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PIPE AND CORE SAND
also Extra Fine Quality
SUPPLIES
Ceylon Plumbago
HAMILTON, ONT. Manufacturers of


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

THE MOST COMPLETE
WE RICHEN IT UP
A NATION THAT
MANUFACTURES FOR ITSELF
PROSPERS

Vol. 42.

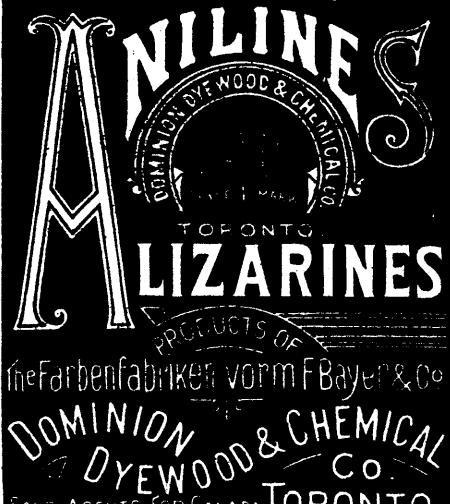
TORONTO, FEBRUARY 1, 1901.

No. 3



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WATER TUBE BOILERS

Head Office for Canada—
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TORONTO OFFICE—114 KING ST. W.
Send for large book, "STEAM."



ANILINE LIZARINES
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PRODUCTS OF
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DOMINION DYE WOOD & CHEMICAL CO.
SOLE AGENTS FOR CANADA TORONTO.

Wire Rope
FOR....
Hoisting, Mining,
and Other Purposes
IMPORTED PROMPTLY
AT
LOW PRICES.....
A. C. LESLIE & CO.,
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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.

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The Fensom Elevator Works...
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RUBBER GOODS OF ALL KINDS.



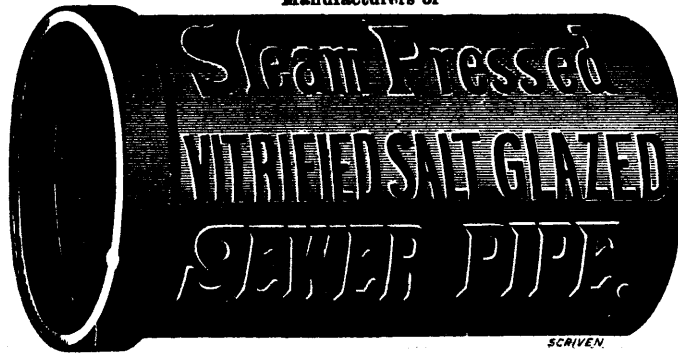
61 and 63 FRONT ST. WEST, TORONTO.

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Walkerville Malleable Iron Co., (Limited)
Manufacturers of.
REFINED AIR FURNACE Malleable Castings
ALSO LIGHT GREY IRON CASTINGS.
WALKERVILLE, ONTARIO.

THE CANADIAN SEWER PIPE CO.

Manufacturers of



ST. JOHNS
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Aniline Colors, Aniline Oil and Salt, Archil Extracts
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A Complete Assorted Stock of the above always on hand.

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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.

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— 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.

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Montreal, Radnor and Three Rivers

Manufacturers of the well-known

“C.I.F.” Three Rivers Chapeoal 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.

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.

MONTREAL PIPE FOUNDRY CO... (Limited)

SUCCESSORS TO

DRUMMOND-McCALL PIPE FOUNDRY CO. (Limited)

Manufacturers of



“Specials,” Hydrants, Valves, Etc.

Offices: - - - Canada Life Building,
MONTREAL

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

An Engine that runs smoothly with good regulation, and uses the least fuel per h.p., and keeps in repair longest, is the Engine manufacturers desire. No Engines are capable of

WE ALSO MAKE Gas and Gasoline Engines, Boilers, Pumps, Water Wheels, Flour Mill Machinery, Oat Meal Mill Machinery, Oat Meal Steam Pan Kilns, Wood Working Machinery, Iron Pulleys, Wood Rim Split Pulleys, Shafting, Hangers, Gearing, Friction Clutch Pulleys, etc., Safes, Vaults and Vault Doors.

filling these requirements better than the **WHEELOCK and IDEAL ENGINES** built by

The Goldie & McCulloch Co., Limited, - Galt, Ont.

THE IMPERIAL OIL COMPANY, Limited.

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

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

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

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

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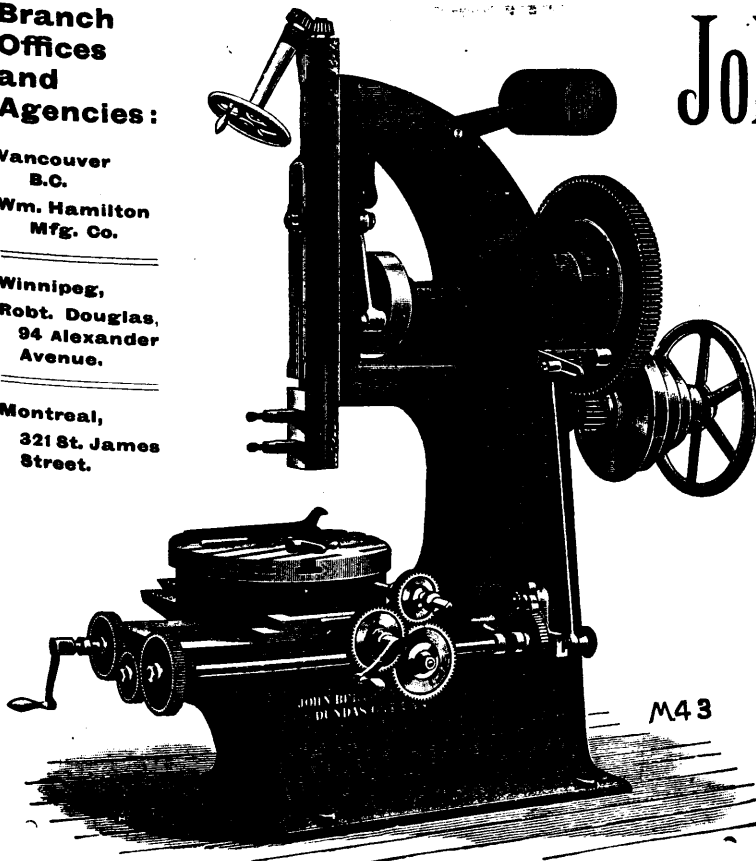
Branch Offices and Agencies:

Vancouver B.C.

Wm. Hamilton Mfg. Co.

Winnipeg, Robt. Douglas, 94 Alexander Avenue.

Montreal, 321 St. James Street.



M43

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.

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MANUFACTURERS OF

BRIGHT COMPRESSED STEEL SHAFTING

FROM $\frac{1}{2}$ TO 5 INCHES IN DIAMETER. GUARANTEED STRAIGHT AND TRUE TO WITHIN $\frac{1}{100}$ OF AN INCH.

Spring, Reeled Machinery, Tire, Toe Caulk, Sleigh Shoe, Angles, Special Sections and all Merchant Bar Steel. Sheet Steel up to 48 inches wide.

RAILWAY AND ELECTRIC RAILWAY CAR AXLES

FISH PLATES, SPIKES AND TRACK BOLTS

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

HEAVY FORGINGS a SPECIALTY.

"FERRONA" PIG IRON, For Foundry Use.

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

Head Office—NEW GLASGOW, NOVA SCOTIA

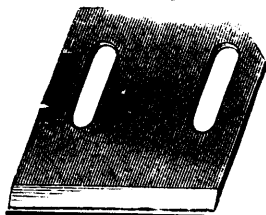
GALT Machine Knife Works

PETER HAY,



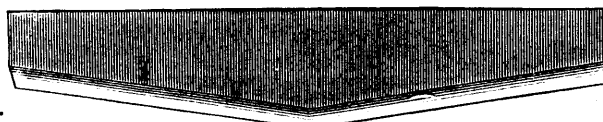
GALT, ONT.

Manufacturers of Every
Description of.....

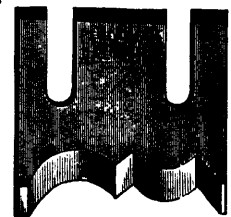


KNIVES, For Wood-Working, Paper
Cutting and Leather-
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Machines

BARK
KNIVES
PULP
KNIVES
RAQ
KNIVES
Etc., Etc.



Shear Blades,
Straw Knives,
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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.

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TORONTO, ONT.

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NORTHWICH, ENGLAND.

PURE ALKALI

48% and 58% (Light and Heavy)

BLEACH^g PWD.

35% to 37% (Hardwood Casks)

CAUSTIG 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

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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

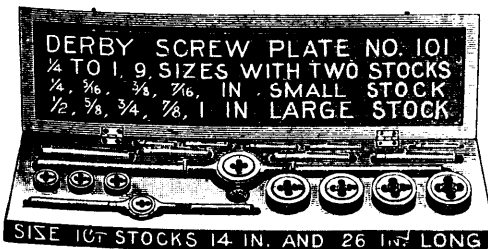
STEEL STEAM VESSELS OF EVERY DESCRIPTION.

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.

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ALBERT MANUFACTURING CO.

MANUFACTURERS OF THE
WELL-KNOWN

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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.

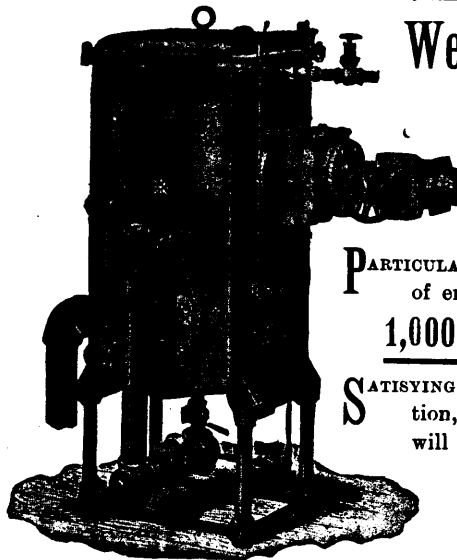


Send for Catalogue and Price
List to

THE JOHN MORROW MACHINE SCREW CO.
INGERSOLL, ONT.

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

THE
PETERBOROUGH
CANOE CO. LTD.
PETERBOROUGH,
Ont. Canada.
SEND FOR CATALOGUE.



Webster Feed Water Heater AND PURIFIER

BEFORE PURCHASING ELSEWHERE
ENTERTAIN A BID FROM US.

PARTICULAR experience for ten years in this department
of engineering, and the fact that over
1,000 WEBSTER HEATERS are in use, is
self-explanatory.

SATISFYING particulars, embracing details of construc-
tion, materials, operation and exclusive results,
will be sent on application.

DARLING BROTHERS,
Reliance Works, MONTREAL.

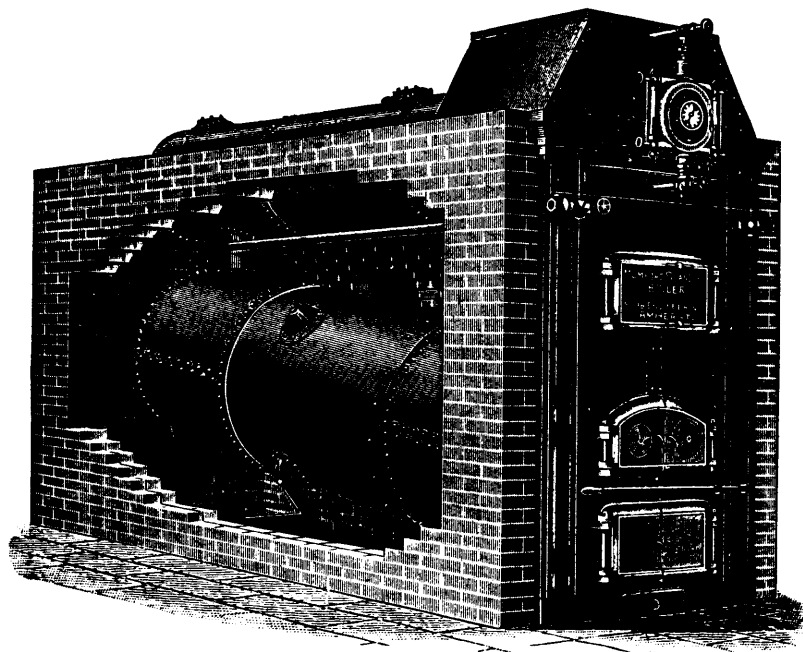
A. KLIPSTEIN & CO. 122 Pearl St. New York

Anilines, Dyestuffs & Chemicals

DELIVERY MADE AT NEW YORK, MONTREAL OR HAMILTON.

WRIGHT & DALLYN, AGENTS,
HAMILTON, ONT.

THE "MUMFORD" BOILER



Is built for brick casing, or with sheet steel case, as desired by purchaser. Uses 10 to 25
per cent. less coal than a return tubular boiler.

