- T is approved by all insurance companies.
- T cannot be tampered with.
- T is guaranteed for five years.

MONTREAL ELECTRIC CO.,
Agents,
198 Notre Dame St., Montreal.

ECO MAGNETO CLOCK CO.
620 Atlantic Ave., BOSTON.

MARSH STEAM PUMPS
MANUFACTURED BY
AMERICAN STEAM PUMP CO.
BATTLE CREEK MICH.

Labels in image: SMALL POWER FEEDER, HYDRAULIC PRESSURE PUMP, LARGE BOILER FEEDER, AIR COMPRESSOR, FOR DEEP WELLS, COMPOUND, LARGE TANK.

Text in image: 35,000 SOLD IN ELEVEN YEARS, MAXIMUM STRENGTH, SIMPLICITY AND SERVICE, WRITE FOR NEW CATALOGUE.

Canadian Agents **The A. R. WILLIAMS MACHINERY CO. LIMITED**
Head Office, — — — TORONTO
Branch Office—MONTREAL

BUY OUR
CARD CLOTHING
BECAUSE IT IS
ENGLISH
ALL WORKMANSHIP
LEATHER & CLOTH BACKINGS
HARD & TEMPERED WIRE
MACHINERY
MADE HERE AT HOME
ASK FOR SAMPLES & QUOTATIONS
THE **J. C. McLAREN BELTING CO.**
TORONTO
FACTORY MONTREAL.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

WATERFALLS AS CENTRES OF INDUSTRY.

Within a very short time two important installations of electric power-transmission plants have been installed at waterfalls, one at Niagara and the other at Snoqualmie. Primarily, the object of the plants is to transmit electrical energy to cities at a distance where it may be utilized for various commercial purposes, but it now seems that a new phase is being manifested. A few days ago an electro-lytic refining company, having a plant in the vicinity of Niagara, contracted for a heavy increase in the horse-power furnished it by the power plant, and will extend its works at a cost of nearly a million dollars. This may be taken easily to indicate that the great power-transmission plants which are located at waterfalls throughout the country will soon become large centres of manufacture. Real estate in the cities is expensive and often unsatisfactory, but in the country land is much cheaper, and, with ordinary railroad or water transportation facilities, great industries are locating at the various power plants and erecting factories which will operate at less expense, producing the same, or better results than they could in the more crowded cities.—Electrical Review.

ONTARIO MINES.

The mining outlook in the Province of Ontario appears to be more encouraging this year than before, the evidence pointing to a decided increase in the quantity

and value of output of metalliferous mines and furnaces over the year 1900. In a quarterly report just issued by the Ontario Bureau of Mines, some figures are given, showing the expansion in mining.

The quantity of iron ore smelted into pig iron at the three furnaces of Ontario, all of which are in steady operation, was 48,663 tons, of which 21,083 tons were from Ontario mines, and 27,580 tons were imported ore. The proportion of native ore smelted during the quarter rose to forty-three per cent. of the whole, as against twenty-three per cent. in 1900. In addition to the ore, 3,486 tons of scale and mill cinder-were smelted.

The total quantity of nickel and copper ore mined during the period was 72,036 tons, being a proportional increase, as compared with the whole of 1900, of thirty-one per cent. The new nickel-copper and copper mining companies are beginning to raise considerable quantities of ore, but not much of it has yet been smelted. The quantity of gold ore crushed was 10,174 tons.

The output of the metalliferous mines and works of Ontario for the three months ending March 31, 1901, as returned to the Bureau of Mines, was as follows:—

	Quantity	Value.
Iron ore, tons	36,503	\$44,106
Pig iron, tons	28,694	438,659
Nickel, pounds	1,805,691	190,858
Copper, pounds	1,680,391	75,625
Arsenic, pounds	236,054	12,046
Gold, ounces	3,150	54,520
Silver, ounces	20,077	12,046
Total		\$827,860

The total value of the above products for 1900 was \$2,541,131, consequently the output for the first three months of the present year shows a proportional increase of about thirty per cent. The largest increases are in iron ore and pig iron; nickel and copper remain at about the same level of production; arsenic shows a decided increase, while gold and silver have fallen off.

IRON AND STEEL BOUNTIES.

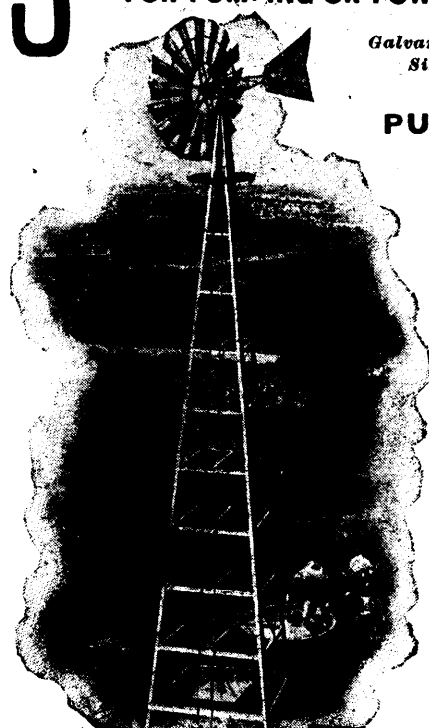
In the fiscal year ended with June 30, 1899, the iron and steel bounties paid by the Dominion Government amounted to \$280,109.

Last year, according to the auditor-general's report, the Dominion gave \$312,774 as bounties on iron and steel, the distribution being as follows:

Radnor Forges, Three Rivers, Que.....	\$18,234
Deseronto Iron Co., Deseronto, Ont.....	27,026
Hamilton Blast Co., Hamilton, Ont.....	107,009
John McDougall & Co., Montreal.....	5,485
Nova Scotia Steel Co., New Glasgow, N.S.....	137,522
Mineral Products Co.....	7,378
Ontario Rolling Mills, Hamilton, Ont.....	1,200
Hamilton Steel & Iron Co., Hamilton Ont.....	8,920

Total bounties paid.....\$312,774
The bounty paid is \$3 a ton on pig iron

STAR WIND MILLS
FOR PUMPING OR POWER PURPOSES



Galvanized Steel or Wood, all Sizes, 4 to 26 feet in Diameter.

PUMPING MILLS

FURNISHED WITH OR WITHOUT TANK ELEVATED IN TOWER.

GALVANIZED

Steel Towers

Any height, either Three or four post, with substantial ladder.

TANKS

Any Capacity, Any Purpose Made in Pine, Cypress, Fir or Galvanized Steel.

Our windmills are self-regulating and self-governing, and with our Hoosier Automatic Anti-Freezing Force Pump the windmill outfit takes care of itself, night or day, in calm or storm.

"Hoosier" IRON AND "Fast Mail" PUMPS.

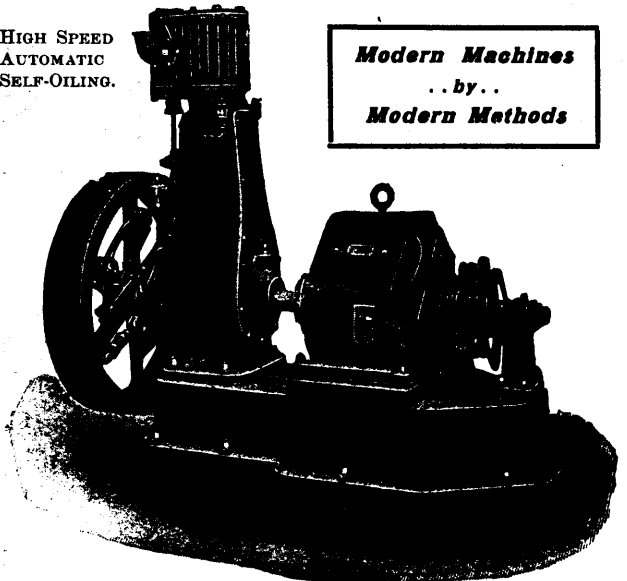
Designs and Prices Furnished. Write for Catalogue.

Address **FLINT & WALLING MFG. CO.**
"STATION A" KENDALLVILLE, IND.

Buffalo Forge Company
ENGINES

HIGH SPEED AUTOMATIC SELF-OILING.

Modern Machines .. by .. Modern Methods



Buffalo Single Vertical Direct Connected Engine.

BUFFALO FORGE CO., BUFFALO, N.Y.
E. A. WALLBERG, - CANADIAN REPRESENTATIVE
410 TEMPLE BLDG. TORONTO. Merchants Bank Bldg., MONTREAL.

from Canadian ore and \$2 on pig iron from foreign ore, \$3 a ton on puddled bar from pig iron made in Canada, and \$3 a ton for steel ingots made from Canadian pig iron.

The Dominion Iron & Steel Co., of Sydney, N.S., in its offer of sale of \$3,000,000 of 7 per cent. preferred stock, sets forth an estimate of the Government bounty which will be received by that company for seven years. The company states that "if the production from the company's works be as estimated—300,000 tons of pig metal and 60,000 tons of steel blooms in 1901, and thereafter 400,000 tons of iron and steel per annum, made from foreign (Newfoundland) ore—the bounties to be received from the Canadian Government" will be as follows:

1901	\$870,000
1902	2,075,000
1903	1,850,000
1904	1,450,000
1905	1,000,000
1906	625,000
1907	225,000
Total.....	\$8,095,000

NOVA SCOTIA.

A letter written by Mr. T. S. Whitman, Portugese Vice-Consul at Annapolis Royal, has been published, in which he says:—

This iron and steel movement or combine is making things lively in Nova Scotia. The mineral resources of this

province in iron, coal, limestone, and gypsum are enormous, but as yet their development is in its infancy.

The Dominion Coal Co. and the Dominion Iron & Steel Co., both at Cape Breton, N.S., are making things lively there. The latter is drawing largely of its iron ore from Newfoundland. The most extensive deposits of iron ore are at this (the western) end of Nova Scotia, just east and west of Annapolis.

Recent borings have shown very large deposits, and it looks now as if we have a world's supply of iron ore in these hills on the south side of the Annapolis Valley. East and west of this old town some of the largest deposits of iron ore are within two to five miles of our harbor, where ships up to 15,000 tons can load "always afloat" all the year round.

So far these boring tests (six) have not exceeded 400 feet deep, but show enormous deposits of very rich iron ore. This range of hills on the south side of the Annapolis Valley and harbor, running east and west, is about five to ten miles wide and about sixty miles in extent. The Government Geological Survey reports iron ore more or less in this entire district, particularly in the range about two to five miles south of this port, where ocean ships, steam or sail, from 10,000 to 15,000 tons, may load always afloat the year round.

So far the six borings have been confined to the Torbrook district, and worked west as far as the Nictaux Falls, and the operators have already met with such

good success that they have purchased and bonded the Torbrook district, including the Nictaux Falls, which is a good water power for electric motors. They are now boring on the higher hills of this Torbrook district. No boring has yet been done on the grounds at the south, just east and west of this town, where are indications of the largest deposits of iron ore in this province.

With the present demand for iron ore I anticipate a good future for a large export traffic, if not extensive smelting operations at and from this port of Annapolis Royal in iron ore and pig iron; and am well convinced that these very extensive deposits of iron ore deserve immediate attention.

Most of these lands above noted are well wooded with spruce timber, the exports of which from Western Nova Scotia alone annually exceed 30,000,000 square feet to ports in the United Kingdom, Continent, South America, and West Indies. Lands owned by farmers and lumbermen can be bonded now for a small consideration.

COWAN'S NEW DOUBLE RIP AND CROSS-CUT SAW.

This is a newly designed machine, and is invaluable for cutting to accurate lengths all kinds of material used in furniture, cabinet, piano, box, sash and door, school furniture, agricultural and other shops. It is strong and substantial, with heavy iron shears, upon which are

THE BEST PIPE THREADING and CUTTING-OFF MACHINES

Are Made by the **ARMSTRONG MFG. CO., BRIDGEPORT, CONN.**

Also Manufacturers of a FULL LINE of **ADJUSTABLE STOCKS and DIES** and Water, Gas and Steam Fitters' Tools.
Send for Catalogue 27. Factory: BRIDGEPORT, CONN. New York Office: 139 CENTRE STREET.

Electrical Construction Co. of London, Limited.