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

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

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.

See particulars in Advertisement in page 39.

Manufacturers of

Phosphor Bronze

FITTINGS

FOR

PULP MILLS

VALVES
DIGESTER
COCKS, Etc.

THE JAMES
MORRISON
BRASS MFG.
CO., Limited

TORONTO.



RUBBER BELTING

"The large 28-inch driving belt you made for us is the admiration of everyone."

THE CONGER LUMBER Co.,
Toronto.

THE CANADIAN RUBBER CO.

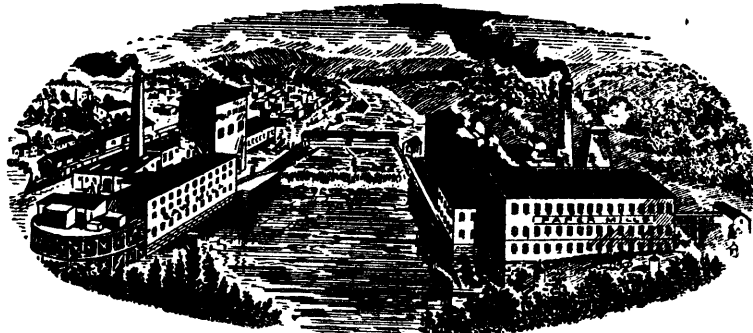
MONTREAL * TORONTO

WINNIPEG

Royal Paper Mills Company, Limited

Mills —AND—
Head
Office:

East Angus,
QUE.



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

WAREHOUSES:

763 Craig Street,
MONTREAL, QUE.

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

Manufacturers
OF



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.

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 ATLANTIC REFINING CO.

TORONTO, ONTARIO

MANUFACTURERS
AND IMPORTERS
OF ILLUMINATING
AND LUBRICATING

OILS, GREASES

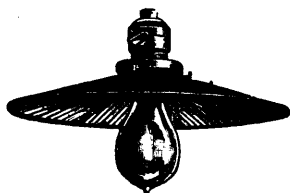
and SPECIALTIES

SEE THIS SPACE NEXT ISSUE.

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

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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.

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J. J. CASSIDY, - - - Editor and Manager

QUEEN VICTORIA.

1837

The sunshine streaming through the stained glass,
 Touched her with rosy colors as she stood,
 The maiden Queen of all the British realm,
 In the old Abbey on that soft June day.
 Youth shone within her eyes, where God had set
 All steadfastness, and high resolve, and truth ;
 Youth flushed the cheek, dwelt on the smooth white brow,
 Whereon the heavy golden circlet lay.

The ashes of dead Kings, the history of
 A nation's growth, of strife and victory,
 The mighty past called soft through aisle and nave :
 " Be strong, O Queen ; be strong as thou art fair ! "
 A virgin, white of soul and unafraid,
 Since back of her was God, and at her feet
 A people loyal to the core, and strong,
 And loving well her sweetness and her youth.

1901

Upon her woman's head earth's richest crown
 Hath set with grace these sixty years and more.
 Her hand, her slender woman's hand, hath held
 The weightiest sceptre, held it with such power
 All homage hath been hers, at home, abroad,
 Where'er hath held a chivalrous regard
 For strength of purpose and for purity,
 For grand achievement and for noble aim.

To-day the cares of State no longer vex.
 To-day the crown is laid from off her brow.

Dead ! The great heart of her no more will beat
 With tenderness for all beneath her rule.
 Dead ! The clear eyes of her no more will guard
 The nation's welfare ! Dead ! The arm of her
 No more will strike a mighty blow for right
 And justice ; make a wide world stand amazed
 That one so gentle as old England's Queen
 Could be so fearless and so powerful !

Full wearily the grief of sense doth press
 And weight us down. The good Queen is no more ;
 And we are fain to weep as children weep
 When greedy death comes to the home and bears
 From thence the mother whose unfailing love
 Hath been their wealth, their safeguard, and their pride.

O bells that toll in every zone and clime !
 There is a sound of sobbing in your breath,
 East, west, north, south, the solemn clamor goes.
 Voicing a great—a universal grief !

THE METRIC SYSTEM.

In another article entitled "South American Trade" reference is made to the currencies of South and Central American States, in which is explained the different standards of value and the names of the coins in use there, and their equivalents given in both American gold, identical with the Canadian standard, and in British gold. A knowledge of these facts as relates to the South American States is absolutely essential in all our commercial dealings with them, and the diversities of names and values most strongly emphasizes the necessity of a standardization of values, weights and measures throughout the entire world. If the metric system is the best for that purpose it should be adopted without delay—if it is not the best, a better one should be presented. The claims for the universal adoption of what we now understand to be the metric system are being so strongly urged, and there being no other feasible system proposed, the consensus of opinion seems to be strongly in favor of the adoption of the metric system, with the probability that within a few years it will be the method in vogue throughout the whole commercial world for measuring all quantities and values. The metric system is now in common use in France, Germany, Austria-Hungary, Italy, Spain, Portugal, Sweden, Norway, Belgium, Netherlands, Roumania, Servia, Egypt, Mexico, Costa Rica, Guatemala, Nicaragua, Salvador, Brazil, Colombia, Bolivia, Chile, Argentina, Haiti and San Domingo ; and it has also been adopted officially by Venezuela, Uruguay, Turkey and British India, although it cannot be said that in these four countries it is in common use. Japan has announced her intention of adopting some form of the system, and China has a decimal system although not entirely similar to the French system. The exceptions to this almost universal system are Great Britain and some of her dependencies, notably Canada and the Australasian colonies, Russia and the United States.

Speaking of the diversity of systems of weights and measures in use, and the necessity of the adoption by the entire world of a uniform system, Mr. A. D. Risteen, in his work "The Metric System," points out that while from the earliest days of civilization men have measured and weighed things, whereby they possessed at least the rudiments of a system of weights and measures, there was no attempt at precision in the standards used. A "foot" meant something of substantially the same length as the king's foot ; and an "inch" was sometimes considered to be the twelfth part of a foot, and at other times it was defined as the space covered by three kernels of barley placed end to end. At the present time the units used in weighing and measuring have been defined by law in all civilized countries. This has secured for each country a certain degree of uniformity therein, but among the standards of different countries there is a diversity almost as great as ever. In the United States, as we well know in Canada, there are a great number of units of weights and measurements in vogue. For example, for measuring lengths there are the inch, ell, pail, link, foot, yard, fathom, rod, chain, furlong, mile, knot, etc., and the units in use for area, capacity and weight are even more numerous. Many of these units possess different values according to the nature of the thing to be measured or weighed. Then there are several kinds of ounces and pounds, quarts and gallons.

Mr. Arthur Harvey, author of an excellent brochure

"Decimals and Decimalization," speaking of the inconvenience of British coinage, which we all appreciate, alludes to what Sir John Bowring in his work on the decimal system says about the difference between the figures required for calculations with and without decimals. One account, he says, of 215 tons, 17 cwt., 3 qrs. 9 lbs. at £9 11s. 6½d. a ton takes 208 figures to make up in the usual way, whereas if stated decimally it would require but 66. Prof. De Morgan asks, "how much in the pound is £43, 17s., 4¾d, and takes 42 figures to work it out, whereas, with a decimal coinage, as exists in Canada, the question would be answered by the figures themselves. In going through a number of calculations of common occurrence, using first English money and non-decimalized weights and measures, and then decimalized coinage and standards, Mr. Harvey found a saving of one-half in the number of figures, and of one-half more in the time needed for processes of mental conversion, such as from ounces to pounds, and pence to shillings and pounds sterling.

Speaking of the adoption of the metric system, Mr. J. M. Allen, in his introduction to Mr. Risteen's book, shows that its advantages are many, and the only really serious objection appears to be that the change from our present units to the new ones would be more or less confusing and annoying for the first few years. Much of this could be prevented by providing school children with cheap sets of metric measures and weights, and requiring each child to measure and weigh a number of objects as a part of his studies. In this way the units and their names would become tolerably familiar to the next generation, and the transition would be far easier. The formidable decimals that the metric system suggests to the average mind constitute no part of the system itself, and they could be determined the moment the metric system came into use. They owe their existence to the fact that the foot, pound and quart are not commensurable with the meter, gramme and liter; and when we cease to use our present units we should also cease to use the long numbers that express their values in metric units. Viewing the matter from that standpoint Mr. Harvey argues that if the introduction of the new standard were determined upon, it would be advisable for each school to have a set of metric measures and weights; and for every scholar to know how to use them and how to compare them with present standards. Frequent examples should be worked out to show the practical simplicity of the system. The cost of the introduction may be calculated at less than ten cents per head of population. The lesson to be learned is that the system should be dealt with as a whole, and made compulsory at an agreed upon future date, prior to which the schools should be utilized for making known the principles of the reform and for demonstrating the practical ease and utility of the change.

SOUTH AMERICAN TRADE.

Articles which have heretofore appeared and are appearing in the pages of this journal regarding the openings for trade between Canada and other countries have excited much interest, particularly those having reference to trade with Mexico and the States of Central and South America. The restlessness of the commercial fever being in strong evidence, and the fact that the exceedingly unsatisfactory condition of affairs in South Africa acts as a damper upon trade in that

direction, it appears that the commercial worlds which are to be immediately conquered lie to the south of us.

We have become more or less accustomed to the differences which exist between ourselves and the two great countries with which we transact a very large portion of our business—differences which exist as regards the systems in vogue having reference to values, weights and measures; but as annoying and inconvenient as these are, they are increased and intensified many fold when we face the conditions which present themselves in our efforts to do business with other countries, unfamiliar as we are with their languages and systems.

We all know the value of our own money; that ours is a gold standard, and that it is identical with that of the United States, the country with which we do more buying and selling than even with that other country, Great Britain, with which we are so closely bound by political ties. We do not all know the relative value of British money as compared with Canadian or American; and while the names of British coin are familiar to us, there are not many who even know the names of the coins in use in the South American States, or have any conception of their value. It is, therefore, easily seen that under these circumstances we are badly handicapped at the outstart in any effort we may make in the direction of trade with South and Central America. Considering this condition, and the desirability of enlightenment, we have much pleasure in giving some information which will be useful for reference, and which, no doubt, those interested will preserve for that purpose.

Argentine Republic.—Standard, gold. The nominal unit is the gold dollar, of which \$5.05 equals £1, or \$1 gold equals 47.619d. The rate of exchange for gold fluctuates constantly, but averages about 47¾d. to 48d. All internal commerce in Argentina is carried on with a paper currency, originally equivalent to gold, but subsequently declared to be inconvertible, and which has consequently been depreciated for years. The relative value of this currency and the theoretical gold unit is expressed by saying that there is a premium on gold of so much. Thus, for instance, if the premium is quoted at 128, that means that \$228 paper must be paid for \$100 gold, or its equivalent in exchange on abroad. This premium is constantly fluctuating. With the object of steadying it somewhat, Congress passed a Conversion Law in 1899 whereby it was decreed that the nation will convert the whole of its paper money into gold at the rate of 44 cents gold for \$1 paper. This corresponds to a premium on gold of 127.27 per cent., or \$100 gold equals \$27.27 paper. Certain receipts of the Government are set aside to form a conversion fund in gold. When these have reached what may be considered to be a sufficient amount, the Government will "at an opportune moment, fix by decree and with three months' anticipation the manner and form in which the conversion is to be carried out." As a temporary measure a Conversion Office has been established, which issues notes in exchange for gold, at the rate of 44 cents gold to \$1 paper, and will buy notes at the same ratio so long as it has gold available for the purpose. In order to find value in pence of an Argentine paper currency dollar at any given rate of premium, the following method is employed. Say, for example, that the premium is 180, then \$280 paper equals \$100 gold. And as \$5.04 gold equals £1, or 240d., the value of the gold dollar equals 47.619d., and \$100 gold equals 4,762d. Divide by 280, and it is found that the value of the paper dollar at this premium is 17d. approximately.

The standard of Brazil is gold. The monetary unit is the milreis, the par value of which is 27d. The actual circulating medium is an inconvertible paper, which, after having been

greatly depreciated in value in recent years of crisis, is now rapidly recovering, as the Government is withdrawing large amounts from circulation and destroying them, and also on account of the improved prospects of the country. The rate of exchange in Brazil is quoted at so many pence and fractions of pence to the milreis. This rate is variable.

Chili.—Standard, gold. The unit of account is the dollar, worth nominally 18d. The law converting the old currency to this rate began to take effect in 1895, and the conversion was completed by end of 1897. For a time only metallic currency was in circulation, but, owing to a financial crisis which became acute in 1898, Congress authorized, on July 30 of that year, the temporary emission of \$50,000,000 paper currency, to be taken as legal tender for all obligations which had not been specially contracted in gold. This emission is being redeemed at the rate of \$10,000,000 per annum, which rate may be increased. Both fiscal notes and specie are in circulation. The rate of exchange fluctuates between 17d and 18d.

The standard of Uruguay since 1876 has been gold. Its currency has always been specie, and all attempts to introduce paper currency have failed. The nominal value of the dollar is 51d., or \$4.70 equals £1. The rate of exchange fluctuates between 51 and 53 pence to the dollar.

The standard of Paraguay is a gold dollar nominally equivalent to the gold dollar of the Argentine Republic. It has, however, been supplanted by a forced paper currency, which has depreciated very greatly, the premium on gold having been in recent years as high as 800 per cent. At present it is about 750 per cent.

Peru.—Standard, gold. The unit is the sol, which is fixed by law as par value 24d. At present the rate of exchange with London is at a premium, the sol being quoted at about 24½d. The currency in use is specie, consisting of the "Libra Peruvian," a gold coin, representing 10 sols, the silver sol, and pesetas of one-fifth of a sol. No paper currency.

Ecuador.—Standard, gold. The unit is the sucre, fixed by law as worth 24d. The coins are the gold condor, of 10 sucres, and the silver sucre, also fractional coins. No paper in circulation.

Colombia.—Standard, silver. The dollar is nominally equivalent to 5 francs, but all circulation is in paper, which has been greatly depreciated for many years, and more especially since the recent outbreak of the revolution. At present the premium upon gold is about 1,200 per cent.

Venezuela.—The standard is gold, and this republic has been able to keep free from paper currency. The unit is the gold dollar, equal in value to the French 5 franc piece. The dollar is divided into 5 bolivares, equivalent to francs, and most quotations in business are given in this unit. At present exchange in Venezuela is about par.

Bolivia.—Standard, silver. The dollar, "Boliviano," is by law 25 grammes weight, 900 fine, but is not in circulation. It is represented by silver 50 and 20 cent pieces. The approximate value of a Bolivian dollar is about 22½d. to 23d.

Costa Rica.—The gold standard has been recently introduced. The unit is the "Colon," worth about 23d. The following information is official, and shows the exact Mint pars:

£1 = 10.46 colones.	\$1 U.S. = 2.15 colones.
1 mark = 0.512 colon.	1 franc = 0.414 colon.
1 colon = 22.935d.	

At present there is still, however, a paper currency in circulation, which is quoted at 177 per cent. That is to say, \$100 gold equals \$277 paper.

Salvador.—Standard, silver. Unit a dollar, or peso, equivalent in value to the French 5 franc piece. Actual circulation, silver and bank notes; no Government notes. Exchange quoted at present at 136 per cent.; that is \$100 U.S. gold equals \$236 paper.

Nicaragua.—Standard, silver. Unit a dollar, nominally worth 5 francs. Actual circulation, silver, bank and Government notes, the latter being at a small discount. Exchange

is at present quoted at about 150 per cent.; that is, \$100 gold equals \$250 paper or silver.

Honduras.—Standard, silver. Unit a dollar, equivalent to French 5 franc piece. Currency, the same as Salvador.

Guatemala.—Standard, silver. Unit a dollar, equivalent to French 5 franc piece. The actual circulation, paper currency, has been recently greatly depreciated, as much as \$800 paper to \$100 U.S. gold. At present the quotation is about 700 per cent., and is constantly fluctuating.

Mexico.—Standard, silver. The unit is a dollar weighing 416½ grains troy, 898 fine. Its value in sterling depends upon the price of silver. At present it is quoted at about 24d.

NOTE.—For many of the facts contained in this article we are indebted to "South America as a Field for Enterprise," published by the editors of The South American Journal.

CANADIAN-AMERICAN TRADE.

At a meeting of the Boston Paper Trade Association, held in that city on January 2, Mr. Osborne Howes, of the Boston Chamber of Commerce, delivered a most interesting address on "Our Trade Relations with Canada," a portion of which we reproduce. Mr. Howes said in part:

It is generally recognized by all intelligent business men that the problem of the present and immediate future is to obtain wider markets for the consumption of our products. It is believed that the productive power of the mills and workshops of this country is fully sufficient, by the work of eight months, to supply the ordinary needs of our people, and the condition that confronts us is to find outside of our borders markets for surplus products in order that our industrial efforts may be continuous in their operations, that manufacturing establishments may not be shut down for a part of the year, with the consequent loss to labor and to capital.

It is this recognized need which has led to the calling together of Pan-American congresses, to our retention of the Philippine Islands, and the insistence upon the open-door policy in China, these being all incidents in the efforts of the American people to expand their trade. Unfortunately there is not a little reason for realizing that diplomatic attempts to increase our exports have not in all cases followed the line of least resistance. American manufacturers are in the main the producers of wares which are better adapted to the needs of a people representing, as we do, a high type of civilization than they are to meet the needs of barbarians or those of a low type of civilization. More than this, these latter classes have not only comparatively little need for the goods which we produce, but they have not in any great extent the ready money to pay or the goods to exchange for them.

On the other hand, when we take up for consideration the case of Canada, we find the conditions wholly reversed. Here is a people closely resembling ourselves in the standard of civilization, having the same tastes and needs that we have, fully appreciating the attractiveness and value of our product, and what is more, having the wherewithal to buy them for the purpose of meeting their needs. The result of this has been that in spite of entirely needless and irritating interferences, our sales in Canada, in this effort to find markets beyond our borders, have increased at a prodigious rate, so that they were about 300 per cent. greater last year than they were twenty years ago. We have been selling during the last year or two more of our products to the 5,500,000 people of Canada than we have sold to the 60,000,000 of people inhabiting the American hemisphere south of the Rio Grande river. Man for man, there is nowhere to be found in the world as liberal a purchaser of American goods as the Canadian.

Take the paper trade as an illustration. In the year 1899, the paper trade of the United States sold in foreign countries goods of its production to the value of \$5,600,000. Of this

amount \$912,000, or about one-sixth, represented its sales in Canada. The increase in the volume of sales was about fifty per cent. in five years, and this in the face of the fact that the Canadians have within the last few years manufactured the greater part of their writing paper and calendered paper, and that the paper trade of Great Britain in Canada has in the same interval fallen off approximately twenty per cent.

The mistake which our Government has made in the past has been to discourage the idea in the minds of the Canadians that their natural market to sell their goods and obtain their supplies is in the United States. In 1882 the Canadians sold in this country goods of their production to the value of \$42,000,000, sales representing a larger volume of business than was then transacted with the Mother Country, and larger than they have ever since been with us of the United States.

Canadian people were beginning to realize that their interests drew them toward the United States, and a spontaneous and hence natural, feeling in favor of annexation was springing up all over the country. It was a sentiment which, if our statesmen had been wise, they would have encouraged by every means in their power. The fruit seemed almost ripe; it only needed the sunshine of good feeling and increased commercial interests to fall into our hands.

But instead of making it an object for the Canadians to look to our country as almost a part of their own, the policy adopted by our Government, with no doubt the underlying idea of expansion and annexation, was to force the Canadians to pray for admission to the Union by forcibly shutting them out from what was looked upon as their best, as it certainly was their nearest market. The tariff of 1883, and two of the subsequent tariffs, have been drawn with the express intention of excluding as far as possible Canadian products from the American market. As a matter of national policy the result has been disastrous in the extreme. Fifteen or twenty years ago a very large proportion of the inhabitants of Canada looked upon commercial union with our country, brought about through annexation, as their ultimate destiny. At the present time it would be difficult to find in Canada any man of prominence who is not an anti-annexationist.

This policy of oppression encouraged an entirely new development in the industrial and commercial growth of the Dominion. Its Government felt itself justified in seeking to build up its own industries so as to be entirely independent of the United States; its lines of transportation, both by land and water, which would naturally have been southward, were developed eastwardly and westwardly so as to avoid American territory. The market of the Mother Country, that it had not greatly sought, was cultivated with highly satisfactory results, so that the sales of Canadian products in Great Britain now amount to approximately \$100,000,000 a year in value, against about a third of that sum in the United States. The folly of our statesmen has driven the Canadians away from us and forced them to be not only politically, but commercially independent. If those at Washington who have been responsible for this diplomatic blunder had been retained by liberal payments of British gold, they could not have played England's game more successfully than they have done, although it must be admitted that what has happened has been due to their want of foresight and ignorance of human nature, and not to any intention of building up a great and independent nation to the north of us.

The danger that now confronts us is, that the same diplomatic blindness which led to the results just named will also lead to the breaking down of our market in Canada, which last year represented to us sales to the amount of \$100,000,000. Our average rate of duty on dutiable goods is fifty per cent. ad valorem; the average duties in Canada are thirty per cent. ad valorem. The Canadians complain that we are not treating them fairly; that we are not giving to them the opportunities that they accord to us; that as wonderfully good customer we should be willing to encourage and not drive away their trade. As we have not thus far been willing to

listen to them they are showing us in their treatment of England what they think we should do for them.

England is their best customer, and in recognition of this they have cut one-third from the rate of duties on all dutiable goods that enter Canada from the United Kingdom, and the probabilities are that if this does not suffice in building up trade between Canada and the Mother Country, the time is not far distant when larger concessions will be made, or when the Canadian duties upon English goods will be entirely repealed. We have held our market in Canada thus far against tremendous adverse conditions, but there is a point where we cannot hope to successfully compete, and it should certainly be the duty of the Government at Washington to see that our manufacturers and merchants are not compelled by the pleading of a few special interests to lose the best and most convenient market outside of our borders that we have for the sale of our goods.

Mr. Howes then offered the following resolutions, which were adopted:

Whereas, The great development that has recently taken place in American productive industries makes it of paramount importance that we should find markets for our wares outside of our national borders, and

Whereas, A very large part of the manufactured products of this country find their best markets among civilized people, and

Whereas, the tastes and needs of the Canadians are more nearly like our own than those of any other people, and would lead them under natural conditions to buy freely of us; therefore, be it

Resolved, That the Boston Paper Trade Association respectively petitions the President and the Congress of the United States to do what they can to place American merchants and manufacturers in a position to hold and enlarge the markets they now have in Canada.

Resolved, That a reciprocal trade treaty on the basis of equivalent concessions, should be made between the Dominion of Canada and the United States at as early a day as possible.

Resolved, That copies of this resolution be sent to the President, the Secretary of State, the two Massachusetts United States Senators, and to those in the National House of Representatives representing Massachusetts.

ARGENTINE REPUBLIC.

In a report on the foreign commerce of the Argentine Republic for 1899, with observations relative to the French commerce there, Mr. Francastel, French Consul at Buenos Ayres, reports as follows regarding industrial and agricultural developments, to which in part is due the decline in imports of French products, France now occupying fifth place among the importing nations, whereas in 1899 it was second.

In the last few years, says Mr. Francastel, numerous dairy farms and cheese factories have been established, which have caused a falling off in the imports of foreign cheese of over a million kilograms. In 1899 the Argentine Republic exported 1,179,496 kilograms of butter, and to-day competes with similar French products in the Brazilian markets.

The flour mills of Rio de la Plata have made such progress that not only have they stopped the importation of foreign flours but they are beginning to export. Rio de Janeiro is the market they are aiming at principally, where they are attempting to compete with North American flour.

Of the 2,500,000 hectoliters of wine actually necessary for consumption, the Republic to-day produces more than 1,000,000. The ordinary wines which enter into consumption are for the most part mixed wines, composed, per hundred liters, of thirty-five liters of Mendoza and San Juan wine, forty

liters of wine from raisins, and twenty-five liters of Italian or Spanish wine.

The sugar industry has progressed so rapidly in the last twenty years that it is obliged to moderate its production to avoid a return of the crisis brought on by the over production of 1895 and 1896. When the needs of the country did not exceed 95,000 tons, the sugar mills were producing 170,000 tons yearly. The stock on hand one time reached 165,000 tons. The sugar syndicate could not keep up the prices and dispose of the excess of its production abroad except by means of different legislative measures, for which it obtained the vote of Congress (establishment of a protective tariff and export premiums). If the cost price of Argentine sugar does not permit its entering normally the foreign markets, it is at least sure of the home market, thanks to the essentially protective duties.

Manufacturing industries of products other than purely agricultural ones are less developed in the Argentine Republic. Nevertheless there is a strong tendency toward their establishment. In the city of Buenos Ayres alone there are 2,928 factories or workshops, among which are to be remarked 207 jewelry and watch-making factories, 182 furniture factories, 151 liquor distilleries, 89 carriage factories, 85 for the manufacture of wagons and carts, 66 for boots, 26 for hats, 22 for gloves, 25 for shirts and collars, 13 for artificial flowers, 27 for iron beds, 3 for safes, 6 for canned goods, 4 breweries, etc.

BUYERS' GUIDE.