MULTIPOLAR MOTORS & DYNAMOS

And Direct Connected Plants for Isolated Lighting.

Repair Work a Specialty.

HEAD OFFICE AND FACTORY:

90 YORK STREET, London, Canada.

760 Main St., Winnipeg.

24 York St., Toronto, 134 Granville St., Halifax.

RICE LEWIS & SON, LIMITED

HARDWARE and METAL

Bar Iron, Steel,
Boiler Plate Tubes.

**MACHINIST TOOLS,
PIPE FITTINGS.**

COMPLETE STOCK OF

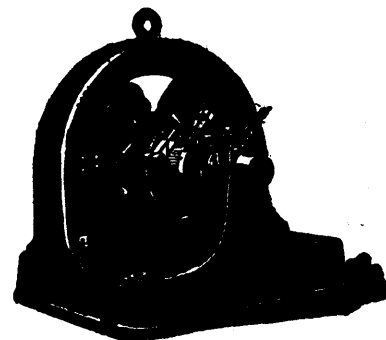
STOCKS and DIES. PIPE VICES.

STILLSON & TRIMO
WRENCHES.

STEAM PIPE.

Cor. King and Victoria, TORONTO

TORONTO and HAMILTON ELECTRIC CO.



MOTORS and DYNAMOS

MODERATE and SLOW SPEED OF HIGH EFFICIENCY.

EITHER BELTED OR FOR DIRECT CONNECTION.

REPAIRS PROMPTLY EXECUTED ON ALL ELECTRICAL APPARATUS.

T. & H. ELECTRIC CO.

99-103 McNAB N., HAMILTON, ONT.

CUPOLAS

FOUNDRY EQUIPMENT

CRANES

E. A. WALLBERG, C.E.

Temple Building, TORONTO

Merchants Bank Building, MONTREAL

two saw frames, one stationary, the other movable to and from it by a screw, and bevel gears.

The operator can quickly adjust the movable table to suit any length of material he may desire to cross-cut, both ends being cut off square at one operation. The saw arbors are of large diameter and run in self-oiling bearings; the arbors adjust independently of each other, and in case of wear have an adjustment for keeping them true; the arbors are mounted in a substantial frame, and can be quickly raised or lowered by means of a hand-wheel, to suit the work, the table remaining at all times at a fixed height, the belts retaining their proper tension at any position of the saw.

Motion is communicated to the arbors by a countershaft upon the rear side of frame. The driving pulley to the traversing arbor is enclosed by two arms from the table frame, and when moved, slides upon a splined shaft. The tables are of iron with planed grooves for receiving the gauges. Wood packing plates are inserted around the saws, which can be taken out for grooving purposes.

The tables can be brought together so that material eight inches in length can be cut on both ends perfectly square, or they can be separated so as to cut off on both ends material up to six feet six inches. There is also a sliding cross-cut gauge, quickly adjustable for different widths, which can be instantly removed or replaced.

The stationary table has a ripping gauge, which can be bevelled to varying angles, or reversed for sawing upon the opposite side of the table; no sliding car-

riages are necessary, the fence gauges being so constructed as to fully answer this purpose, and are such that one operator can work with a grooving saw and another cut off both ends of material at once, any length from twenty-two inches to five feet.

The tight and loose pulleys are 10x5½, and should make 700 revolutions.

For further information, address the manufacturers, Cowan & Co., Galt, Ont.

DIXON'S SOLID BELT DRESSING.

The Joseph Dixon Crucible Co., Jersey City, N.J., have sent us a circular having reference to the Traction Belt Dressing and Leather Preservative manufactured by them. The use of which, they say, absolutely prevents a belt from slipping; thoroughly preserves the leather and protects the elasticity of the belt.

An expert, in an article in the Mechanical News, says:

The common and every-day users of belts know but little about them other than what they learn by observation. They know how to put one on the pulleys when it slips off; know how to re-lace it when the lacing gives out, or how to cut out a piece and take it up when it becomes too slack, or how to put rosin on it when it slips. The latter lesson is learned too quick, probably because it ought not to be learned at all. It is simply an injurious stimulant which tends to destroy the vital energies and shorten the life of the belt, especially a leather belt.

Of course all belt users know that the life of the belt depends upon the care

given it; and if this is so it is certainly worth while to look after them.

It is the custom of many owners and superintendents to use nothing on their belts, but, when the belts slip, to tighten them up. This, however, heats and wears the journals, consumes the lubricating oil, and does not remedy the trouble of slipping. Weight we know increases journal friction, and the tightening of a belt acts just the same as would the adding of dead weight to the journals. The tighter the belt is made, the surer it is not to slip, but it is impossible to tell how much additional work it and the power plant have to do when made too tight.

There is a certain amount of elasticity in all good leather belting, but time and continued hard work weaken it, and the application of soap, rosin, tar, tallow, and castor oil is simply an injurious and temporary stimulant, which tends to destroy the vital energies and shorten the natural life of the belting. Dixon's Belt Dressing and Leather Preservative we are told, saves the life and elasticity of the belt to a most wonderful degree, and, as it completely prevents slipping of the belt, no power is wasted and the greatest economy secured. Slipping belts means loss of power, and loss of power of course means additional cost.

This belt dressing, in both liquid and solid form, has acquired great popularity in Canada.

The Gowanlock Printing & Publishing Co., Toronto, has been incorporated with a capital stock of \$15,000. The provisional directors include A. G. Gowanlock, P. E. McMillan and G. J. Gowanlock.

The Owen Sound Meat & Cold Storage Co., Owen Sound, Ont., has been incorporated with a capital stock of \$100,000. The provisional directors include E. H. Horsey, W. P. Telford and Christopher Eaton all of Owen Sound.

Midland, Ont., will install a water-works system and take over the electric light plant from the present owners.

Drayton, Ont., have passed a by-law to loan \$10,000 to aid the building of a factory for the manufacture of felt boots and shoes.



ASTHMALENE BRINGS INSTANT RELIEF AND PERMANENT CURE IN ALL CASES.

SENT ABSOLUTELY FREE ON RECEIPT OF POSTAL.

There is nothing like Asthmalene. It brings instant relief, even in the worst cases. It cures when all else fails.

The Rev. C. F. Wells, of Villa Ridge, Ill., says: "Your trial bottle of Asthmalene received in good condition. I cannot tell you how thankful I feel for the good derived from it. I was a slave, chained with putrid sore throat and asthma for ten years. I despaired of ever being cured. I saw your advertisement for the cure of this dreadful and tormenting disease, asthma, and thought you had overspoken yourselves, but resolved to give it a trial. To my astonishment, the trial acted like a charm. Send me a full-size bottle.

We want to send to every sufferer a trial treatment of Asthmalene, similar to the one that cured Mr. Wells. We'll send it by mail POSTPAID, ABSOLUTELY FREE OF CHARGE, to any sufferer who will write for it, even on a postal. Never mind, though you are despairing, however bad your case, Asthmalene will relieve and cure. The worse your case, the more glad we are to send it. Do not delay. Write at once, addressing DR. TAFT BROS. MEDICINE CO., 79 East 130th St., N.Y. City. Sold by all Druggists.

The B. GREENING WIRE CO., Limited

GREENING

MANUFACTURERS
OF

GREENING

Lang's Patent Wire Ropes
For Colliery and Mining Use.

WIRE ROPE of every Description
and for all purposes.

HAMILTON, ONT.
and MONTREAL, QUE.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

OPPORTUNITIES FOR TRADE.

The following enquiries have been received at the offices of the High Commissioner of Canada in London, and of the Canadian Section of the Imperial Institute, London, England.

NOTE—Those who may wish to correspond with any of these enquirers can obtain the names and addresses by applying to THE CANADIAN MANUFACTURER, Toronto. No charge for giving information. When writing refer to the numerals opposite the enquiries.

477. A manufacturer of church, school, and other kinds of furniture, asks for names of Canadian exporters of orham wood in planks; also of shippers of sawn and turned chair and seat material, etc.

478. A North of England firm ask to be furnished with addresses of shippers of Canadian provisions—butter, cheese, eggs, etc.

479. An enquiry is received from a firm in Scotland for the names of Canadian wood pulp exporters.

480. Enquiry has been received from a Swedish correspondent respecting the export of coal from Canada.

481. A commission merchant in Copenhagen asks to be placed in touch with Canadian business houses desiring representation in Denmark and Scandinavia.

482. A Scotch firm of jute manufacturers who are in a position to export direct from their branch in India, desire to correspond with Canadian importers of these goods.

483. A firm of agents in London are desirous of representing Canadian manufacturers, on commission, for such goods as there is a market for in England and in Australia and South Africa, etc.

ARGENTINA.—Both the import and export trade of the Argentine Republic fell off somewhat for the year 1900 as compared with the previous year. Imports amounted to \$113,485,069, a decrease of \$3,365,602, and exports to \$154,600,412, a decrease of \$30,317,119. Germany, Holland, Spain and Paraguay alone increased their sales to this country largely, most of the others showing more or less loss. Imports from the United States were \$13,438,529, a loss of \$2,028,317. This was mainly due to decreased shipments of agricultural machinery.

By a recently promulgated decree the Brazilian Government confers a lower tariff on flour imported into that republic which is packed in barrels than the one which is shipped in bags. This proceeding of the Brazilian authorities means practically the exclusion of all Argentine flour—as it now comes under the latter category—in favor of flour from the United States, the same being always packed in wooden barrels. To be ousted of a flourishing export trade—the Argentine having shipped for years large quantities of flour annually to the Brazilian markets—naturally does not meet with the approbation of Argentinian millers and exporters. In order to counteract this obstructive measure on the part of Brazil the Buenos Ayres Herald advises Argentine millers to have their flour packed into barrels which, if the loss from breakage and the deterioration of flour in bags were taken into consideration, would not cost them any more. There was plenty of poplar wood to be got in the country which would answer the purpose admirably well. The Argentine, one of the chief granaries of the world, we consider, should offer an almost unlimited field for the enterprise of British manufacturers of barrel machinery.—Commercial Intelligence.

The commercial attache to the German consulate-general at Buenos Ayres reports that barbed wire for fences of the "estancias" and iron sheeting for roofs and walls of houses are largely imported

into the Argentine Republic; the latter, suitably packed in wooden frames, often comprising the main portion of a vessel's cargo. Other articles mentioned by the attache as finding good sales in the Argentine, are remedies against the prevalent sheep itch (sarna), stoves, and preserved food.

According to statistics published in the Review of the River Plate, the quantities and values of the imports of electrical machinery, appliances and goods into Argentina during the year 1900, were as in the following table:

	Value.
Telephone apparatus.....	\$4,576
Dynamos.....	80,025
Electrical material.....	236,155
Cable and wire.....	375,225
Fittings (inclusive of those for gas and kerosene).....	114,654
Electric bells.....	3,048
Metres.....	18,948
Phonographs and gramophones.....	8,071
Ventilators.....	13,059
Insulators, china and porcelain.....	16,869
Glass insulators.....	541
Arc lamp carbons.....	21,622
Arc lamps.....	5,826
Incandescent lamps.....	95,375
Telephone material.....	20,817
Telegraph.....	24,720

BRAZIL.—Consul Girimondi, of Santos, says that cash registers and adding machines are practically unknown in that section of Brazil, and should meet with a ready sale, if properly introduced by agents speaking the language of the country. The consul also believes there is a good opening for photographic apparatus and supplies, and suggests the introduction of up-to-date postal scales to replace the crude articles in use at the present times. Even Government offices, he thinks, might be persuaded to adopt a novelty in this line. Railway companies should also be approached.

French pianos are well introduced here, but these instruments have of late deteriorated in their quality. After two or

Do You Fear

FIRE

The International Head.



In Your
FACTORY?

MILL?

STORE?

IF SO have your buildings equipped with

The Best.

Automatic Sprinklers

And save from 30 to 70 per cent. on your insurance rates. Insurance companies approve of our system and devices.

Write us for particulars.

W. J. McGUIRE & CO.,
TORONTO and MONTREAL.

Dominion Oil Cloth Co.
(LIMITED)

Manufacturers of....

OIL-CLOTHS 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 Sts.
MONTREAL, Que.