At a recent meeting of the Executive Committee of the Canadian Manufacturers' Association, Mr. George H. Hees, chairman of the Tariff Committee, made a number of valuable suggestions looking to the trade of Canada with other countries, and particularly to the advantages which would accrue from the presence of a trade commissioner in London, who should be prepared to intelligently answer all enquiries regarding the manufactured products of Canada, and to give the addresses of the manufacturers producing them. His suggestion was that there should be an alphabetical list of manufacturers, with an enumeration of their products, grouped according to the articles made, an arrangement which would be of much assistance to buyers.

In our opinion the suggestion is a most excellent one, and it is our pleasure to inform our readers that such a book, *The Buyers' Guide of Canada*, is already on the market, and quite available to any who may desire to possess it. It is a book containing some 488 pages, in cloth binding. It is a complete index, containing the addresses of more than ten thousand Canadian manufacturers, every one of whom have stationary plants operated by steam, electric or water power; and it also contains the names of more than 22,000 articles produced by these manufacturers, alphabetically arranged, the names of the manufacturers being given under each article enumerated. The book was compiled by one of the most experienced men in Canada, and should be in the hands of every manufacturer as well as every buyer who desires accurate knowledge concerning Canadian manufactured products. Fuller particulars will be found in an advertisement in page 39. The book can be had on application to THE CANADIAN MANUFACTURER.

EDITORIAL NOTES.

United States Consul Hughes, at Coburg, Germany, writes to his Government as follows:—

Up to the present time, Germany has imported each year from \$25,000,000 to \$30,000,000 worth of American petroleum. This industry, however, seems to be threatened somewhat by the introduction of acetylene as an illuminant, in a convenient and safe form, for house, store and other uses. This has resulted from the low price at which calcium carbide is being produced here, and also from the rise in the cost of petroleum in the German markets.

A couple of years ago a very flourishing Canadian industry was the manufacture of acetylene gas machines, but such machines are now practically unsaleable because calcium carbide cannot be had in sufficient quantities to operate them.

The American Society of Mechanical Engineers, of which Prof. F. R. Hutton is secretary, with head office at 12 W. 31st street, New York City, have sent us a copy of their twenty-first catalogue, second edition, which contains the names and addresses of all the members of the society, the summary showing that there are of all classes a total membership of 2,064. The objects of the Society are to promote the arts and sciences connected with engineering and mechanical construction by means of meetings for social intercourse and the reading and discussion of professional papers, and to circulate by means of publications among its members the information thus obtained. The roster shows that there are 113 foreign members, of whom thirty-seven reside in Great Britain and twelve in Canada, among whom is Mr. W. T. Bonner, of Babcock & Wilcox, Montreal.

We are in receipt of an enquiry from a large general mercantile concern in India for names of manufacturers of oil and gasoline motor carriages. This is a trade that should be cultivated.

The manufacture of calcium carbide in commercial quantities found its inception in Canada, and soon after its introduction the manufacture of acetylene lighting plants in this country was begun and soon assumed very gratifying proportions. But for causes which we are not at present prepared to discuss, the production of carbide, never sufficiently large to meet the current demand, began to decrease, and at this time we are face to face with the fact that the use of acetylene lighting plants is being discontinued, and the manufacture of them abandoned, simply because the carbide cannot be had. There is no good reason why carbide should not be produced in Canada in quantities sufficient to meet all demands, and at prices which should encourage its use. The industry is quite sufficiently protected by a high tariff duty which should be greatly reduced or removed if the article cannot be produced here, with the view of importing it from Germany or the United States. In fact the carbide manufacturers in Germany have recently been suffering from the exceedingly low prices prevailing in that country, caused by active competition. The acetylene gas industry there is a very important one, there being at present in the Empire more than 200,000 plants producing acetylene gas. Many of the smaller towns are lighted by it, and it is also used for lighting railroad passenger cars. The production of calcium carbide in Germany last year was equivalent to about 9,500,000 gallons of petroleum.

Just as the buzzing busy bee goes forth in search of honey, so should the busy business man, by seeking trade, find money. And as the bees that buzz the most find most of sweets they prize, the cream of trade will always go to those who advertise.

The beauty of free trade for Great Britain and British preference for Canada is seen in the following which we clip from Commercial Intelligence, London:—

The result of the Canadian elections and the subsequent declarations of Sir Wilfrid Laurier put it beyond doubt that the Preferential tariff will be continued, and that British traders will continue to enjoy the benefit of the reduction of one-third in Canadian import duties which the preferential tariff confers upon them. It is, unfortunately, true that, while British traders have undoubtedly benefited, the "preference" has not by any means turned the scale in favor of the British, as compared with the American trader in the Canadian market. But even more unfortunate is it that by giving us a tariff preference, Canada has worked harm to her products in the German market, Germany having excluded her from most favored nation treatment as a consequence of the discrimination against German products. The Government state that they have the matter in mind, but in answer to a question in the House of Commons, Viscount Cranborne, while admitting the importance of the subject, had to point out that in the absence of a commercial treaty between this country and Germany, that power is, of course, able to regulate her tariffs in accordance with her own views. But, serious as this matter is to Canada, it is trifling compared with the stake which Sheffield has in the German market, and which is threatened by impending German legislation. To raise the German duty on crucible cast steel from £2 10s. to four times that amount per ton, as is suggested, would be a crushing blow to Sheffield exports to Germany.

The result of the visit to Buffalo of Messrs. C. C. James, Thomas Southworth, T. W. Gibson and David Boyle, representing departments of the Ontario Government, with a view to conferring with the Pan-American officers regarding the space and other facilities to be allowed for the Ontario exhibits, resulted very satisfactorily. The four gentlemen named represented the agricultural, forestry, mineral and archaeological exhibits, which are the only ones so far decided upon for this Province. Mr. James, who is the honorary commissioner for Ontario, in speaking of the conference said that in their disposition to be fair, and even generous to this country, the Exposition officials will spare no pains to give us a liberal allowance of space, although in some of the departments the applications for room amount to two or three times as much as is available. Mr. Hutchinson, the Dominion Commissioner, and Mr. McBride, the architect of the Dominion Department of Agriculture, were also at Buffalo and arrangements are being made for the construction of the Canadian building.

The Toronto Architectural Eighteen Club are holding an exhibition, including the Circuit Exhibition of the Architectural League of America, in the galleries of the Ontario Society of Artists, under the patronage of the Lieutenant-Governor. Its objects, which are chiefly educational, are also to interest the public generally in architecture. The exhibition will be open free to February 9. The opening night, for which invitations have been issued, will be held on Friday evening, February 1.

The Sault Ste. Marie, Ont., Board of Trade is arranging for a public banquet on a magnificent scale, to be tendered to Mr. F. H. Clergue, the promoter of the gigantic enterprises in the Dominion, on his return from Europe early in February. Prominent speakers and press representatives from every part of Canada will be present. A similar function will be tendered to Mr. Clergue by the people on the American side in the near future.

Another coal company, rivalling the Dominion Coal Company in magnitude, is about being formed at Sydney, N.S. Senator David McKeen, Vice-President of the Dominion Coal Company, director of the Royal Bank of Canada, representing wealthy capitalists, has effected a consolidation of the coal interests in Cape Breton known as the Moseley, McVey, White, Hickey and Keefe interests. These areas adjoin those of the Dominion Coal Company and cover an extent of over ten miles from Cochrane Lake almost to Sydney Harbor. A large and expensive plant for experimental work has been secured. It is understood that application will be made to the Nova Scotia Legislature for a charter incorporating the company.

The Imperial Trade Defense and Anti-Free Imports League, of which Mr. J. W. Mahony is organizer, and whose head office is at 115 Fleet street, London, England, have sent us a fly sheet in which is called a public meeting to be held on January 28, at Birmingham, under the auspices of the League, at which Mr. Mahony will be the chief speaker. The subject of the address was "Britain's Responsibility for the Defense of Imperial Trade," and the following subjects were to be dealt with:—"The Need of Empire and its Industrial Development;" "The Interests of Labor and the Empire;" "The World's Great Empire is Stirring in Deadly Earnest for Supremacy in Trade;" "The Hope of Free Trade must be Finally Abandoned;" "British Trade must be Considered as part only of Imperial Productions;" "British Markets Should be Free to None but Imperial Goods, all others of a Competing Character to be Taxed." This incident indicates the drift of public sentiment in the Mother Land.

At the annual banquet of the Canadian Canners' Association held in Toronto last week, W. R. Brock, Esq., recently elected from a Toronto constituency as a member of the Dominion House of Commons, in responding to a toast of the House, expressed confidence that if the gentlemen composing the Canners' Association gave their attention to obtaining a share of the market of Great Britain for their goods they would confer a great benefit upon both themselves and upon the Dominion. He was satisfied this was possible, as the products of Canada are as good as those of the United States. It was essential that the products of Canada should be laid down in England as cheaply as those from the United States. To this end, when charters are given to railways he thought provision should be made for getting our goods to the sea-board at the same rates as goods shipped from Cincinnati, Cleveland and Chicago. He also thought it would be advantageous to devote more time and money to obtaining a fast freight service on the Atlantic, with cold storage, which would be of greater benefit to Canada than a fast passenger service. Referring to the work of the Association, he was glad to see they had a combination not to force up prices, but to get fair prices. Speaking of the Dominion Parliament, Mr. Brock, as a new member, he differed from Sir Wilfrid Laurier, who wanted more lawyers to go to Parliament, and expressed a hope that they would soon see more manufacturers and business men there.

CAPTAINS OF INDUSTRY.

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

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

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

The Buffalo Forge Co. has recently placed upon the market an extremely novel folding forge, which by reason of its light weight and exceedingly small compass, when knocked down and packed within its case, renders it a valuable article for army and navy use. The outside dimensions of the case into which it packs are but 22½x27½x10 inches. The forge is designated as the Buffalo Army and Navy Forge, and as may be mentioned, is in use in the Imperial Japanese navy. The same company received a rush order for 100 of these forges recently for use by the United States army in the Philippines. Owing to the necessity of shipping these forges on a certain transport, only three days were given in which to fill the order, but the forges were completed and placed upon the transport in the specified time.

D. K. McLaren, Montreal, belting manufacturers, have appointed John L. Richardson manager of their Toronto office. Mr. Richardson wishes to assure the trade that any business intrusted to his care will receive prompt and accurate attention.

The Dominion Industrial Co. has been incorporated with a capital stock of \$200,000 to manufacture pulp, paper, etc. The provisional directors include R. H. Pope and W. W. Bailey, of Cookshire, Que.; F. P. Buck, Sherbrooke, Que., and G. Stevens, Waterloo, Que.

The Dominion Bridge Co., Montreal, have been awarded a contract for the construction of the new Canadian Pacific Railway bridge over the Red river at Winnipeg, Man., the cost of which will be \$60,000.

"Draft Without a Chimney" is the title

of an interesting little booklet, of which the fourth edition has just been issued by the B. F. Sturtevant Co., Boston, Mass. This brings the total number of copies printed up to 50,000. It relates to the experience of the Sturtevant Co. in the use of a fan to produce draft without a chimney in its own works. Copies will be furnished on application.

Messrs. Sadler & Haworth, Montreal and Toronto, have received an order for supplying the belting for the electric power house at St. Mary's, Ont.

The Canadian Bridge Co., Walkerville, Ont., is applying for incorporation with a capital stock of \$250,000, to manufacture bridges, etc. The provisional directors include B. S. Colburn; F. C. McMath, and G. F. Porter, Detroit, Mich.

The new shops of the Colorado & Southern Railway, just completed at Denver, Colo., are noticeable for the introduction of many features conducive to the comfort and welfare of the workmen. Among these is a complete equipment for both ventilating and heating the entire plant by the blower system. Separate apparatus furnished by the B. F. Sturtevant Co., Boston, Mass., consisting of fans and heaters are installed in the machine and car shops. Air distribution is secured through a complete system of galvanized iron piping. A clear atmosphere is also maintained in the forge shop by means of a large Sturtevant exhauster arranged to draw the smoke and gases from the eighteen special down draft forges also furnished by the same company.

Port Arthur, Ont., is interested in the newest phase of development, which is ex-

pected to take place there. A great pulp mill is spoken of in connection with the Jennison power scheme, promoted by E. S. Jennison, who has been in New York in consultation with the agent of an American pulp and paper syndicate, who have agreed to make an estimate of the spruce and pulp wood in the vicinity of Thunder Bay, with a view to a possible location there. They will require a minimum of 15,000 h.p., and their plant when in full operation will grind about 1,250 cords of wood per day.

The B. F. Sturtevant Co., Boston, Mass., recently received the following unsolicited letter from the Widdicomb Furniture Co., Grand Rapids, Mich., which speaks for itself. "Enclosed we hand you check for exhaust head, which was applied yesterday and found to be the most efficient device for the purpose the writer has ever seen. The condition of the atmosphere this morning is one of extreme moisture, which certainly would display any spray passing out with the steam, but not a particle of moisture can be found in the air, and that even within twelve inches from the exhaust steam. As we have to purchase our water supply the device will soon pay for itself."

The Papineauville Lumber Co., Papineauville, Que., are applying for incorporation with a capital stock of \$50,000. The applicants include Henri Bourassa, T. Bonhomme and P. de Varennes, all of Papineauville.

The Laurentian Stone Co., Ottawa, has been incorporated with a capital stock of \$40,000, to manufacture lime, cement, etc. The provisional directors include T. G. Brigham, W. E. Hayes and M. J. Murphy, all of Ottawa.

The Malcolm & Souter Furniture Co., Hamilton, Ont., has been incorporated with a capital stock of \$75,000, to manufacture furniture, etc. The provisional directors include Thomas Bain, Dundas, Ont., A. M. Souter, Wm. Malcolm and J. E. Souter, all of Hamilton, Ont.

Messrs. Whiteford & Angus, Danville, Que., have been granted a loan of \$30,000, by that town to erect a paper mill at Nicolet, Que.

The Pigeon River Lumber Co., Grand Rapids, Mich., have purchased the mills and machinery of Graham, Horne & Co., Fort William, Ont., and will enlarge the works.

An electric light plant has been installed at Lucan, Ont., by Messrs. Cook Bros., Hensall, Ont., who have secured the contract for lighting the village.

INGERSOLL-SERGEANT Rock Drills

FOR MINES, TUNNELS AND QUARRIES

PISTON INLET Air Compressors

STRAIGHT LINE
 DUPLEX and
 COMPOUND.

FOR ALL DUTIES.

... COMPLETE MINE EQUIPMENT ...

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

Other Offices - - - ROSSLAND, B.C.

RAT PORTAGE, ONT.

HALIFAX, N.S.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

A bonus of \$7,000, a free site, water power and exemption from taxation has been asked by J. R. Simpson, of Hastings, Ont., as an inducement to erect a furniture factory there.

We have received from the Edwardsburg Starch Co., Cardinal, Ont., their calendar for 1901. They inform us that their new plant is now completed with improved machinery and increased capacity.

The ratepayers of Woodstock, Ont., have voted favorable on a debenture issue for \$20,000 to purchase and improve the electric light plant of that town.

The St. Lawrence River Navigation Co., Canada, has been formed in London, Eng., with a capital stock of £500,000, to operate an all winter line of ice-breaking steamers between Montreal and Quebec.

The collector of Crown Timber Dues at Quebec City says that the Crown stumpage dues revenue collected during the past season on pine timber cut in Ontario and exported at Quebec amounted to about \$50,000. The season was an active one, good prices prevailed, and all the timber sent to Quebec was readily sold, and nearly all was shipped; very little of it wintering in Quebec. The season compared favorably with former years, the total quantity of various

kinds of square timber exported being upwards of 3,000,000 cubic feet. Notwithstanding the steadily growing scarcity of suitable standing timber, the prospects for the season of 1901 were very fair, as prices have advanced and the demand is active.

The town of Collingwood, Ont. is negotiating with a Pittsburg syndicate who intend to erect a monster wire works there that will employ three hundred men. This syndicate, which is represented by the Stanyon-Miller Engineering Co., Pittsburg, Pa., is said to be negotiating with the Cramp Ontario Steel Co. for the bulk of the output of their steel furnaces, the idea being to turn the steel into wire nails, barbed wire and fencing wire, mostly for the foreign trade. The syndicate is said to be very strong financially, and quite capable of coping with the American wire trust. The company will also erect a large foundry and machine shop in connection with the wire works, and will manufacture all their own tools and machinery. The wire works, together with the steel shipyard, will utilize almost the whole of the output of the steel company to commence with.

The Clayton Air Compressor Works, whose offices are at 26 Cortlandt St., New York, have just issued their new catalogue, No. 2, which illustrates and describes the

many types of Clayton air compressors, air receivers, vacuum pumps, carbonic acid gas and high pressure compressors and the Clayton air and lift pumping system. Among the other contents of this catalogue will be found full information relative to the transmission of compressed air and capacity lost by air compressors in operation at various altitudes.

The Pontbriand Co., Sorel, Que., has been incorporated with a capital stock of \$100,000, to manufacture engines, boilers, etc. The provisional directors include A. E. Pontbriand, J. E. A. Pontbriand and J. T. Hurtean, all of Sorel, Que.

The Garfield Oil Co., Cleveland, Ohio, manufacturers of Zanzibar Anti-rust Paint are preparing for a large increase in their Canadian trade. With branch warehouses at Windsor, Ont., and Montreal, prompt service is insured. Zanzibar Paint is well known throughout Canada for its high merit. Elastic and durable. Free from blistering, cracking or peeling off.

The MacLaughlin Automatic Air Brake Co., Walkerville, Ont., has been incorporated with a capital stock of \$1,000,000. The provisional directors include W. G. MacLaughlin, Kansas City, Mo., J. H. Coburn, Walkerville, Ont., and G. H. M. Christie, Windsor, Ont.

Transfer Ornaments, AMERICAN MADE.

TRADE MARKS, DECORATIONS, NAME PLATES, ETC., Guaranteed Quality.

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.

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

—MAIN OFFICE—

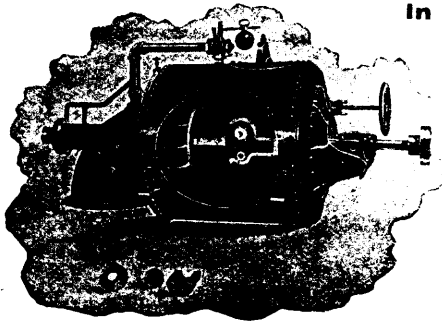
Canadian Travelling Representative,
CHAS. H. JAGGER, Hamilton, Ont.

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 Equipments.

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

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Chatham, Ont., is to have a beet sugar factory. A meeting of the city and county councils was held last week when John R. Truphant, of Detroit, and a number of New York capitalists were present and explained the cost and capacity. The factory would cost \$475,000, and the New York bankers would take half the stock. The other half of the stock would be floated locally. A subsequent meeting was held and arrangements made to at once float the company and have the factory running by October. The surrounding country is peculiarly adapted to the growing of beets for sugar. The following provisional directors were appointed:—Mayor Sulman, Manson Campbell, G. P. Scholfield, R. Gray, S. T. Martin, D. Wilson, and G. W. Cowan.

The works of the Duncan Lithographing Co., Hamilton, Ont., was destroyed by fire Jan. 23. Loss about \$20,000.

The keel has been laid and work is now in progress at the Collingwood, Ont. shipyard, on what will be one of the finest passenger and freight steamers on the Great Lakes. The vessel is being built for the Sarnia and Duluth route, and in size and appointments will be a larger and finer vessel than the Manitoba, which is considered to be the finest steamer in the inland marine. The length of the new steamer will be 325 feet, beam 43 feet, moulded depth 27 feet. The keel and all portions of the vessel will be built of steel. Four boilers and triple compound engines will develop 2,500 horsepower and guarantee fifteen miles an hour loaded, and seventeen to eighteen miles light. When completed this vessel will be the queen of the lakes. This is the first keel laid in the new shipyard, and it is expected

the vessel will be completed by the first of next September.

Messrs. Fleming, Birkby & Goodall, Halifax, England, have sent us their new pamphlet having reference to the "Teon" belting manufactured by them. "Teon," we are told, is a composite textile belt. Externally it somewhat resembles Balata belting, and on this account it has often been described as of "Balata type." Teon, however, we are told, possesses inherent elements of efficacy and durability, which statement has been verified by actual experience. The results of many tests are given regarding tensile strength, action in the presence of caustic soda, ammonia, lubricating oils, freezing and thawing, heat and steam, etc., all of which were of most satisfactory character. A list is given of trades where "Teon" is especially suitable, and this covers about all places where first-class belting is required. Mr. P. H. Wilby, 27½ Front street East, Toronto, are agents for Messrs. Fleming, Birkby & Goodall, from whom further information can be had.

A syndicate, comprising Charles Burrill, Weymouth, N.S.; B. F. Pearson, Halifax, N.S.; Robert Mackay, Montreal; W. H. Rowley, Ottawa; Franklin Stetson, George W. Jones and George McAvity, St. John, N.B.; and others, has purchased the Knight Lumber Co's property at Musquash, N.B., which includes 36,000 acres of spruce timber land. The price is said to be \$100,000. The purchasers will vest the property in the Lancaster Pulp & Paper Co., which is to build a sulphite and paper mill at Musquash. The syndicate has also obtained an option on 20,000 acres belonging to the Clinith lumber lands.

The McLachlan Electric & Gasoline Motor Co., Toronto, have sent in an illustrated circular having reference to the gas and gasoline engines built by them. Regarding these they say:—Our gas and gasoline engines are of the four-cycle type. They usually consume about one pint of gasoline per hour per horse power or from fifteen to twenty feet of gas per hour. They are easily started, and it takes but a minute or less to get them under way. When the fuel is at hand they are always ready. No mechanical skill is required of the operator. A few simple instructions are enough to enable one of average intelligence to run such an engine. Once started it takes care of itself, using fuel in proportion to its load. No other attention is necessary than starting, stopping and oiling. The consequent dust and dirt does not worry the gas engine user. Boiler insurance, danger of boiler explosions, and knowledge of the state of the water gauge and safety valve, with many other necessary operations are put up on the shelf, and a compact machine with an economy scarcely dreamed of, takes their place. Launches fitted with the McLachlan Electric & Gasoline Motor Co's engines are not subject to government inspection, and licensed engineers and pilots are not required. For further information apply as above.

The Bertram Engine Works Co., Toronto, are building a sister ship to the freight steamer Ottawa, for the Canada Atlantic Transit Co.

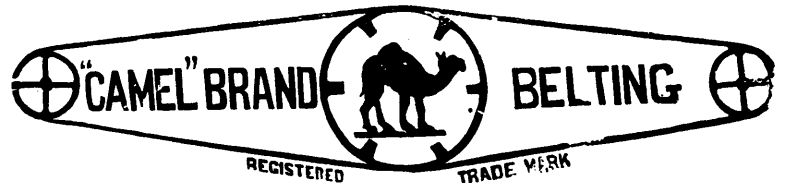
According to news from Ottawa, a large pulp mill and power house will soon be built on the Chaudiere. The new works will occupy the site of the Hull Lumber Co's

W. A. FLEMING & CO.,

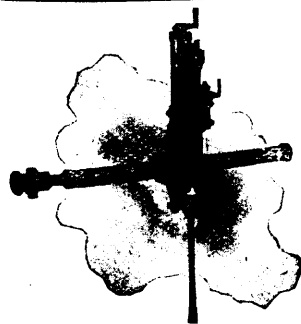
MILL SUPPLIES

CAMEL BRAND BELTING

HOSE of all kinds
DRIVING ROPE
BELTING of all kinds

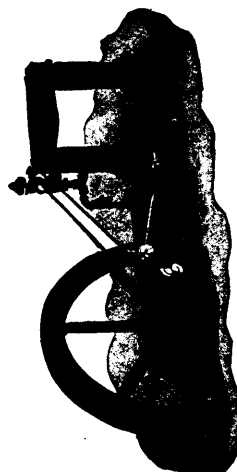


771 CRAIG STREET, MONTREAL.

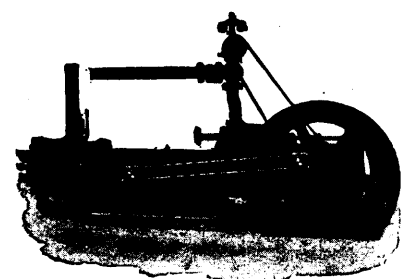


MINING MACHINERY

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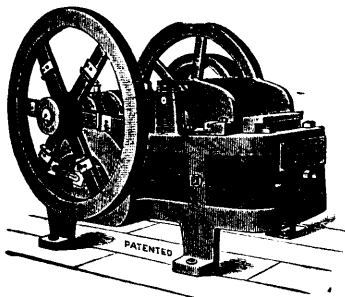


The Canadian
Rand Drill Co.

MONTREAL
SHERBROOKE,
HALIFAX, N.S.
TORONTO, ONT.
ROT PORTAGE, ONT.
ROSSLAND, B.C.
GREENWOOD, B.C.
NELSON, B.C.

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ROLL JAW CRUSHER.



Crushes

Large Rock

to

4 inch.

Send for Circular.

STURTEVANT MILL CO.,

**104 Clayton St.
Boston, - Mass.**

mills, which were destroyed by fire last year. Plans are now being prepared for the new building, and application has been made for the incorporation of the company with a capital of \$1,000,000. The names of the parties interested are: W. C. Edwards, M.P., J. C. Edwards, R. G. C. Edwards, H. K. Egan, Hiram Robinson, P. L. Blackburn, and John A. Cameron. It is the intention of the company to develop power for rental, as well as for the operation of the new pulp mill.