Protection Against Fire

Apart from the protection it affords, it pays as an investment to use an

AUTOMATIC SPRINKLER SYSTEM

From 40 to 70 per cent. of cost of insurance saved by putting in an

**AUTOMATIC
SPRINKLER
EQUIPMENT**

No charge for estimating.
Endorsed by Insurance Companies



The General Fire Equipment Co.
72 Queen Street East,
TORONTO.

three years' use their sound becomes unbearably metallic. Nor is sufficient regard paid to the hot and moist climate. Still, for want of better instruments, and because the French article has been well advertised, they continue to meet with ready sale at high prices. Last year a few pianos of Bohemian (Austrian) manufacture were introduced in Curityba, the capital of the State of Parana, and have given great satisfaction. One of the best-selling pianos is the short square, called "Mignon," 175 centimeters long, 7½ oc-

tave, which sold at the factory for 400 Austrian florins (about \$160 in United States currency). Pianos which are more popular and most in use cost at the factory about 300 florins (\$120). These instruments must be ornamentally and highly finished, have cast-steel frames and light mechanism, which, however, must be impervious to moisture.—United States Consular Report.

The Prefect of Minas Geraes has authorized a permanent exhibition of all the manufactured, agricultural and mining

products of that State, to be held in the State capital. Other countries will be also allowed to exhibit, and will be allotted space free of charge on which to erect their buildings. Although the date is not definitely fixed, the opening of this exhibition will probably take place in April, 1902.

McLachlan Electric & Gasoline Motor Co., LIMITED.
94 ADELAIDE ST. WEST. TORONTO
MAKE Gas or Gasoline Engines from 1 h.p. to 6 h.p.
 Stationary or Marine and Electric Motors from ½ h.p. up.
 Motor Carriages for Pleasure or Business. One cent spent for a postal will bring you any information you wish.

BLACK IS BLACK

Extra O is our best grade. We cannot make anything better than the best. You cannot buy anything better, try where you will. When you buy, see that our Trade Mark and grade are stamped on it and quality will be there.

D. K. McLAREN

Mfr. "GENUINE OAK" BELTING

88 Bay St., TORONTO

Factory, MONTREAL

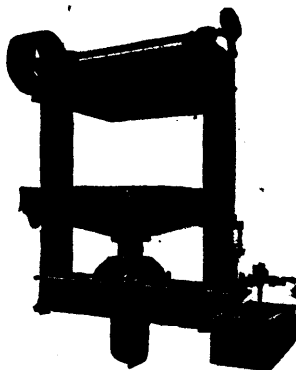
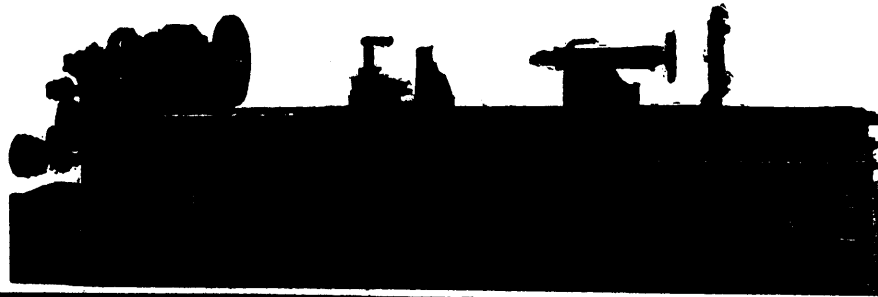
The London Machine Tool Co., LONDON, ONT.

LATHES,
PLANERS,
DRILLS,
SHAPERS,

MANUFACTURERS OF

HAMMERS,
BULL DOZER,
PUNCHES,
PRESSES.

General Machinery



PRESSES

HYDRAULIC, POWER
and FILTER PRESSES

William R. Perrin & Company

TORONTO, ONT.

BRITISH GUIANA. — The following articles will henceforth be admitted free of duty: (a) All railway and power plant, motors and their parts, controllers and their parts, rheostats and rails and their appendages for electric street lighting. (b) Any machinery, ironwork, or goods as may be approved by the Governor-in-Council, imported by the Mayor and Town Council of Georgetown or of New Amsterdam exclusively for their own use. Should, however, the Reciprocal Trade Convention between Great Britain and the United States of America, in respect to British Guiana, come into operation, the specific rates of duty at present in force on goods imported from countries not entitled to preferential treatment would be subject to an additional duty of 16½ per cent.; and if the goods should be imported from countries entitled to the benefit of the most-favored-nation treatment, preferential rates of duty would in that case be imposed on certain articles.

BULGARIA.—Iron stoves for Bulgaria are, says Handels Museum, mostly imported from Belgium, small quantities also from Great Britain and Germany. The latter which formerly almost had the monopoly of this trade, has been ousted by Belgium, which has known how to meet the taste of the buyers by its simple and most praiseworthy stoves. A St. Petersburg Journal calls attention to the direct purchases of agricultural implements and machinery abroad by the Zemstvo's. These agricultural associations appoint special representatives and send travellers abroad, who make wholesale purchases of machinery. It is, therefore, advisable that manufacturers should place themselves in direct communication with the Russian Zemstvo's. As to the Russian importation of tools, Germany supplies cheap and fairly good articles, whilst the best kinds are imported from Great Britain and France. Pitchforks, shovels and spades are imported in small quantities at present. German Consular reports draw attention to the competition of the Americans, who have already put new practical tools upon the market, which are well conditioned, evenly made and comparatively cheap. In Turkey also, America has appeared as a competitor; it supplies agricultural and household machinery; viz.: ploughs, meatmincing machines, small presses, etc., but above all tools; the latter are, as the German Consul at Constantinople writes, uniformly good and cheap, being manufactured, in accordance with American custom, with regard to the smallest detail for practical use. Besides the delivery is regular and reliable.

GERMANY.—In a recent German appropriation bill, provision has been made for subventions for 125 schools for the Ger-

man education of German children in foreign countries. For a school at Constantinople, \$7,140 is allowed; for three

Bellhouse, Dillon & Co.

30 ST. FRANCOIS-XAVIER ST.
MONTREAL

DYESTUFFS, CHEMICALS AND EXTRACTS

SOLE AGENTS IN CANADA FOR

KUTTROFF, PICKHARDT & CO'S
ANILINE and ALIZARINE COLORS

TORONTO OFFICE:

JAS. HAYWOOD, Agent, 30 Wellington St. E.

NEW YORK OFFICE:

DILLON & CO., 20 Cedar Street.



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

R. BARBER, Parliament Buildings, Toronto.
JAS. R. BROWN, Parliament Buildings, Toronto.
MARGARET CARLYLE, Parliament Buildings, Toronto.
O. A. ROCQUE, Orleans, Ont.

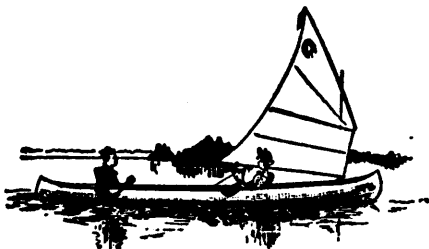
Persons having business with any of the Inspectors will find them at the above address.

JOHN DRYDEN, Minister of Agriculture.

MILL TELEPHONES

F. O. PLUMMER
Boston, Mass., U.S.A.

THE CANADIAN CANOE CO., Limited,
PETERBOROUGH, ONT.



Manufacturers of CANOES and SKIFFS
BEST QUALITY LOWEST PRICES
Send for Catalogue J.

PATENTS PROVISIONAL PATENTS, Caveats, Etc.
H. DIXON,
REGISTERED ATTORNEY,
MECHANICAL EXPERT, ETC.
124 VICTORIA STREET, TORONTO, ONT.

schools at Buenos Ayres, \$4,284; for one at Galatz, \$2,665; and \$2,380 for a high burghal school, and \$238 for a deacon school at Antwerp. A high school for girls at Brussels also receives \$2,380. Four schools at Bucharest together receive \$2,380. A school at Pretoria is granted \$1,428, and one at Johannesburg, \$2,522.80. There are twenty-nine German schools in Brazil, twelve in China, twelve in the British colonies, twelve in Roumania, eleven in Egypt, etc.

The lead-pencil industry in Germany is at present suffering from American competition. It is alleged that our success in this branch of industry is mostly due to the perfection of the machinery. Another important point is the fact that we have the best cedar wood, which is particularly suitable for the manufacture of lead pencils; while the Germans are compelled to import it and cannot get it in such good quality. Numerous trials have been made to find another material which could take the place of wood in the manufacture of lead pencils; metal tubes, coverings made from rolled compressed paper, etc., have been used, but none has met with success.

ITALY.—An Italian Royal Decree grants temporary free importation of English buffalo leather for use in the manufacture, for export, of articles of military equipment, subject to the following regulations:—The importation must be effected through a Custom House of the first class; the quantity of leather allowed to be imported at one time is not to be less than fifty kilogrammes; and the term assigned for re-exportation in a manufactured condition is not to exceed one year. The "temporary admission" obligations are to be discharged by the exportation of a weight of leather wares equal to that of the leather imported after deducting the weight of materials other than imported leather which enter into the composition of the articles. No fine will be inflicted in cases where the weight of the leather exported is less than that of the leather temporarily imported, provided the difference does not exceed twenty per cent., but import duty will be charged on the quantity found to be deficient.

An international exhibition of modern decorative art will be held at Turin next year between April and November, and will include all artistic embellishments for streets, and for the interior and exterior of houses. It will also include an infinite variety of picturesque decorations for houses such as doors, windows, earthenware, glassware, mosaics, cloths, carpets, table cloths, laces, embroidery, stained paper, skins, matting, metals cast, forged and chased, repousse work and weapons, apparatus for lighting and heating, furniture, gold and silver wares, medallions, seals, engravings, architectural modillions, monograms, visiting cards, playing cards, bonds and bank notes, postage stamps, bindings, furnished rooms, plans of buildings, streets, squares, gardens and porticoes, fountains, kiosks, cupolas, flags, public seals, shop windows, letter boxes, clocks, and of everything that can furnish an example of aesthetical taste as applied to familiar objects. It is

Electric Light

We are anxious to figure on your work, whether a new plant or extension of present one is required.

We will install the complete plant, including engine, dynamo and wiring; or if you wish it, we will figure on the wiring only.

Let us hear from you when ready.

R. A. L. GRAY & CO.

85 YORK ST., TORONTO.

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

CARRIAGE, WAGGON, AND SLEIGH WOOD WORK.

It's the business of the E. Desbarats Advertising Agency, Montreal, to plan advertising campaigns and carry them out in every detail. Their many customers like their system.

Highest Gold Paris



Award Medal 1900

SOUTH AFRICA.

Messrs. Kelly's Directories Limited, (London, Eng.), beg to announce that a new edition of the **General Directory of South Africa** is now in course of preparation, and desire to draw the attention of Canadian Manufacturers to the importance of the work as an advertising medium for making their goods known to buyers in South Africa. Being the Standard Work it reaches the very people whom manufacturers, desirous of opening up or extending their export trade with South Africa, would desire to get in touch with—**THE ACTUAL BUYERS THEMSELVES.**

New Editions of the following now being prepared:

OFFICIAL DIRECTORY OF QUEENSLAND, Australia
" " VICTORIA, "
" " NEW SOUTH WALES
" " NEW ZEALAND

DIRECTORY OF BUILDING TRADES, Great Britain.
LAXTON'S BUILDERS' PRICE BOOK (85th Edition)

For further particulars, charges for advertisements, etc., apply

Dominion Branch, Kelly's Directories, Ltd.
71 Victoria St., Toronto, Ont.

W. P. Dent, Manager. Head Office, London, Eng.
Branches:

Cape Town; Melbourne; Sydney; Adelaide; Dunedin, (N.Z.), Etc.

LISTS OF ADDRESSES FURNISHED FOR ALL TRADES—ALL COUNTRIES

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

not the costly, luxurious articles that it is proposed especially to gather together, but types of decoration suitable for every house and adapted to the means of every purse. Reproductions of antique styles will be excluded, as also will copies of

historical objects and the productions of arts and manufactures not inspired by an artistic taste. The exhibition must have a modern character without excluding, however, the productions or the elements of antique art adapted in a new manner

to modern needs. Exhibitors are not to pay for the space occupied by them, but only a small registration fee.

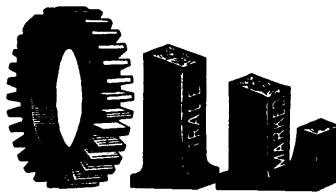
"Capitol" Cylinder

"RENOWN" ENGINE

"ATLANTIC" RED

RELIABLE WELL-KNOWN BRAND

ALL ORDERS PROMPTLY FILLED



THE QUEEN CITY OIL CO. LIMITED
SAMUEL ROGERS, Pres. TORONTO, Canada.

THE EUGENE F. PHILLIPS ELECTRICAL WORKS

MONTREAL, CANADA (LIMITED)

BARE and INSULATED ELECTRIC WIRE

ELECTRIC LIGHT LINE WIRE,
INCANDESCENT AND FLEXIBLE CORDS,

RAILWAY FEEDER and TROLLEY WIRE

RUBBER-COVERED, MAGNET, OFFICE AND
ANNUNCIATOR WIRES.

CABLES FOR AERIAL and UNDERGROUND USE.

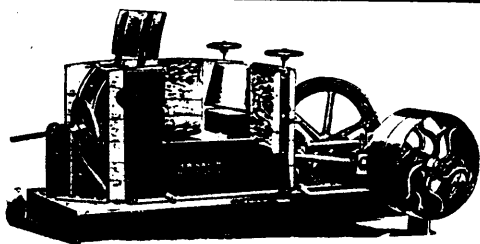
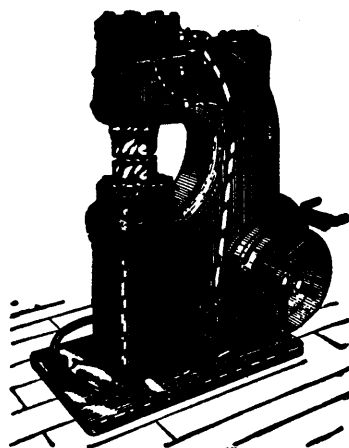
The Yeakley Vacuum Hammer.

Canadian Patent November 9, 1897.

is now Manufactured and for Sale by
the undersigned Sole Proprietors
of the Canadian Patent:

George Brush

EAGLE FOUNDRY,
MONTREAL.



H. W. KARCH

HESPELER, ONT.

IRON FOUNDER and MACHINIST

Manufacturer of

WOOLEN MACHINERY,

Rotary Fulling Mills, Kicker Fulling Mills, Soaping Machines,
Cloth Washers, Wool and Waste Dusters, Rag Dusters, Drum Spool Winders
Reels, Spooling and Doubling Machines, Ring Twisters, Card Creels
Dead Spindle Spooler for Warp or Dresser Spools,
Patent Double-Acting Gig Dyeing Machines.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

QUEENSLAND.—In spite of the high duty (twenty-five per cent. ad valorem) the imports of preserved vegetables amounted last year to 213,500 frs. According to the official statistics, Great Britain sent 83,925 frs., France 80,050 frs., and Belgium 5,400 frs. worth. Some years ago a large trade was done in dried and mixed vegetables, which were sold in seven and fourteen pound tins. These have, however, now been supplanted by preserved vegetables put up in one pound or two pound tins. At present the consignment consist principally of green peas, French beans, tomatoes, and carrots, in one pound tins, and two pound tins of asparagus. These vegetables are sold respectively at from 4s. 3d. to 4s. 6d., 5s. 6d. to 6s., 6s. to 6s. 6d., 8s. to 8s. 6d., and 9s. 6d. to 10s. per dozen tins. Preserved potatoes—"Edwards and "Muckart" brand—are also imported in 7, 14, 28, and 56 lb. tins; and sell at from 48s. to 56s. per cwt. of 50½ kilos.—Belgian Official Report from Melbourne.

SOUTH AFRICA.—South Africa is a country of immense distances, and it is interesting, for the purpose of realizing its area, to recall the great extent of its railway systems. In the Cape Colony the open mileage of the Cape Government Railways is about 2,000 miles, with 360 miles under construction, and 350 miles of privately owned lines. In Natal there are upwards of 600 miles open, and short extensions, totaling sixty miles, on the north and south coasts, and between Dundee and Vryheid, under construction. In the Transvaal Colony there are 890 miles open to traffic, and 200 miles under construction, exclusive of the Vereeniging-Rand line. The Orange River Colony possesses about 400 miles of open mileage, and about 100 miles under construction. Rhodesia, although only a decade old, already possesses about 1,600 miles of open railway, and its three main sections under construction—the Bulawayo-Zambesi, Bulawayo-Salisbury, and Bulawayo-Tuli—aggregate about 600 miles. Altogether the open mileage in South Africa amounts to upwards of 5,900 miles, with at least 2,000 miles under construction. The figures are exclusive of the projected extensions for which funds have not yet been provided.—British and South African Export Gazette.

There is now a large demand for boiler tubes and wire ropes for the Witwatersrand mines. The sizes of boiler tubes most in demand are as follows:—Lengths, 8½ ft., 10ft., 12 ft., 14 ft., 16½ ft.; diameters, 3½ ins., 3¾ ins., 3¾ or 4 ins., 4 ins., 4 ins. The latter dimensions are those most in demand. In wire ropes the sizes most current are lengths of 2,000, 2,500, 3,000 ft. and more, with a diameter of 1¼ in., which is most in use. Enormous stocks of all these articles are now lying in the coast ports awaiting a favorable opportunity for sending them to the Rand.—Belgian Official Report from Johannesburg.

THE BOURNE-FULLER CO.
IRON, STEEL
AND
PIG IRON

CLEVELAND, OHIO, U.S.A.

Shipping Tags. Invoice Tags.

DUPLICATING BOOKS

HEAD OFFICE:

THE MORTON COMPANY, Limited

(Successors to Automatic Check Book Co.)

46 & 48 Richmond St. W., Toronto.

We are the largest manufacturers of shipping Tags in Canada. We make all the standard sizes and a great variety of special sizes.

Branch Office: 260 ST. JAMES ST., MONTREAL.

TALISMANIC BELT DRESSINGS

WILL INCREASE YOUR POWER



"What We're On We'll Cling To."

TALISMANIC BELT CLINCH—For Leather Belts
TALISMANIC RUBBER FACING—For Rubber Belts
TALISMANIC ROPE PRESERVER

JOHN W. BOWDEN & CO.

330 Clinton Street. Toronto, Ont.

FOR SALE

Large **FOUR** Brick STOREY

FACTORY

In Toronto Junction, on line of C.P.R. Steam Heating.

GEO. F. R. HARRIS

18 TORONTO ST.

Telephone Main 3548.

THE PATENT CLOTHBOARD CO. OF PARRY SOUND

Limited

Clothboards, Lapping, Rolling and Bailing Boards
Veneers of Ash, Birch, Bass and Elm, all thicknesses
Cheese Box Bands and Rims
Box Shooks (Small and Light) also Crating Material

PARRY SOUND, ONT., CANADA.

Advertise in Canadian Manufacturer.

Send for rates.

UNITED KINGDOM.—According to returns of the Board of Trade, the quantity and value of pig-iron and unwrought steel registered as imported into the United Kingdom from the United States during each of the months of January, February and March, 1900 and 1901, were as follows:—

	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
Jan ... tons	5,742	£22,898	12,847	£48,297
Feb ... "	2,356	8,905	8,766	28,241
March ... "	4,688	18,101	2,910	11,577
Year 1900, tons	94,282	£350,649		
" 1899, "	80,988	219,715		
" 1898, "	76,356	180,614		

UNWROUGHT STEEL.

	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
Jan ... tons	409	£3,988	16,647	£98,927
Feb ... "	369	5,190	16,405	89,817
March ... "	585	4,991	5,804	34,542
Year 1900, tons	157,628	£1,011,851		
" 1899, "	59,375	288,706		
" 1898, "	29,374	158,689		

NICARAGUA.—The United States Government has received information of the establishment of a "National Museum," devoted to the development of industry, commerce and science, with a section devoted to foreign commerce and industry. In order to establish better commercial relations between Europe, America and Nicaragua, a large hall has been provided in Managua, the capital of Nicaragua, for the public display of the products of foreign lands. The director of this museum invites the Nicaraguan Consuls to solicit from the manufacturers and producers within their consulates samples (not too large) of goods and articles of their manufacture—only such as will be of interest, and of commercial value to that country being desired. Articles of this description are to be exhibited at all times free of cost, and it is anticipated that a permanent exhibition of this kind will prove to the benefit of both exhibitors and visitors. Where a manufacturer's products are bulky, such as machinery, heavy farming or mining implements, etc., it is requested that only small working models, or a set of representative photographs be submitted. All exhibits should be accompanied by a lucid description or by instructions how to operate them, their advantages, their technical or commercial names, together with catalogue, price lists, terms, commissions allowed to agents—and especially the style of packing for export. This latter point is of great importance to the Nicaraguans, as the Custom duties of that country are based on the gross weights. All consignments should be packed as lightly as is consistent with safety.

JAPAN.—The foreign trade of Japan for the year 1900, according to returns recently issued by the Japanese Department of Finance, shows a marked increase in imports, and a considerable falling off in exports, as compared with the previous year. Imports for 1900 were 287,261,000 yen (the Japanese yen is valued at 49.8 cents), as compared with 220,401,000 for

KERR'S

"COPPER-ALLOY"

DISC VALVES

ARE THE BEST

—FOR—

HIGH STEAM

ASK YOUR DEALER

FOR THEM.

CATALOGUE SENT

ON APPLICATION.

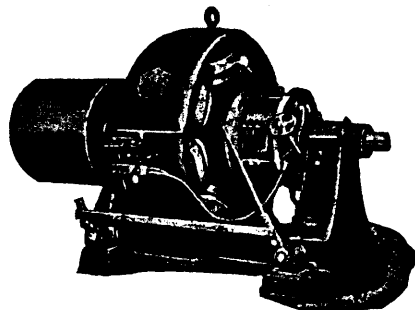
THE KERR ENGINE CO.

LIMITED

WALKERVILLE, - ONTARIO

The Jones & Moore
ELECTRIC CO.

ELECTRICAL CONTRACTORS



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

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

20 and 22 ADELAIDE W., TORONTO.

CHARLES F. CLARK, President. **JARED CRITTENDEN, Treasurer.**

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.

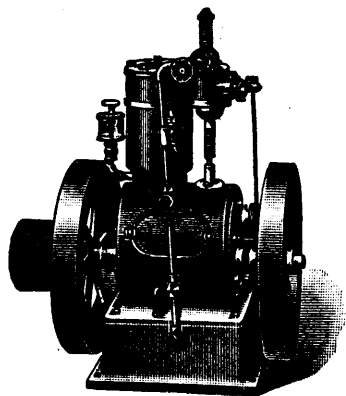
OFFICES IN CANADA:

- Hallifax, N.S.
- London, Ont.
- Ottawa, Ont.
- St. John, N.B.
- Vancouver, B.C.
- Winnipeg, Man.
- Hamilton, Ont.
- Montreal, Que.
- Quebec, Que.
- Toronto, Ont.
- Victoria, B.C.

THOMAS C. IRVING, Gen'l Manager Western Canada, TORONTO.

JOHN A. FULTON, Gen'l Manager Eastern Canada, MONTREAL.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



THE SYLVESTER GAS and GASOLINE ENGINES

Are beyond doubt the most complete and economical engine in the market. They are compact and perfectly under control, easily managed, get up speed immediately, thoroughly reliable, and where intermittent power is required they are just the thing.

They are built in sizes from 1 to 20 h.p., upright and horizontal, for pleasure yachts, boats, shops, farm work and any purpose where light power is required. Tell us to what use you want to put the engine, and what power you require, and we will name you prices.

SEND FOR
CATALOGUE.

SYLVESTER BROS. MFG. CO., Lindsay, Ont.

Toronto Elevator Co.

MILLWRIGHTS AND ELEVATOR SPECIALISTS

Estimates Given and Losses
Adjusted

OUT-OF-TOWN WORK PROMPTLY ATTENDED TO.

PHONE **JOHN H. SHALES,**
1535 Manager

AGENTS FOR....

Miller Bros. & Toms,
Elevators
Leitch & Turnbull Co.
Limited, Elevators.
Greening's Wire Ropes.