The Clayton Air Compressor works, whose head office is in the Havermyer Building, New York city, have sent us their catalogue No. 2, which has reference to air compressing machinery manufactured by them. They inform us that the rapid and extended development of the compressed air field has established a demand for air compressing machinery of the highest efficiency and economy, and that their claim for the excellence of their machinery is based upon the fundamental points such as simplicity of design, economy in consumption of power, efficiency in work, accessibility and durability of working parts, and perfect automatic regulation. These points should be considered in making a selection. The catalogue is splendidly produced, and contains illustrations and descriptions of the leading and most modern lines produced by the company.

The Crystal Sugar Co., Sombra, Ont., has been incorporated with a capital stock of \$40,000, to manufacture sugar and by-products therefrom, etc. The provisional directors include W. K. Snider, R. A. Stokes and W. W. Stover, all of Sombra, Ont.

The branch works of the Canada Woolen Mills at Lambton, Ont., which was destroyed by fire will not be rebuilt.

The Canadian Steel Co., Lake Superior Power Co., American Sheet Steel Co., Otis Steel Co., Pittsburg Steel Co., and the

Wellman Seaver Co., of Cleveland, Ohio, will, according to a London despatch, amalgamate with several English firms with the intention of erecting plants at various places in Canada.

Mr. J. L. Legein, representing the Keller Heater Syndicate, and the Gilbert Smoke Consumer Syndicate, is in Toronto in the interest of the above mentioned capitalistic concerns. The National Steam Economizer Co., Springfield, Mass., control the Keller heater business in the United States, and Mr. Legein is in Toronto looking to the organization of a company which will engage in the manufacture of probably both the Keller economizer and the Gilbert smoke consumer in this country.

According to a Montreal despatch, roller grain barges may shortly revolutionize traffic on the whole St. Lawrence system. Frederick A. Knapp, whose boat absorbed the attention of the scientific world several years ago, and since has been commended by several capitalists, was in Montreal after having conducted negotiations with a well-known grain handler, which, it is said, will lead to the immediate construction of an experimental fleet of the new craft. This will be the first practical application of the principles of the roller barge successfully tested in Toronto a few years ago. The boats will be cylindrical, 255 feet long, fifty feet in diameter, and have a draft of fourteen feet; or, in other words, each barge will consist of concentric cylinders, the outer being a hollow, air-tight compartment to give buoyancy, the middle one containing the bunkers or compartments for freight, and the central one the platform, which is so adjusted and arranged as to be vertical always, and from which the cargo is loaded and unloaded into the spherical body of boat. The barges will have a capacity of 2,700 tons, cost \$20,000 each, and can be unloaded by their own screws without extra cost. Mr. Knapp says a twenty-five horse-

power engine will be sufficient to furnish all the power needed for revolving the craft.—Marine Record.

EASTERN ONTARIO IRON ORE.

Professor C. H. Heys, Toronto, has written the following letter to the Toronto Globe:—

In your paper of to-day I notice that Mr. W. Kennedy, of Pittsburg, is reported to have stated in his speech before the Board of Trade that the iron ores along the line of the Kingston & Pembroke Railway were irregular as to the quantity of phosphorus, and were therefore objectionable.

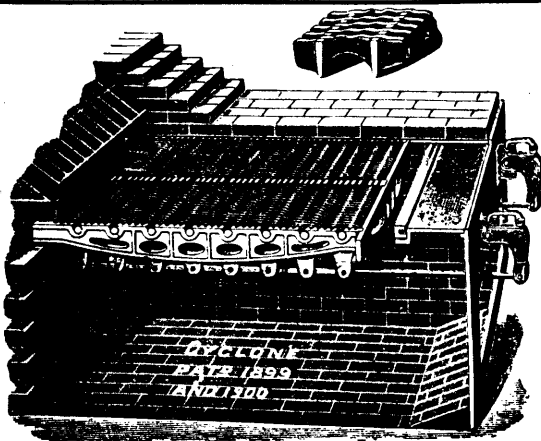
Now, as one who has had considerable experience in the assaying of ores from this district, I wish to state that Mr. Kennedy's statement is incorrect as far as the average quality of the ore from this district is concerned.

I know that I have assayed for Mr. Wm. Caldwell, of Rosedale, Toronto, and have taken from his mine at Wilbur, on the Kingston & Pembroke Railway, over one hundred samples, and not in a single instance have I found more than a trace of phosphorus, and many of the samples were taken at a depth of over two hundred feet.

Feeling that Mr. Kennedy's statements might give a wrong impression as to the quality of the ore in this district, I may say that the iron is not only free from phosphorus, as a detrimental ingredient, but also titanium and sulphur in a great many cases.

Having examined Mr. Caldwell's mine at Wilbur personally at intervals as the development work is being carried on, I can speak more definitely and can say that the iron ore as mined to a depth of over 250 feet is first-class in every respect.

I make these statements feeling that it is only justice to Mr. Caldwell and others who are interested in mining along the K. & P. Railway.



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.

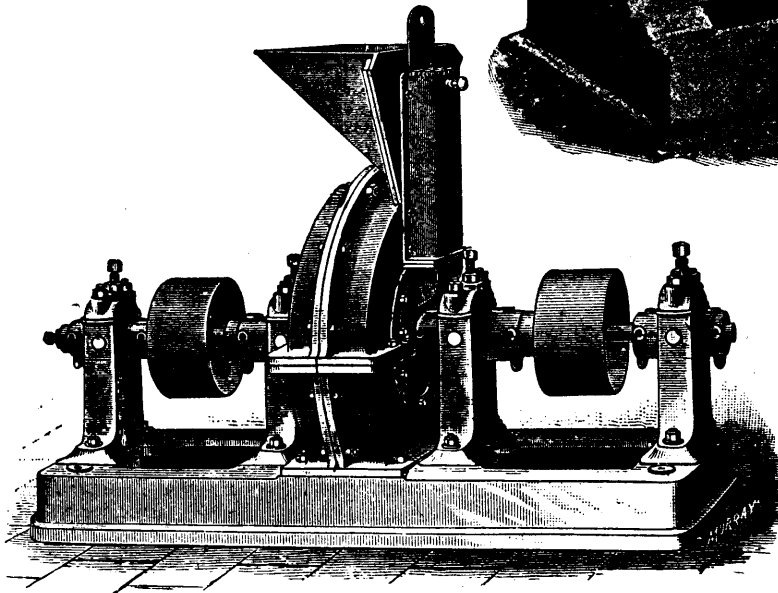
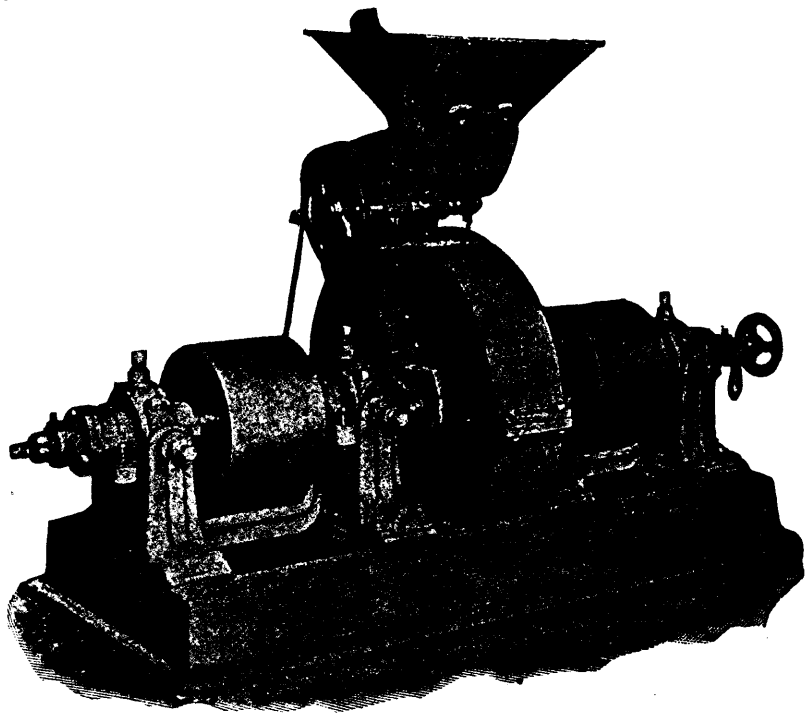
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Manufacturers of all kinds of.....

FLOUR MILL
MACHINERY,



**PLATE
CHOPPERS,**

**ROLL
CHOPPERS,**

Brown Automatic Engines

ETC., ETC.

**THE
CUMMER
DRYERS.**

FOR
Mechanically Drying Everything

THE F. D. CUMMER & SON CO.,
HUNDREDS IN OPERATION. CLEVELAND, OHIO.

A NEW GAS GENERATOR.

We had the pleasure last week of assisting at a trial made with a new Gas Generator that has just been patented in Canada, and which seems to us to open up a large field of new developments in the industries of our country.

This generator, the invention of the French engineer, H. Riche, gives a gas with a high calorific power from wood and all other organic matters, even when they themselves are incombustible, such as damp peat, industry wastes of all kinds, and even animal wastes.

The Riche apparatus, makes a practical and rational application of the well-known principle of the reduction of all oxygen gases by their passing over a red hot body of carbon. In this instance the carbon is at the same time the residue of the operation and the agent of the reduction.

The apparatus is composed of a cast iron retort, shut at the top by a door, and open below so as to allow the gas to escape to the gas holder, and to allow the apparatus to do the work which is required of it. Another door at the bottom allows for the extraction of the charcoal or coke produced in the retort.

The retort being filled up to the middle with charcoal, and heated to a red heat by means of an outside fire, if there is introduced by the top door, wood or any organic matter, these substances are decomposed by the heat into gas, steam and carbon.

The gas and steam not being able to escape at the top of the retort, are forced to pass through the mass of red carbon, where they are decomposed into hydrogen, carbon mon-oxide and carbures, and which go over to the gasholder, whereas the carbon formed rests in a solid form in the retort, to contribute to the decomposition of the gases formed during the next charge.

The tars themselves are decomposed into

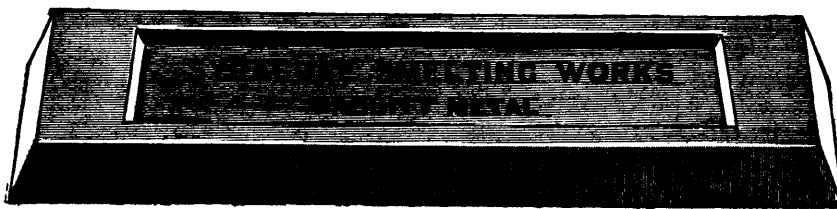


Generator Riche, 2 retorts at Vincennes, Paris Exposition, 1900, awarded the highest recompense for gas generator.

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
SCRAP**



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

SYRACUSE
BABBITT
BEATS THEM ALL

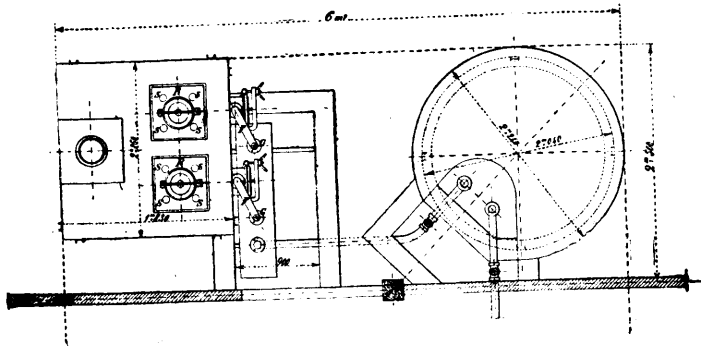
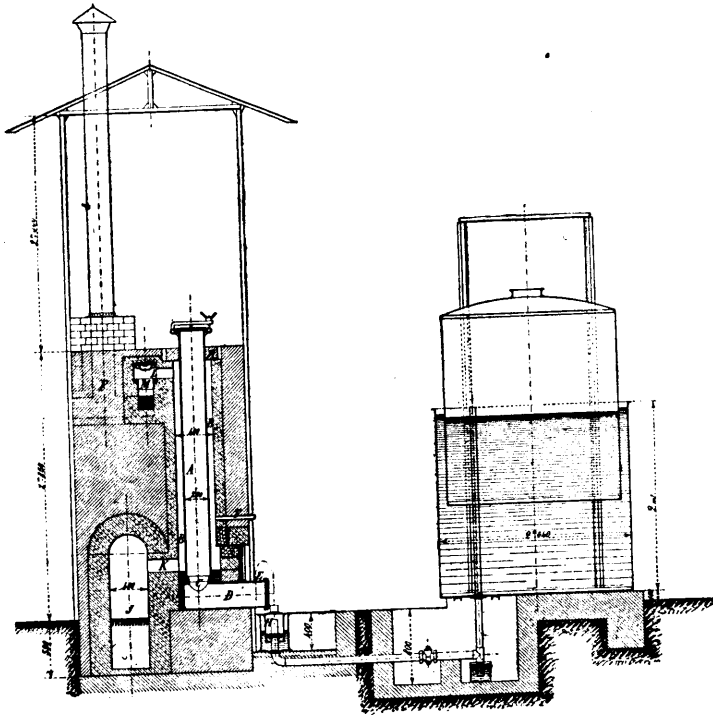
SYRACUSE SMELTING WORKS

WILLIAM AND ST. THOMAS STREETS, - - MONTREAL

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COAL JAS. H. MILNES & CO. COKE

WHOLESALE DEALERS IN
Best Grades of STEAM COALS.
Best Grades of BLACKSMITHS COALS.
Best Grades of FOUNDRY COKES.
 Shipments made direct from Mines to any point in
 Canada. Write for quotations.
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Vertical cut of above plant.

carbon and volatile carbures, and if the distillation is well conducted there is no need of any other purifier than the wash tank and saw dust or moss filter, which retain any dust of carbon that may be mechanically carried over by the gas.