74 ADELAIDE ST. WEST
TORONTO

ALEX. GARTSHORE, President. J. G. ALLAN, Sec.-Treas. JAS. THOMSON, Vice-Pres. and Gen. Mgr.

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.

PACKARD

ELECTRIC
COMPANY
LIMITED

MAKERS OF

LAMPS AND TRANSFORMERS

SOLE AGENTS FOR CANADA

SCHIEFFER RECORDING WATT METERS

D. & W. ENCLOSED FUSES

ST. CATHARINES, - CANADA

1899, an increase of nearly 67,000,000 yen, or about \$33,500,000. Exports for 1900 were 204,430,000 yen, and for 1899, 214,930,000, a decrease of 9,500,000 yen, or nearly \$4,750,000. The United States supplies Japan with nearly half of its imports of raw cotton, sending shipments for 1900 to the value of 27,010,000 yen out of a total importation of 59,472,000. By far the greater part of the imports of cotton manufactures came from Great Britain, that country sending nearly ninety-five per cent. of the total imports, which amounted to fully 25,000,000 yen. Raw wool imports come chiefly from Germany, Belgium and Australia. France sends about sixty-four per cent. of the imports of "mousseline de laine." England most of the woolen cloths, and Germany most of the flannels. Switzerland also ships considerable quantities of woolen manufactures, but American trade in this line is insignificant. In imports of machinery and engines Great Britain comes first, with the United States second and Germany third, the totals being 4,095,000 yen, 2,645,000 and 1,534,000 respectively. England sent locomotives to Japan in 1900 to the value of 1,819,000 yen, an increase over the preceding year, while American exports were only 480,000 yen, a decrease of nearly fifty per cent. from 1899. In steel rails the United States made a remarkable gain, from 230,000 yen in 1899 to 3,161,000 in 1900. Imports of steel rails from the United Kingdom were 906,000 yen, from Germany, 562,000 and from Belgium 121,000. In iron nails this country also enjoyed much the greater share of the import trade, its sales amounting to 1,423,000 yen out of a total of 2,181,000. In bar and rod iron Belgium held the leading place, and in other imports of iron and steel Great Britain was first, with Belgium second and Germany third. Imports of paper in 1900 came largely from Great Britain and Austria. Leather came for the most part from the United States, while this country sent kerosene to the value of 10,775,000 yen out of a total importation of 14,163,000. Other leading imports to which Americans contributed materially, were window glass, flour and oil cake.—Dun's Review.

The Government of Australia is inviting tenders for a hundred thousand tons of steel rails to be manufactured within four years in New South Wales. This will involve the establishing of iron works, and it is stipulated that the price is not to exceed the cost of such rails in America and Great Britain, plus the freight.

The Northey Mfg. Co., Toronto, have received an order from the Montreal Water & Power Co., for what will be, it is stated, the largest electrical single pumping engine in Canada. The contract price is \$27,000. The total weight is about 400,000 pounds or 200 tons, the engine will be forty feet long and twenty wide; one of the gear wheels measuring thirty feet in diameter. The engine will throw a column of water 400 feet high and will have a capacity of 5,000,000 gallons every twenty-four hours.

Advertise in The Canadian Manufacturer.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

HAVE YOU HEARD
 ABOUT OUR
STEEL POINTED
CORE DRILL?
 CUTS ANY ROCK. NO DIAMONDS.
Davis Galyx Drill Co.
 Canadian Rand Drill Co.
 Agents,
 18 VICTORIA SQ.
MONTREAL.

METALS, MACHINERY, HARD-WARE, ETC.

It is reported from Cincinnati that very recent transactions in Southern pig iron, were on a basis of \$11.25 for No. 2 at Birmingham, Ala., a decline of fifty cents from previous ruling.

The ruling price in Pittsburgh, Pa., for steel billets is \$24.

It is reported that a German steel rail mill has accepted an order for supplying 7,000 tons of rails to a Canadian railway, negotiations now being in progress for a further supply of 10,000 tons.

The Iron Age says, that it is noteworthy that the European makers of rails seem at last to have become convinced that the strong position of the United States is not a mere sham, but is based on an enormous consumption. The Germans have stiffened considerably of late, and are naming prices in the English market which are turning the business to the British works.

Generally speaking, the United States export trade is very dull. It has practically ceased in pig iron, steel billets and bars and other lines, although it does continue in structural material. In the latter the rush of work is over for the present, but it has left the shops crowded with work for many months to come.

A number of machinery concerns in the United States have recently gone into the manufacture of grain elevator machinery, which just now is having a great demand. The demand for molding machinery continues good, as also that for core machines. The factories which are engaged in the manufacture of general elevating, conveying and power transmitting machinery are not as busy as they ought to be this time of the year. The season for that class of machinery and appliances is delayed, but the prospects are good, and a heavy trade is expected.

Dealers in gas and gasoline engines concur in the report that there has never been a better trade in this line. The activity, however, is inducing an increasing number of people to engage in the business, causing greater competition. The demand seems to be better for medium sized and large engines than for small ones. It is now a common occurrence to sell a 160 or 180 horse-power engine, whereas a few years ago the same buyers would have scouted the proposition to rely on anything but steam to develop such power.—The Iron Age.

The season for electrical mining machinery has not yet opened, but the factories are fairly busy. Most of the manufacturers are accumulating stock, preparing for a strong demand. Electrical railway supplies are readily sold, and the demand is increasing to such an extent that one of the largest electrical manufacturers in the United States, located in Chicago, has determined to add that branch of business to those now being conducted.

A census bulletin on the coke industry of the United States, based on its condition in the year 1899, shows that a rapid increase in production has occurred since 1880, the first year that the business re-



**Tenders for the Construction of a
 Twin Screw Steel Steamer.**

SEALED TENDERS

addressed to the undersigned and endorsed "Tender for Steel Steamer," will be received by the Department of Marine and Fisheries until 4 p.m. of

Saturday, 1st June, 1901,

for the construction of a

Twin Screw Steel Steamer

of the following dimensions:

LENGTH.....	160 feet.
BREADTH, Moulded.....	30 "
DEPTH, Moulded.....	13 "

The contract to include hull, masts, rigging, engines, boilers and all other machinery and equipments complete and ready for sea.

Plans and specifications can be seen in this Department at Ottawa, at the Halifax, St. John and Quebec Agencies of this Department, and at the Custom Houses at Montreal, Toronto, Hamilton and Kingston.

Each tender must be accompanied by at least the names of two good and sufficient sureties and an accepted cheque for ten per cent. of the amount of the tender, which sum will be forfeited should the tender be accepted and the tenderer refuse to enter into a contract and bond.

The cheque must be certified good until the contract and bond are duly executed.

The Department does not bind itself to accept the lowest or any tender.

F. GOURDEAU,
 Deputy Minister of Marine and Fisheries,
 Department of Marine and Fisheries,
 Ottawa, 12th April, 1901.

Toronto Woolen Machinery Co.

We now offer as a going concern the property known as

The Vienna Woolen Mills

Consisting of the following machinery:—

- One set 48 in. Platt Cards, all clothed.
- One 264 Spindle Bancroft Mule.
- One 24 in. G. & Mc. Picker. One Cone Duster.
- One Fraser's Card Grinder. One Yarn Spooler.
- One 60 Spindle Fly Twister.
- One 108 in. Crompton Cone Loom, 4x4 box, 4 harness.
- Two 92 in. Falsely " " 4x4 " 24 "
- One 48 in. Gilbert " " 3x1 " 4 "
- One 48 in. " " 1x1 " 4 "
- One Broad Warper and Beamer.
- One Bobbin Winder.
- Two Broad Up and Down Gigs.
- One Rotary Fulling Mill. One Cloth Washer.
- One Yarn Washer.

With Spools, Bobbins, Tools, etc., etc.

BUILDING No. 1.

Two and a-half Storey Frame, with stone foundation, 30x60 feet.

BUILDING No. 2.

Boiler and Picker House—One Storey Brick, 25x64.

A never-failing Water Power, all heat by steam and in first-class order. Good local trade has always been done.

The above can be bought cheap and on easy terms. Apply

TORONTO WOOLEN MACHINERY CO.
118 DUKE ST., TORONTO.

PATENTS

Home and Foreign Patents Procured at
 Lowest Rates

Patent Rights Sold on Commission.
 Prompt Attention guaranteed to all business entrusted. Write for full particulars.
THE TORONTO PATENT AGENCY, Limited,
 Confederation Life Bldg., Toronto, Can.

Book, Mattress and Broom Wire

High Grade, Double Turned
 —Size and Temper Guaranteed
 —Fine Charcoal Annealed Brush Wire—Tinned Wire of all kinds.
 Samples and quotations on application.

PEERLESS WIRE CO.
 Hamilton, Ont.

MARINE Engines

FROM 1 TO 200 H.P.

HYDRAULIC RAMS

—AND—

FORCE PUMPS**STEAM and HAND POWER CAPSTANS**

AND STEERING GEARS.

Sole Agents in Canada for the Hoff-
man Detachable Screen Door Hinge
and Bronzite Anti-Friction metal.

A TRIAL ORDER IS SOLICITED

Raneys Specialty Mfg. Co.

33 PRINCESS STREET

KINGSTON, ONT.

Advertise in The Canadian Manufacturer

The Wm. Hamilton Mfg. Co.

Peterboro, Ont., Can.

Acting as the Patentee's Licensee

Are prepared to manufacture
and supply**SAVERY'S PATENT
SHAKE FRAMES**

—FOR—

Fourdrinier Paper Machines,

AS DESCRIBED IN

Canadian Patent No. 57,819.

—ALSO—

**SAVERY'S PATENT
COMBINED
DRYER STEAM JOINT**

AND

SAFETY VALVE

AS DESCRIBED IN

CANADIAN PATENT No. 68,098.

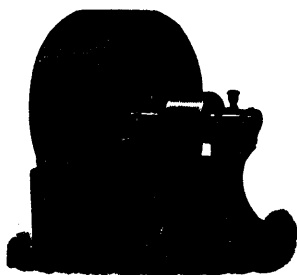
ABOUT 2,000 NOW IN USE.

ceived attention from the census officials. Thus, in 1880 the value of the country's output of coke amounted to \$15,250, and in 1890 the production was worth \$16,498,345, while in 1899 the total of \$35,585,445 had been attained.

The bulletin says that the present tendency toward large industries under one management is illustrated in the statistics of coke production in 1899. The total number of tons of coke produced has increased ninety-six per cent. and the value of all products has increased 115 per cent., while the number of active establishments reporting for 1899 was only twenty-three, or ten per cent. more than the number reporting for 1889. The amount of capital invested in the industry in 1899 was \$36,502,679, as compared with \$17,462,729 in 1889 and \$4,769,858 in 1880. The increase of capital in 1899 over 1889 was \$19,039,950, or 109 per cent. As compared with 1880, the capital invested in 1899 increased 665 per cent.

The world's copper markets have during the past few years presented many features which have upset the views held in the trade in the past. The economic doctrine that an article cannot long maintain a position in price far above what might be termed a normal figure has been thoroughly exploded. The normal price is supposed to be that at which the article can be produced plus a good profit to the producer. The argument is fallacious, that a very rapid development of output must follow a price yielding exceptionally large profits. Mining work and metallurgical plant in an often remote region cannot be expanded over night. New enterprises require elaborate and costly preparations involving much delay, particularly since all really important new deposits are low grade, which cannot be operated successfully except on a large scale. The experience of the past few years has proven that the production of any metal, and notably that of copper, cannot be rushed, and that it is quite possible that consumption may for a long time warrant prices which yield the miners extraordinary profits. Experienced men in the copper mining industry do not expect this windfall to continue indefinitely.

Let us turn first to the recent records of production, which are gathered in convenient form by the well-known firm of Henry R. Merton & Co., of London. For many years they have published annually a statement of the

**PLANING MILL STEEL PLATE
EXHAUST FANS**For removal of refuse from Wood-Working
Machinery.**CYCLONE DUST
SEPARATORS**Made of Galvanized Steel. All Sizes for Fans
from 30 inches and up.

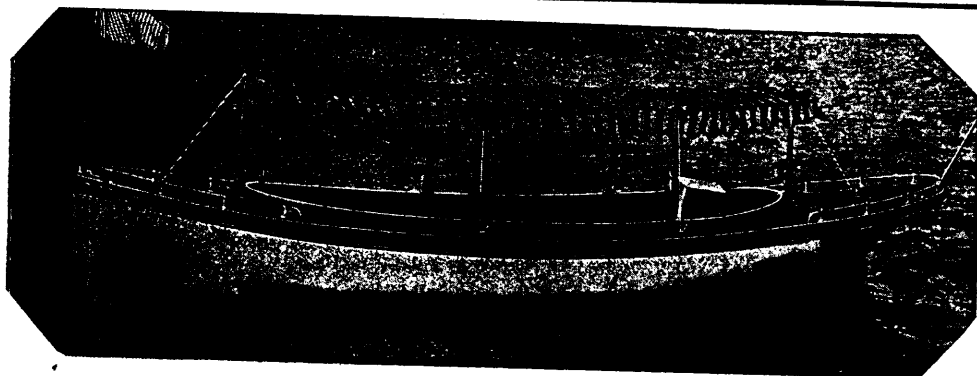
Estimates cheerfully given for Complete Installations of Fans,
Piping, Gates, Hoods and Separators, with or without
Shavings Feed Attachment to Boiler Fires.

**McEACHREN HEATING AND VENTILATING CO.,
GALT, - ONT.**

WE MAKE

Forge, Cupola and Disc Fans, Electric Fans, Heaters and Fans for
Lumber and Wool Drying, etc., and for Heating of Factories.

STEAM TRAPS, OIL SEPARATORS, ETC.

**GASOLINE
and STEAM****Launches**THE LATEST STYLE
ASK FOR PRICES**Dean's Canoes**ARE KNOWN
THE WORLD
OVER.

Send for Catalogue

WALTER DEAN, - Toronto

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

A. C. NEFF
CHARTERED ACCOUNTANT
 Room 500 McKinnon Bldg.,
 Tel. 1330. — TORONTO.
 Audits and Investigations a Specialty.

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.

Chemistry of the Arts and
Manufacturers.

DR. GEO. ARCHBOLD,

A.M., Ph.D.,

CONSULTING CHEMIST,

(Formerly Chief Chemist, Ordnance Dept.,
 U.S. Navy Yard, Washington, D.C.)

Gives expert technical advice in all matters relating to chemical arts and manufactures. Thirty years practical experience in Great Britain, Europe and the United States.

P. O. BOX 283, - PRESCOTT, ONT.

JOHN J. GARTSHORE,

83 Front St. West, Toronto.

RAILWAY, TRAMWAY, and

...Contractors' Supplies

METALS and SCRAP IRON

Bought and Sold.

PATENTS

TRADE MARKS, Etc.

HANBURY A. BUDDEN

NEW YORK LIFE BUILDING,
 MONTREAL

CANADIAN OFFICE & SCHOOL FURNITURE CO. LIMITED
 PRESTON ONT.



FINE BANK OFFICE, COURT HOUSE & DRUG STORE FITTINGS. OFFICE, SCHOOL, CHURCH & LODGE FURNITURE. SEND FOR CATALOGUE.

Look For **PETRIE'S** CATALOGUE of **MACHINERY**
 NEW AND SECOND HAND.
 TORONTO, CANADA



WOOD ENGRAVING
PHOTO ENGRAVING
HALF TONES
 OR ANY CLASS OF ENGRAVING FOR ADVERTISING PURPOSES, CATALOGUES, MAGAZINES, &c.
J. L. JONES ENG. CO.
 6-8-10 Adelaide St. W. **TORONTO.**

BUSINESS CHANGES—Continued.

PEMBROKE, Ont.—Patent Development & Mfg. Co. damaged by fire.
 PERTH, Ont.—Pressed Steel Car & Wheel Co., obtained charter.
 PORT ALMA, Ont.—A. M. Ballak, general store, removing to Merlin.
 PRESTON, Ont.—H. S. Osgood, mfrs. gloves, burnt out.
 RENFREW, Ont.—Roberts' Planing Mill, assigned.
 RIDGETOWN, Ont.—John R. Owen, planing mill, burnt out.
 RODNEY, Ont.—Hetherington Bros., millers, about dissolving.
 ST. CATHARINES, Ont.—Black, Kerr & Co., millers, succeeded by Black & Davidson.
 ST. THOMAS, Ont.—George Oliver, mfrs. pumps, sold to McGillivray & Co.
 SAULT STE. MARIE, Ont.—Sault Ste. Marie Co-Operative Co., obtained charter.
 SPRINGFIELD, Ont.—Richard McDonald, blacksmith, sold to Homer Lyons.
 STAYNER, Ont.—Gibson & Doner, hardware, succeeded by Doner Bros.
 TAMWORTH, Ont.—W. H. Milburn, general store, sold to Wager & Carscallan.
 TORONTO, NEWBURY AND MONTREAL.—Consolidated Pulp & Paper Co., Toronto, called meeting of creditors.
 TORONTO, Ont.—George E. Martin Co., obtained charter.
 Kay Electric Dynamo & Motor Co., obtained charter.
 McLennan Paint Co., obtained charter.
 Millichamp, Coyle & Co., obtained charter.
 United States Ferrol Co., obtained charter.
 WALLACEBURG, Ont.—Wallaceburg Sugar Co., obtained charter.
 WELLAND, Ont.—W. R. Walker, tinware, etc., sold to C. M. Allaire.
 WENDOVER, Ont.—W. J. Storey, general store, gave up business.
 WINGHAM, Ont.—John Kerr, general store, succeeded by J. & J. H. Kerr.
 ANCIENNE LORETTE, Que.—Joseph Allaire, mfr. shoes, assigned.
 BROME, Que.—Hoskins Bros., tinsmiths, etc., registered.
 COATICOOK, Que.—D. Rainville, sawmill, deceased.
 DANVILLE, Que.—Johnson & Thompson, tinsmiths, dissolved.
 ETCEMIN, Que.—George Guay, mfr. shirts, dissolution registered; St. Lawrence Mfg. Co., registered.
 FARNHAM, Que.—Glosson & Freres, carriage makers, registered.
 FULFORD, Que.—Empire Oil Co., retiring from business; Fulford Lace Leather Co., seeking extension.
 GLEN SUTTON, Que.—S. Courser & Co., general store, dissolved.
 HULL, Que.—V. Leblanc & Co., general store, asking an extension.
 JONVILLE, Que.—G. A. Manning, general store, assets sold.
 LACHINE, Que.—Adelard Binette, plumber, St. Armour & Doucet curators.
 LAKE ST. JOHN, Que.—La Compagnie de Pulpe Oulatchouan, obtained charter.
 MAISONNEUVE, Que.—Acme Can Works, registered.
 Hamel & Bleau, sash and door factory, assets sold.
 MONTREAL, Que.—Alaska Feather & Down Co., warehouse damaged by fire.
 Calumet & Red River Mica Mining Co., applied for charter.
 J. Eveleigh & Co., mfrs. trunks, etc., warehouse damaged by fire.
 Erignon & Jourdain, painters, registered.
 Attleboro Export Co., W. jewelery, assigned.
 Dominion Mfg. Co., mfrs. biscuits, portion of assets sold.
 Leclerc Freres, mfrs. agents, registered.
 National Cash Register Co., registered as incorporated.
 Rougier Freres, importers, Claudius Rougier registered.
 Lafontaine & Bastien, painters, registered.
 Bee Starch Co., dissolved, new partnership registered.
 Canadian Typewriter Co., Chas. E. Archbald registered.
 Dagenais & Gauthier, carriage makers, dissolved.
 Duval & Favreau, machinists, dissolved.
 F. X. Laplante, mfr. hosiery, Mrs. Frs. X. Laplante.
 Canada Linseed Oil Mills, obtained charter.
 Canadian Salt Co., obtained charter.
 Labrador Co., capital increased to \$300,000.
 Laurentian Lumber Co., capital increased to \$50,000.
 National Coal Tar Co., registered.
 Standard Asbestos Co., applied for charter.

GALVANIZING

We are prepared to attend to all orders Promptly and Economically.

WINDMILLS, PUMPS, TANKS, Etc.

ONTARIO WIND ENGINE and PUMP CO.

LIMITED,

95 ATLANTIC AVE., TORONTO.

BUSINESS CHANGES—Continued.

C. R. McDowell & Co., mfrs. agents, Mrs. C. R. McDowell, registered.
 George E. Robertson & Co., mfrs. agents, Geo. E. Robertson registered.
 Star Shirt & Overall Co., registered.
 Win. Strachan Co., mfrs. soap, etc., registered as incorporated.
 Tetreault Sewing Machine Co., applied for charter.
 Frank C. Wheeler, mfrs. clothing, registered.
 NEW GLASGOW, Que.—James Grady, carriage maker, Gagnon & Caron, curators.
 NICOLET, Que.—J. E. Lewis & Co., plumbers, etc., Hormisdas Lewis registered.
 QUEBEC.—Hill Mfg. Co., registered; St. Lawrence Glove Works, J. H. Larochell and Edouard Piche registered props.

SILICIA BRICKS

Highest Grade for all Purposes

MAGNESIA BRICKS

FOR LINING

Smelting, Refining and Matte

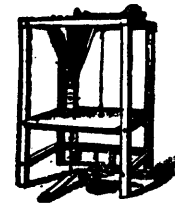
Furnaces, also Converters

Rotary Cement Kilns

F. HYDE & CO. 31 WELLINGTON ST.
 MONTREAL.

SPECIAL MACHINE

For Packing Soda, Baking Powder,
 Coffee, Chicory and all Powdered
 or Granulated
 Materials,



In Packages of from
 half ounce to six lbs.

For Flour and Other
 Cereals,

Six to fourteen lbs.

Ask us about this Machine.

T. H. & A. H. DRYDEN

TORONTO

I BUY all Minerals at Mines by contract or otherwise. Mineral Lands and Timber Properties bought and sold.

H. FAWCETT HARTLAND,

Room 309-310 Merchants Bank Chambers,
 205 St. James Street, - Montreal.
 Correspondence Solicited.

The Rehder Plating & Mfg. Co.,

THOROLD, - ONT.

Manufacturers of

Stove and Piano Trimmings and Novelties

Fine Grey Iron Castings a Specialty.

Nickel, Copper and Brass Electro Plating.
 WRITE FOR PRICES.

G. H. Adams & Co.

MANUFACTURERS'
AGENTS AND
COMMISSION
MERCHANTS.

Flinders Lane, MELBOURNE,

Clarence Street, SYDNEY,
 and at FREMANTLE, ADELAIDE,
 BRISBANE and N.Z.

Will be pleased to correspond with Canadian Manufacturers and Exporters desirous of opening up direct relations with Australasia.

BUSINESS CHANGES—Continued.

MORIN FRERE & Co., tanners, dissolution registered and new firm formed with Octave Boutin as sole proprietor.

ROBERVAL, Que.—Chase Lindsay, general store, suspended.

ROCK ISLAND, Que.—Lay Whip Co., registered as incorporated.

RIVIERE BOIS CLAIR, Que.—La Societe de Fabrication de Beurre et de Fromage de la Paroisse, registered.

ST. COEUR DE MARIE, Que.—D. Jobin, general store, assigned.

ST. CYRILLE DE WENDOVER, Que.—Pierre Dauplaise, sash and door factory, assigned.

Lafontaine & Lavoie, general store, Joseph Lafontaine deceased.

ST. HYACINTHE, Que.—Joseph Brodeur & Co., general store, Mrs. Joseph Brodeur registered.

ST. LOUIS DE MILE END, Que.—Daze Freres, plumbers, dissolved.

ST. PAUL, Que.—C. O. Clarke & Bro., mfrs. bells etc., registered.

STANBRIDGE EAST, Que.—W. A. Odell, grocer, sold to S. Hope.

WINDSOR MILLS, Que.—Windsor Electric Co., registered as incorporated.

COLDSTREAM, N.B.—W. A. Hayward, general store, closed business.

HEAD OF MILLSTREAM, N.B.—Hayes Bros., general store, burned out.

Murphy & Morgan, general store, burned out.

NEWCASTLE, N.B.—John Morrissey, furniture and agricultural implements, opened store at Chatham.