The following are the results of the trials that we saw:—

Twelve pounds of old and decayed wood, put into the retort, gave, in a few minutes, 136 cubic feet of gas and a bye-product of two pounds of very good charcoal, of a higher value than the rotten wood employed.

Each retort produces 300 cubic feet of gas per hour.

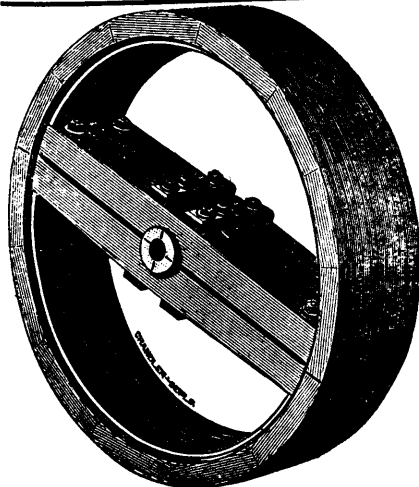
The gas produced was burnt with Auer Mantels and gave a clear and very satisfactory light, with a consumption of six and a half cubic feet of gas, per hour for a forty candle-power light.

Considering that in Canada, where coal is often difficult to obtain and the industries forced to use wood for fuel, we have pleasure in drawing attention to this producer of gas from wood, which cannot only furnish a practical and economical light in even the smallest towns, but gives to the most important industries, a fuel of the highest order, for all kinds of industrial heating and motive power by means of the gas engine.

The quantity of heat furnished by a cubic metre is 3,000 calories (300 British Thermal Units per cubic foot).

Its flame obtains a temperature of 4,500 degrees Fahrenheit and thirty to thirty-five cubic feet of gas Riche gives a force of one horse-power brake per hour in the ordinary gas engine.

At the annual meeting of the Canadian Cannery Association, held in Toronto recently, the following officers were elected: President, H. I. Matthews, Lakeport, re-elected; vice-president, S. Nesbitt, Brighton; secretary-treasurer, W. C. Breckinridge, Hamilton, re-elected; chairman of Executive Committee, W. Boulter, Picton, re-elected.



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

It Does the Work. No Trouble. No Worry.

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REEVES PULLEY MANUFACTURING CO., Limited

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NICKEL.

The only production of nickel from ores mined in the United States was 20,000 pounds made from ore mined at the Mine La Motte in Missouri. This was a decrease of 2,500 pounds from 1899. We have continued to turn out a large quantity of the metal, refined from Canadian ores and matte. The demand for nickel has continued active, and prices have been well maintained throughout the year.

The Mond Process of Extraction.—The Mond Nickel Co., informs us that, during 1900, the mining properties which Dr. Mond acquired in the Sudbury district in Ontario, consisting of eighteen mining locations, covering about 2,900 acres in the Denison and Garson districts, have been further explored and developed, with satisfactory results. The Denison property, to which most attention has been paid, is being developed by the sinking of shafts, etc., for the production of ore, and a smelting plant for producing matte is in course of erection, under the supervision of Mr. Hiram W. Hixon, the well-known metallurgist. At the same time, active work has been proceeding on the property Dr. Mond has acquired at Clydach, near Swansea, in South Wales, in the erection of works for the refining of the matte produced in Canada, by the Mond process, and it is expected that these works, when completed, will produce from 1,000 to 1,500 tons of nickel, and from 4,000 to 6,000 tons of copper sulphate per annum. It is expected that the refiner will be started during the summer of 1901, and that the smelting plant will be in operation in the spring of the same year. A company was registered on September 20, 1900, under

the title of the Mond Nickel Co., Limited, with a share capital of £600,000, to take over from Dr. Mond the mining properties and plant, as well as the patents relating to the Mond process, and the refining works at Clydach. A small plant was put up at Southwick, England, some time ago, for the purpose of working out the process on a manufacturing scale. As this has now been done, the extensive plant is being put up at Swansea.—N. Y. Engineering Mining Journal.

THE BLOWER SYSTEM OF VENTILATION AND HEATING.

The particular features of this combined system of ventilation and heating, in which a fan is employed to distribute the heated air are thus summarized in a recent lecture by Walter B. Snow, of the engineering staff of the B. F. Sturtevant Co., Boston, Mass. :

The entire heating surface is centrally located, enclosed in a fire-proof casing, and placed under the control of a single individual, thereby avoiding the possibility of damage of leakage or freezing incident to a scattered system of steam piping and radiators. The heater itself is adapted for the use of either live or exhaust steam, and provision is made for utilizing the exhaust of fan engine, thereby reducing the cost of operation to practically nothing. At all times ample and positive ventilation may be provided with air tempered to the desired degree. Absolute control may be had over the quality and quantity of air supplied. It may be filtered and cleansed, heated or cooled, dried or moistened at will. By means of the hot and cold system, the temperature of the air admitted to any given

department may be instantly and radically changed without the employment of supplementary heating surface.

The pressure created within the building is sufficient to cause all leakage to be outward, preventing cold inward drafts and avoiding the possibility of drawing air from any polluting source within the building itself. By returning the air, using live steam in the heater and operating the fan at maximum speed, a building may be heated up with great rapidity, as is usually desirable in the morning.

The area of heating surface is only one-third to one-fifth that required with direct radiation, while the primary cost and operating expenses of a fan is far less than that of any other device for moving the same amount of air.

PROPOSED RAILROADS IN BRITISH COLUMBIA.

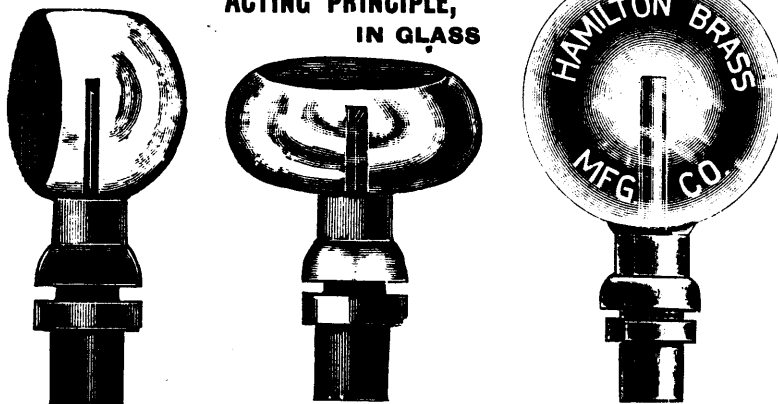
United States Consul Dudley, at Vancouver, B.C., writes to his Government as follows :

It is said here that arrangements have been made for the immediate construction of a railway from this city (Vancouver) to New Westminster, B.C., there to cross the Fraser River and parallel its left (or southern) bank for nearly 100 miles; thence, following the valleys of other streams, to run to the boundary country in the vicinity of Greenwood or Midway.

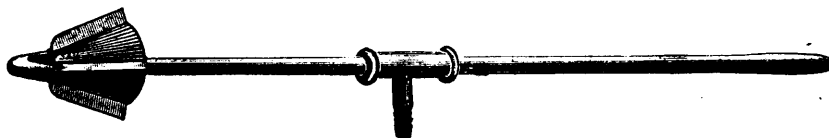
The proposed road is to be known as the Victoria-Vancouver and Eastern Railway and Navigation Co. It is understood that the road will extend westward from Brownsville, opposite New Westminster, to Point

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On a PATENT PNEUMATIC and SELF-ACTING PRINCIPLE, IN GLASS



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INSTRUCTIONS for FITTING and ADVANTAGES

The Lubricators being carefully fitted by enlarging the oil hole to fit the plug part of stopper, or otherwise by reducing the plugs to fit existing oil holes, the needle must be perfectly round, smooth and clean, so as to work freely in the tube, the flatted end reaching about half-way up the inside of Lubricator, while the other end rests on the shaft or axle, will produce the following results, viz:—

1st. Free working of the machinery by perfect lubrication.

2nd. A saving of more than 75 per cent. in oil.

3rd. Corresponding economy in steam-power and coals.

4th. Cleanliness, and consequent saving in labor, engineers' stores, etc.

ALL OUR LUBRICATORS ARE FITTED WITH BRASS TUBES

WRITE FOR PRICES TO

The Hamilton Brass
Mfg. Co., Limited,

HAMILTON, ONT.

Roberts, whence passengers and freight will be ferried to Victoria.

The Canadian Pacific Railway has completed its line to Midway, and it is asserted that it will continue the construction at an early day, carrying the new road through to connect with the main line near Hope or Yale. If both these projects mature, Vancouver will have two lines competing for the trade of the southeastern portion of this Province.

The boundary country is very rich in minerals. It is said that, since 1858, \$20,000,000 worth of placer gold has been taken from a single stream in that section.

Both these projected roads will not only open a country extremely rich in the precious metals, but one that embraces a very large extent of fertile land adapted to stock raising and agriculture.

The completion of the contemplated extension of the Canadian Pacific Railway will shorten its line from Montreal to Vancouver about 250 miles. The reason given for the location of the main line so far north is that in the act granting the charter it was provided that no portion of the line should approach the northern boundary of the United States nearer than fifty miles.

The construction of either of the lines proposed will be of the greatest possible advantage to Vancouver. The completion of both will result in competition which will promote the interests of merchants here and consumers in the boundary district in equal measure.

The northern portion of the State of Washington is interested in the proposed new railways, for both come near the boundary; and it is probably that ultimately lines running north and south within the

State of Washington will connect with the Canadian lines, greatly to the advantage of both countries.

The boundary division of the Canadian Pacific Railway is a continuation of the Crow's Nest Pass division, which has been in operation less than two years. A bridge is now in process of construction over the Columbia River at Robson, B.C., to connect the Crow's Nest Pass and other lines with the boundary road. A branch of the Great Northern Railway from Great Falls, Mont., now joins the Crow's Nest Pass Railway at Lethbridge, and another line from Bonner's Ferry, Wash., connects with the same line at Nelson, B.C.

A charter has been granted for a road up the Kettle River Valley from Marcus, Wash., which is expected to reach the boundary at or near Nelson, Wash., four miles from the Canadian Pacific Railway at Columbia, B.C. It is also rumored that another spur of the Great Northern Railway is contemplated from the point where it crosses the Sans Poli River, through the rich mining camp of Republic, Wash., to Nelson, Wash.

The building of the new road would give this city a direct southern connection with the Great Northern Railway, which now has its northern terminus at Brownsville, on the south side of the Fraser River, opposite New Westminster, B.C., thereby giving Vancouver two competing lines to Seattle and other points south. It is rumored here that the proposed line east from here will become a part of the Great Northern system.

While the proposed railway development in this province will greatly benefit Vancouver and all the surrounding country in

British Columbia, it will at the same time promote the interests of the people of the State of Washington by opening new markets and furnishing facilities for reaching them.

Manufacturers ought also to find a market for a large quantity of tools, machinery, and railway supplies in the work proposed.

ONTARIO'S FOREST RESOURCES.

The Ontario Government is preparing a new statement of the forest resources remaining in the hands of the Crown, to be based on the reports of the exploration parties who surveyed a great area of the Province in the country beyond the height of land. Their reports will be supplemented by information from the regular forest rangers of the country farther south. An estimate of the Province's known timber was issued in 1893. It really added little to the general knowledge of the forest resources. It showed that 26,000,000,000 feet of pine was known to be standing on the limits of the Crown, and that 10,000,000,000 feet was under license.

The new estimate will not only cover a wider area but also a greater variety of timber. At the time the former report was made the government had not a knowledge of the value of the pulp wood, for which, indeed, the demand at that time, so far as Ontario is concerned, was not great. Spruce, therefore, did not figure in that estimate. It will, however, in this report. Spruce is the main timber in the region covered by the exploration parties. North of the height of land it abounds, and the Hudson's Bay slope, both in Ontario and

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... ESTIMATES GIVEN AND DRAWINGS FURNISHED FOR ALL MECHANICAL WORK ...

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Quebec, is a source from which immense quantities of paper making material will be drawn in the future.