ST. CHARLES, N.B.—Kent Milling Co., applying for incorporation.

ST. JOHN, N.B.—J. Parks, mfr. hosiery, offering compromise.

Henry Scovil & Co., mfrs. agents, dissolved, tenders called for stock.

ST. STEPHEN, N.B.—J. A. Boyd & Son, tinware and stoves, assigned to George J. Clark.

SHEDIAC, N.B.—Poirier, Doiron & Co., general store, offering to compromise.

WOODSTOCK, N.B.—Maritime Pure Food Co., canners, sold out.

C. D. Dickinson & Co., tanners, etc., sold to John Palmer.

AMHERST, N.S.—Douglas & Co., hardware, new co-partnership formed.

ANTIGONISH, N.S.—Chisholm, Sweet & Co., general store, A. D. Chisholm & K. Sweet registered.

McCurdy & Co., general store, sold business here to Chisholm, Sweet & Co.

BRIDGETOWN, N.S.—J. H. Hicks & Sons, mfrs. sashes and doors, John H. Hicks retired.

GRANVILLE FERRY, N.S.—J. Mills & Son, general store, advertising business for sale.

HALIFAX, N.S.—Halifax Undertaking Co., sold to Snow & Co.

LUNENBURG, N.S.—Hirtle, Rafuse & Co., general store, incorporated.

NEW GLASGOW, N.S.—I. Matheson & Co., machinists, pattern shop destroyed by fire.

SPRINGHILL, N.S.—C. W. McLeod & Co., general store, sold to H. S. Terrio.

SYDNEY, N.S.—J. C. Mills, general store, succeeded by Mills, McKenzie & Ross.

Prowse Bros. & Crowell, departmental store, opening branch at Whitney Pier.

WOLFVILLE, N.S.—Bentley & Elles, corn mill about dissolving.

Star, Son & Franklyn, hardware, etc., succeeded by C. E. Star & Son.

MURRAY HARBOR SOUTH, P.E.I.—Daniel Davies, lobster factory, burned out.

BONAVISTA, NEWFOUNDLAND.—P. Templeman, general store, opened branch at Catalina.

BEAVERTON, B.C.—F. C. Boles, general store, removing to Carmi.

GOLDEN, B.C.—G. B. McDermot & Co., general store, succeeded by Golden & East Kootenay Trading Co.

GREENWOOD, B.C.—Cameron & Palmer, blacksmiths, dissolved.

Rendell & Co., general store, opening branch at Rendell.

NANAIMO, B.C.—George T. Leddingham, blacksmith, succeeded by Leddingham & Ross.

SALMO, B.C.—W. T. Beadles & Co., general store, W. T. Beadles deceased.

VICTORIA AND DAWSON, B.C.—Joshua Holland, merchant, assigned.

HARTNEY, MAN.—H. Brookbank, blacksmith, admitted W. B. Brookbank, as partner.

KILLARNEY, MAN.—Sanders & McCann, agricultural implements, dissolved.

MINNEDOSA, MAN.—T. H. Easton, carriage maker, assigned to C. H. Newton, Winnipeg.

PORTAGE LA PRAIRIE, MAN.—Morrow Bros., general store, assigned.

ROLAND, MAN.—A. Cameron & Co., furniture, dissolved.

STONEWALL, MAN.—Pepper & Toole, agricultural implements, etc., dissolved.

STRATHCLAIR, MAN.—H. Roberts & Co., general store, assigned.

WINNIPEG, MAN.—Manitoba Plumbing Co. (estate of) stock to be sold.

Nova Scotia Wool Depot, damaged by fire.

LACOMBE, N.W.T.—Lacombe Co-operative Co., sold branch at Ponoka to J. McHugh.

RED DEER, N.W.T.—George A. Love, lumber, succeeded by Red Deer Lumber Co.

REGINA, N.W.T.—James E. Sprague, general store, deceased.

PRESSED ZINC ORNAMENTS.

We have perfect facilities for turning out fanciful embellishments, such as Leaves, Modillions, Brackets, Capitals, Festoons, Garlands, Friezes, Wreaths, Enrichments, Rosettes, etc., in very finest quality and style. The work is all clearly brought out in detail, with very bold relief.

Our new catalogue shows an immense variety of handsome designs. Write us if you're interested.

THE METALLIC ROOFING CO.
OF CANADA, LIMITED
TORONTO, - CANADA.

DON'T BURN YOUR BOILER

Save it by removing the incrustation. Give a long life to your steam boiler, valves, engine, steam pipes, etc., which is sure to be done by the use of

SUTTON BOILER COMPOUND . . .

Every up-to-date steam user is alive to its many good qualities. For everything in the mill supply line ask

THE WM. SUTTON COMPOUND CO., OF TORONTO LIMITED.

186 Queen Street East.

ADVERTISE IN **THE CANADIAN MANUFACTURER** SEND FOR RATES

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

INDEX TO ADVERTISEMENTS.

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

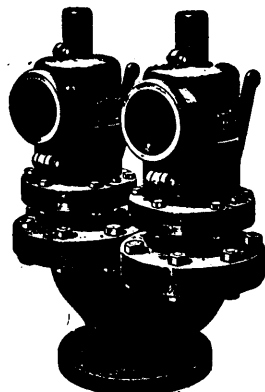
Abbey Improved Chilled Shot Co., Newcastle-on-Tyne, England.....	40	Flint & Walling Mfg. Co., Kendallville, Ind.	28	Northrop Iron Works, Valleyfield, Que.....	39
Adams, G. H. & Co., Melbourne, Australia.....	40	Forman John, Montreal.....	8-ibc	Nova Scotia Steel Co., New Glasgow, N.S.	4
Agriculture, Ontario Minister of Toronto.....	33	Frick, H. C. Coke Co., Pittsburg, Pa.....	obc	Oakley, John & Sons, London, Eng.....	ibc
Albert Mfg. Co., Hillsborough, N.B.....	6	Frost, W. H., Smith's Falls, Ont.....	obc	Ontario Malleable Iron Co., Oshawa, Ont.....	obc
American Steam Gauge & Valve Mfg. Co., Boston, Mass.....	42	Garfield Oil Co., Cleveland, Ohio.....	26	Ontario Wind Engine & Pump Co., Toronto.....	40
American Steam Pump Co., Battle Creek, Mich.....	27	Gartshore, John J., Toronto.....	40	Owen Sound Portland Cement Co., Owen Sound, Ont.....	ifc
Archbold, George, Prescott, Ont.....	40	Gartshore-Thomson Pipe & Foundry Co., Hamilton, Ont.....	36	Packard Electric Co., St. Catharines, Ont.....	36
Armstrong Mfg. Co., Bridgeport, Conn.....	29	General Fire Equipment Co., Toronto.....	31	Parke, Roderick J., Toronto.....	8
Atteaux, F. E. & Co., Boston, Mass., and Toronto.....	ifc	Goldie & McCulloch Co., Galt, Ont.....	3	Parker, Alfred S., New Toronto, Ont.....	ibc
Babcock & Wilcox, Montreal and Toronto.....	ofc	Gray, R. A. L. & Co., Toronto.....	33	Patent Clothboard Co., Parry Sound, Ont.....	35
Barber, Wm. & Bro., Georgetown, Ont.....	ibc	Greening B. Wire Co., Hamilton.....	30	Peerless Wire Co., Hamilton, Ont.....	37
Bellhouse, Dillon & Co., Montreal.....	33	Gutta Percha & Rubber Mfg. Co., Toronto.....	ofc	Penman Mfg. Co., Paris, Ont.....	ibc
Bell Organ & Piano Co., Guelph, Ont.....	ibc	Hamilton Brass Mfg. Co., Hamilton, Ont.....	36	Perrin, Wm. R. & Co., Toronto & Chicago, Ill.....	32
Benson, W. T. & Co., Montreal.....	ifc	Hamilton Cotton Co., Hamilton, Ont.....	ifc	Peterborough Canceo Co., Peterborough, Ont.....	40
Bertram, John & Son, Dundas, Ont.....	3	Hamilton Facing Mills Co., Hamilton, Ont.....	ofc	Petrie, H. W., Toronto.....	40
Bourne-Fuller Co., Cleveland, Ohio.....	35	Hamilton, Wm., Mfg. Co., Peterborough, Ont.....	38	Phillip, E. J., Toronto.....	18
Bouvler, L. F., Toronto.....	3	Hartland, H. Fawcett, Montreal.....	40	Phillips, Eugene F., Electrical Works, Montreal.....	34
Bowden, J. W. & Co., Toronto.....	35	Hay, Peter, Galt, Ont.....	4	Plummer, F. O., Boston, Mass.....	33
Bradstreets, Toronto and New York.....	35	Hore, F. W. & Son, Hamilton, Ont.....	33	Polson Iron Works, Toronto.....	5
Bristol Co., Waterbury Conn.....	obc	Houghton, John, Toronto.....	ibc	Queen City Oil Co., Toronto.....	ofc-34
Brown & Co., Paris, Ont.....	6	Howard, E. Clock Co., Boston, Mass., and New York City.....	26	Raney's Specialty Co., Kingston, Ont.....	38
Brush, George, Montreal.....	34	Hyde, F. & Co., Montreal.....	40	Reeves Pulley Mfg. Co., Toronto.....	17
Brunner, Mond & Co., Northwich, Eng.....	5	Imperial Oil Co., Petrolea, Ont.....	3	Rehder Plating & Mfg. Co., Thorold, Ont.....	40
Budden, Hanbury A., Montreal.....	40	Jencks Machine Co., Sherbrooke, Que.....	16	Rice Lewis & Son, Toronto.....	29
Buffalo Forge Co., Buffalo, N.Y.....	28	Jones, J. L. Engraving Co., Toronto.....	40	Robb Engineering Co., Amherst, N.S.....	6
Burt Mfg. Co., Akron, Ohio.....	21	Jones & Moore Electric Co., Toronto.....	35	Rosamond Woolen Co., Almonte, Ont.....	ibc
Butterfield & Co., Rock Island, Que.....	7	Karch, H. W., Hespeler, Ont.....	34	Royal Paper Mills Co., East Angus, Que.....	24
Buyers Guide, Toronto.....	7	Keller, John J. & Co., New York, N.Y.....	ifc	Schoellkopf, Hartford & Hanna Co., Buffalo, N.Y.....	16
Canada Chemical Mfg. Co., London, Ont.....	ifc	Kelly's Directories, Toronto and London, Eng.....	33	Smart-Eby Machine Co., Hamilton, Ont.....	16
Canada Iron Furnace Co., Montreal.....	ifc	Kemp Mfg. Co., Toronto.....	6	Smith & Cameron, Toronto.....	obc
Canada Switch & Spring Co., Montreal.....	obc	Kerr Engine Co., Walkerville, Ont.....	35	Smith Woolstock Co., Toronto.....	ibc
Canadian Canoe Co., Peterborough, Ont.....	33	Klipstein, A. & Co., New York, N.Y.....	6	South American Journal, London, Eng.....	25
Canadian Colored Cotton Mills Co., Montreal.....	25	Laurie Engine Co., Montreal.....	40	Storey, W. H. & Son, Acton, Ont.....	ibc
Canadian Heine Safety Boiler Co., Toronto.....	35	Leitch & Turnbull, Hamilton, Ont.....	ibc	Stratton, J. R., Toronto.....	22
Canadian Office & School Furniture Co., Preston, Ont.....	40	Leslie, A. C. & Co., Montreal.....	ofc	Sturtevant, B. F. Co., Boston, Mass.....	39
Canadian Rand Drill Co., Montreal.....	37	Lewis, Rice & Son, Toronto.....	29	Sturtevant Mill Co., Boston, Mass.....	18
Canadian Rubber Co., Toronto and Montreal.....	7	London Machine Tool Co., London, Ont.....	32	Sutton, Wm., Compound Co., Toronto.....	41
Carrier, Laine & Co., Levis, Que.....	obc	Lunsden, J. & Co., Montreal.....	32	Sylvester Bros. Mfg. Co., Lindsay, Ont.....	36
Case, Egerton R., Toronto.....	ofc	Marine & Fisheries, Minister of, Ottawa.....	37	Syracuse Smelting Co., Montreal.....	20
Clercy, Jules de, Toronto.....	7	Marion & Marion, Montreal.....	obc	Taft Dr. Bros. Medicine Co., New York City.....	30
Cockburn, W. M., Toronto.....	35	Mason Regulator Co., Boston, Mass.....	8	Tallman, J. N. & Sons, Hamilton, Ont.....	25
Cooper, James Mfg. Co., Montreal.....	15	Matheson, Wm. J. & Co., New York, N.Y., and Montreal.....	5	Thompson, E. B., Toronto.....	30
Cowan & Co., Galt, Ont.....	19	Merrimac Chemical Co., Boston, Mass.....	ibc	Thompson, Worth & Martin, Toronto.....	30
Crosby Steam Gauge & Valve Co., Boston, Mass.....	ibc	Metallic Roofing Co., Toronto.....	41	Toronto & Hamilton Electric Co., Hamilton, Ont.....	29
Cyclone Grate Bar Co., Toronto.....	18	Meyercood Co., Chicago, Ill.....	16	Toronto Elevator Co., Toronto.....	36
Darling Bros., Montreal.....	6	Milnes, J. H. & Co., Toronto.....	25	Toronto Fence & Ornamental Iron Works, Toronto.....	ifc
Dean, Walter, Toronto.....	38	Montreal Pipe Foundry Co., Montreal.....	ifc	Toronto Paper Mfg. Co., Cornwall, Ont.....	40
Desbarats Advertising Agency, Montreal.....	33	Morrison James Brass Mfg. Co., Toronto.....	21	Toronto Patent Agency, Toronto.....	37
Diamond Machine & Screw Co., Toronto.....	26	Morrow Machine Screw Co., Ingersoll, Ont.....	6	Toronto Woolen Machinery Co., Toronto.....	37
Dixon, H., Toronto.....	33	Morton Co., Toronto.....	35	United Electric Co., Toronto.....	obc
Dixon, Jos., Crucible Co., Jersey City, N.J.....	26	McArthur, Corneille & Co., Montreal.....	obc	Walkerville Malleable Iron Co., Walkerville, Ont.....	ofc
Dodge Mfg. Co., Toronto.....	7	McEachren Heating & Ventilating Co., Galt, Ont.....	38	Wallberg, E. A., Toronto.....	28-30
Dominion Bridge Co., Montreal.....	4	McGuire, Wm. J. & Co., Toronto.....	31	Ward, George, Laskay, Ont.....	7
Dominion Dyewood & Chemical Co., Toronto.....	ofc	McLachlan Electric & Gasolene Motor Co., Toronto.....	32	Welland Vale Mfg. St. Catharines, Ont.....	ibc
Dominion Engraving Co., Toronto.....	ibc	McLaren, D. K., Montreal and Toronto.....	32	Whiting Foundry Equipment Co., Harvey, Ill.....	30
Dominion Oil Cloth Co., Montreal.....	31	McLaren, J. C., Belting Co., Montreal.....	27	Williams, A. R. Machinery Co., Toronto.....	5
Dominion Radiator Co., Toronto.....	23	Neff, A. C., Toronto.....	40	Winn & Holland, Montreal.....	5
Dryden, T. H. & A. H., Toronto.....	40	New Toronto Woolstock Co., New Toronto, Ont.....	ibc	Wilson Bros. Bobbin Co., Todmorden, Eng.....	ibc
Eco Magneto Clock Co., Boston, Mass.....	27	Northey Mfg. Co., Toronto.....	8	Wilson J. C. & Co., Glenora, Ont.....	ibc
Electric Construction Co., London, Ont.....	29			Wire and Cable Co., Montreal.....	ofc
Fensom Elevator Works, Toronto.....	ofc			Wright & Dallyn, Hamilton, Ont.....	6
Fetherstonhaugh & Co., Toronto.....	ofc				
Firstbrook Box Co., Toronto.....	ibc				
Fleming, W. A. & Co., Montreal.....	17				

ofc outside front cover.

ifcinside front cover.

ibc.....inside back cover.

obc.....outside back cover.



American Twin Pop Safety Valves.

AMERICAN STEAM GAUGE AND VALVE MFG. COMPANY

BOSTON, MASS., U. S. A.

MANUFACTURERS OF

Standard Appliances for Measuring, Indicating, Recording and Governing Water, Steam, Gas, Ammonia, and all pressures.

Sole Manufacturers of The Thompson Improved Indicator. The only American Indicator awarded a Medal at the Paris Exposition.

Also Gauges, Clocks, Revolution Counters, Pop Safety, Cylinder and Underwriters' Water Relief Valves, Recording Gauges, Pyrometers, Salinometers, and all Steamship Instruments. Send for New General Catalogue.



Underwriters' Pattern Iron Water Relief Valve.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Smith Wool-Stock Co.

219 FRONT ST. E., TORONTO.

Makers of

WOOL STOCK, SHODDIES, Etc.

W. H. PARKER

J. H. PARKER

NEW TORONTO WOOL STOCK CO.

MANUFACTURERS OF

WOOL STOCK and SHODDIES

Write for Samples and Prices.

NEW TORONTO, - ONTARIO, CANADA.

A. S. PARKER, NEW TORONTO



Dealer in Woolen Waste. Carnetting a Specialty

PENMAN MANUFACTURING CO.

PARIS, ONT. LIMITED.

Manufacturers of

Hosiery, Shirts, Drawers, Glove Linings and Yarns.

Selling Agents—D. Morrice, Sons & Co., Montreal and Toronto.

ROSAMOND WOOLEN CO.

ALMONTE, ONT.

Fine Tweeds, Cassimeres, and Fancy Worsted Suitings and Trouserings.

LEITCH & TURNBULL, Canada Elevator Works, Queen and Peter Sts. HAMILTON, ONT. Patent Safety Hydraulie, Hand and Power ELEVATORS. Telephone Connection.

W. H. Storey & Son, ACTON, ONT.,

Manufacturers of..... **FINE GLOVES AND MITTS** in every variety and style. **Moccasins.**

WM. BARBER & BROS.

Georgetown, Ont.

Manufacturers of.....

Book and Fine Papers.

Reproductions Made for Eight Cents per Square Inch.



Half Tones Made Direct from Photos.



CROSBY STEAM GAGE AND VALVE CO.

Sole Proprietors and Manufacturers of

Crosby Pop Safety Valves, for all kinds of Boilers, Water Relief Valves including the Underwriter, which is fully approved by the Associated Factory Mutual Insurance Companies; Crosby Steam Engine Indicators, with Sargent's Electrical Attachment; Crosby Improved Steam Gages, Recording Gages and Patent Gage Testers. Original Single Bell Chime Whistles.

BRANDEN PATENT PUMP VALVES

CLARK'S LINEN FIRE HOSE AND ADJUSTABLE COUPLINGS

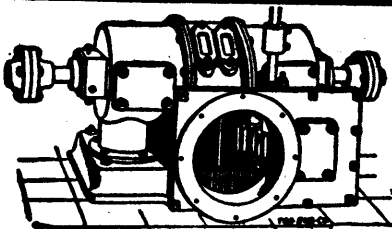
All Kinds of Pressure and Vacuum Gages used in the Various Arts

Gold Medal Paris Exposition, 1889

Ten Highest Awards Columbian Exposition, 1893

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

Underwriter



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, Pulleys, Shafting and Bearings. Catalogue and Gear List mailed on application. Correspondence Solicited.

J. C. WILSON & CO., - - GLENORA, ONT.

BELL PIANOS and ORGANS

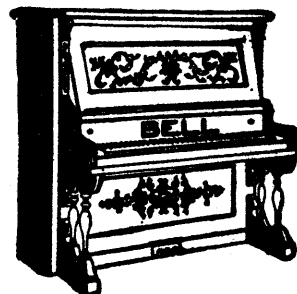
BUILT TO LAST A LIFETIME AND USED THE WORLD OVER

Send for Catalogue No. 47 to

THE BELL ORGAN AND PIANO CO., LIMITED

GUELPH, - - ONTARIO.

LARGEST MAKERS IN CANADA.



THE WELLINGTON MILLS, London, Eng. GENUINE EMERY

Oakey's Flexible Twilled Emery Cloth.

Oakey's Flint Paper and Glass Paper.

Oakey's Emery Paper, Black Lead, Etc.

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

Manufacturers, **JOHN OAKEY & SONS, Limited,** Wellington Mills, Westminster Bridge Road, London, England.

ENQUIRIES SHOULD BE ADDRESSED TO **JOHN FORMAN, 650 CRAIG ST., MONTREAL**

JOHN HOUGHTON

Practical Machinist

106 CHURCH ST., TORONTO.

MODEL MAKING A SPECIALTY.

WELLAND VALE MANUFACTURING CO.

Limited, ST. CATHARINES, ONT.

Manufacturers of....

Axes, Edge Tools, Saws, Farming Implements and Bicycles

The Firstbrook Box Co. Limited

PACKING CASES.

DOVETAIL BOXES.

Bottlers' SHIPPING CASES.

BOX SHOOKS, Etc.

TOP PINS, SIDE-BLOCKS & CROSS-ARMS

Write for prices. **TORONTO, Canada.**

CARBONIZER

A neutral substance, harmless to animal fibre or tissue, while it destroys burrs, etc., as efficiently as acid. It leaves the wool in fine condition. Manufactured by the **Merrimac Chemical Co., 13 PEARL ST. BOSTON.**

PATENTS PROMPTLY SECURED

Write for "Inventor's Help"—FREE.

Marion & Marion, MONTREAL and WASHINGTON
ENGINEERS AND EXPERTS.

By **SMITH & CAMERON,** 51 CANADA LIFE BUILDING
Solicitors of Patents, Experts, Engineers, etc. 46 King St. West, Toronto.

Promptly Secured in all Countries

TRADE MARKS, DESIGNS, PATENTS, Caveats, Copyrights, etc.

**McARTHUR,
CORNEILLE & CO.,**

OFFICES:
310 to 316 St. Paul Street.

WAREHOUSES:
147 to 151 Commissioners Street.

...MONTREAL...

AGENTS FOR . . .

- Berlin Aniline Co., Aniline Colors and other Coal Tar Products.
- Stamford Manufacturing Co., Dyewoods and Extracts.
- Coez, Langlois & Co., French Extracts.
- Miller Extract Co., Hemlock Extracts
- British Alizarine Co., Alizarine.
- J. H. Heald & Co., Extracts Oak, etc.



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

(Limited)

....Manufacturers of....

MALLEABLE IRON Castings to Order for all kinds of

AGRICULTURAL IMPLEMENTS .

....AND....

Miscellaneous Purposes



OSHAWA, - - ONT.

THE UNITED ELECTRIC CO.

SUCCESSORS TO

Limited.

**W. A. JOHNSON ELECTRIC CO.
THE TORONTO ELECTRIC MOTOR CO., Limited.
THOMPSON ELECTRIC CO.**

We Manufacture a complete line of **Electric Light and Power Apparatus.**

ARE PREPARED TO CONTRACT FOR COMPLETE INSTALLATIONS.

Head Office, - **134 KING ST. W., TORONTO, ONT.**

THE CANADA SWITCH & SPRING CO., LIMITED.

Manufacturers of
..... SPECIALTIES FOR.....

Steam and Electric Railways,

**SPRINGS, STEEL CASTINGS,
FROGS, FORGINGS,
TRUCKS FOR ELECTRIC RAILWAYS, ETC.**

**INTERLOCKING SWITCH
and SIGNAL PLANTS,**

(Under patents of Messrs. Saxby & Farmer, Limited, of London, Eng.)

**CANAL BANK, POINT ST. CHARLES,
MONTREAL.**

**BRISTOL'S PATENT
STEEL BELT LACING**

— ONE HUNDRED SIZES —



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

000

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

SMITH'S FALLS

**Malleable Iron
Works . .**

00000

CAPACITY 3,000 TONS.

00000

WILLIAM H. FROST

PROPRIETOR

SMITH'S FALLS,

ONTARIO, CANADA.

CARRIER, LAINE & CO. | Dredges,

SAW MILL MACHINERY,

Montreal Branch....
147 St. James St.
Quebec Branch....

THE HAMILTON FACING MILL CO., LIMITED, Foundry, Racings, FOUNDRY and FIRE SAND. Sand to the Coast