It is expected that the issue of the Government's statement will be followed by applications for charters to run new railways into the north country, and probably by votes of subsidies to some of these lines. There is no doubt that the Government's object in thus drawing attention to the timber resources in its hands is to prepare for the announcement of a policy to boom the material development of the country—a policy which means the attracting of immigrants, the placing of them on the soil, and the converting of the timber and minerals into products. This policy, says the Paper Mill, cannot be carried out without further railway expansion, and that means assistance to companies formed for railway building. If the programme is carried out the northern pulp wood fields will be drawn upon.

The Toronto World makes a very sensible suggestion. It wants the timber resources of Ontario not only estimated, but also classified, and exhibited on a plan or map. The following is taken from a long article in the World:

To some extent in certain districts, the Crown land surveyors have given information to the department as to the forest growth of the townships which they have laid out, but what has chiefly been kept in view was whether there was or was not merchantable pine in any considerable quantity, since from that alone could be derived any public revenue by leases to lumbermen. This idea was given more force by the knowledge that the great bulk of our pine forests had been alienated, and were being rapidly depleted. Now, however, the quantity of spruce we possess has become a question of almost equal importance, from its use not only as timber and as a material for wood pulp for paper making. Fortunately, the spruce is more quickly and easily reproduced than the pine, and a spruce forest is more apt than a pine forest to perpetuate itself naturally.

It is also known that we have great quantities of spruce timber through wide districts, but, even so, the supply is not inexhaustible at the present rate of consumption, which is certain to be augmented. It is essential, therefore, that the extent of our spruce forests should be accurately ascertained, and that waste should not be permitted. These considerations apply also, and if in a less degree and with less immediate pressure, to many other of the timber trees which, in great variety, enrich our forests. Ontario should have a thorough "stock taking" of its forest wealth, and then should utilize it to the best advantage in the light of that knowledge.

THE SMOKE NUISANCE IN TORONTO.

For some time, considerable agitation has taken place in the city of Toronto in regard to the proposal to enact a by-law for the purpose of compelling steam users to adopt the most approved methods to prevent smoke. Opposition to the by-law has been made on behalf of some manufacturers upon the ground that no smoke-preventing device can be obtained. It soon became apparent that these manufacturers were wrong in this respect, and the chief objection now would appear to be as to the form of the by-law. It would certainly be unfair to the manufacturers to enact a by-law of such a kind

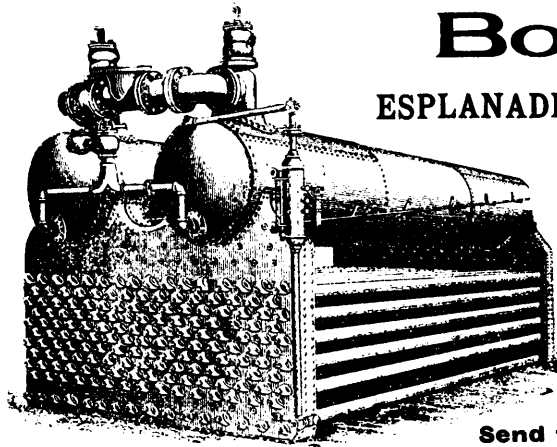
that the manufacturers might be annoyed by irresponsible persons out of mere malice or spite. Whatever by-law may be adopted, it should be enforced through a properly qualified inspector, appointed by the city, and to whom complaints might be addressed. All steam users know that whatever device may be adopted, a careless fireman may cause smoke. Unless some mechanical means of prevention is used, smoke in dense volumes must be emitted from the chimney. The fallacy underlying most of the alleged smoke consumers on the market is that they pretend to be able to burn the smoke. It may be stated, without danger of contradiction, that smoke once made cannot be consumed. The only method of avoiding smoke is to bring about complete combustion of the fuel and to entirely prevent the smoke from

originating. Among the many methods adopted is the introduction of a jet of steam over the burning fire. This is one of the oldest ideas, and is claimed to be of some advantage when small quantities of fuel are burned and when the fireman is carefully avoiding over-feeding. One of the strongest objections to the steam jet method is that the waste of fuel is considerably increased and the volatile gases which arise from the distillation of the fuel simply pass up the chimney concealed by the steam but unconsumed.

For many years experiments have been made to adapt to boilers the "Underfeed" system of introducing the coal without opening the doors, by which system all the gases amounting to about thirty per cent. of the coal are produced and entirely separated

The Canadian Heine Safety Boiler Co.

JOHN J. MAIN,
MANAGER.



ESPLANADE (Opp. Sherbourne St.)

TORONTO

HIGH-CLASS

Water Tube Steam Boilers..

FOR ALL PRESSURES
DUTIES AND FUEL

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ESTABLISHED 1823.

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SMOKELESSNESS

The Jones Underfeed Stoker

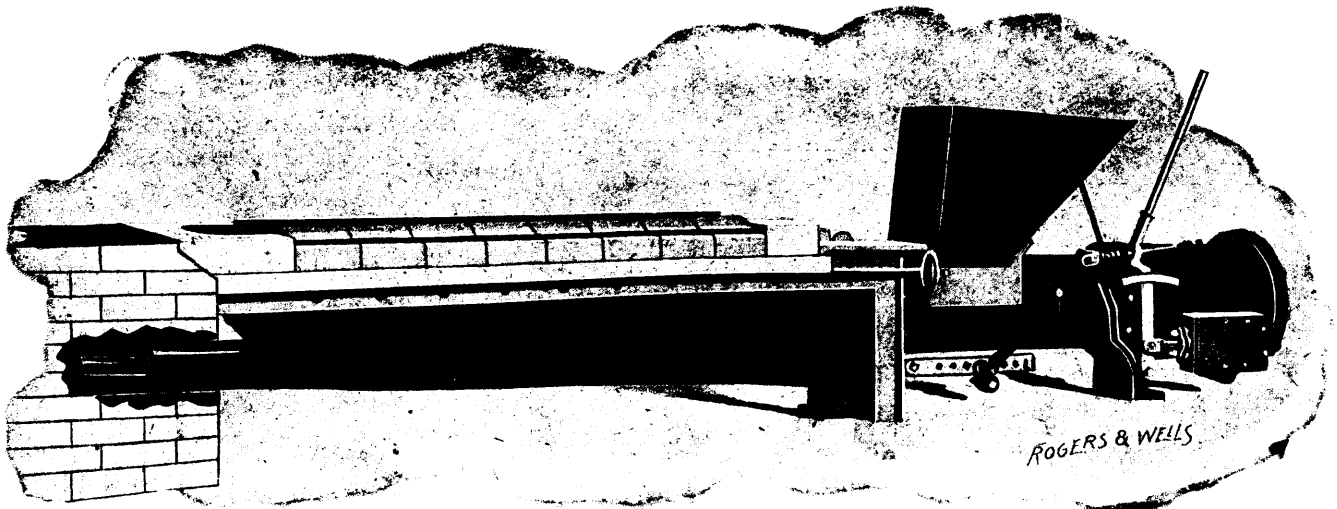
CAPACITY

SIMPLICITY

**Will Burn any Kind of Coal.
Better Results from Screenings than by any other
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No Repairs

A Saving in Boilers



**PLANTS EQUIPPED FREE OF COST
CAPACITY NEARLY DOUBLED**

ECONOMY 10 to 50 %

Average Saving Nearly \$1,000 per annum, per Stoker

A SAMPLE RECENT LETTER—

THE TORONTO RAILWAY COMPANY
The Manager General Engineering Co., Toronto.

Toronto, December 10, 1900.

JONES UNDERFEED STOKERS

Dear Sir,—I am in receipt of your letter of the 5th inst., which closes the contract for the installation of four additional Jones Underfeed Stokers for the two new marine boilers which are now being constructed for our main power station. Would you please lose as little time as possible in getting these stokers installed.

The Stokers previously installed by you at this station, of which there are sixteen, I may say continue to give every satisfaction.
Yours truly,
E. H. KEATING, Manager.

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THE UNDERFEED STOKER CO., Limited

(THE GENERAL ENGINEERING CO.)

National Trust Building, 20 King St. E., Toronto

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IRON, STEEL
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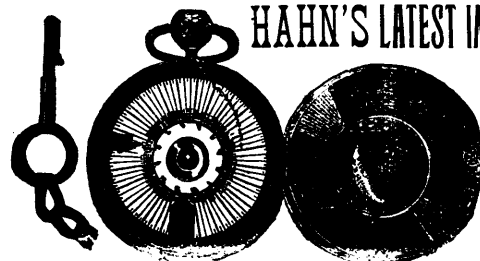


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This Clock is adapted for six or twelve stations, and the keys are all different, ranging from 1 to 6, and 1 to 12, instead of as in the old style Time Detectors, which mark either by holes or an impression on the dial, being the same for all stations.

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A. NANZ & CO., Room No. 45, Graham Building, 127 Duane St
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This Clock received the First Prize at World's Fair

Zanzibar Anti-Rust Paint

FOR — **ROOFS OF ALL KINDS
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A Paint that will not Blister, Crack, or Peel off

A Paint that is Rust, Water, and Spark Proof.

A Paint that is GUARANTEED.

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THE SMART-EBY MACHINE CO.

191 Barton Street East, Hamilton, Ont.

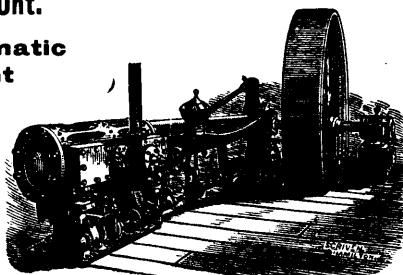
LIMITED,

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.

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from the carbon, before becoming mixed with the oxygen. After the gases arise they are mingled with a volume of air supplied in the proper quantity by mechanical means and pass upward through the hottest part of the fire and are completely consumed. The underfeed stoker or furnace appears to be both a gas producer and a coke oven at the same time. The gases are entirely separated from the coal and mingle with air at the proper point. No air is allowed to enter from the bottom and there are no grate bars to allow air to enter and interfere with the distillation which takes place below the fire line. With the proper supply of air, perfect combustion must take place and consequently, no smoke can result. The coke which is produced is almost pure carbon and will burn entirely free of smoke, and produces an intensely hot fire. It is found from experience, that no smoke arises when the underfeed system is adopted, except when cleaning the fires and in cases where the boilers are forced to nearly double their normal capacity and quite fifty per cent. beyond the maximum under any other system.

A study of the cause and prevention of smoke is most interesting, and it is hoped that the new city council will appoint a committee to report upon the best methods of abating this nuisance, at an early date.

A NEW USE FOR CARBONIC ACID.

The destruction of rats by carbonic acid, especially in case of epidemics, is recommended by Paul Apery, a druggist in Constantinople. Apery describes at length the advantages of this method, which was discovered by accident. In November of last year, on board the ship, Polis Mytilini, a death from plague occurred while the ship was in the harbor of Trieste. When the vessel was disinfected, it was noted as very surprising at first that there were no rats on board. But when several barrels of molasses (the contents of which were in a state of fermentation) were removed, a quantity of dead rats were found. It was evident that they had been killed by the carbonic acid that streamed from the casks. Apery recommends, therefore, that nuts, cheese, fat, etc., be placed in the hold of an infected ship to attract the rats. Then by means of a cylinder of liquid carbonic acid the gas may be turned among the vermin. By reason of its great specific gravity, the gaseous carbonic acid will remain in the bottom of the hold. When the rats have been killed the fumes can be cleared off either by means of ordinary ventilation, or, if necessary, by an air-pump, after which the dead rats can be disinfected and removed. The advantages claimed by Apery for this method are the following: 1. When the carbonic acid gas is poured thus on the rats, they have no longer the strength to escape but die where they are. 2. It is the cheapest possible means of getting rid of them. 3. The carbonic acid has no odor, is not inflammable, and destroys nothing. 4. The height to which the gas is allowed to rise in the hold can be easily controlled. 5. The gas penetrates into all holes and crannies. 6. No evil effects remain, and the space can be used immediately after ventilation. To some extent this method can be used also in cellars and houses.

The corporate name of the General Engineering Co., Toronto, has been changed to the Underfeed Stoker Co.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

A CABLE PROBLEM.

Sir Sanford Fleming, C.E., C.M.G., engineer in charge of Canadian Government railways from 1863 to 1880 and a famous Canadian in many fields of activity, has made a most important proposition, embodied in the following letter to Postmaster-General Mulock. It is the beginning of a movement to nationalize the cable and telegraph service of the Empire, and arrangements are already made to follow up the movements in Australia and England. The title of the letter is: "A State-Owned Telegraph Service Girdling the Globe." It is dated from Ottawa, January 1, and reads as follows:

Sir:—On the opening of the new year, I beg leave to submit the following remarks on a subject connected with your department. I believe the views expressed will meet with your sympathy and the sympathy of the Government, as the subject is of great interest not only to the people of Canada, but to all other British people.

The change of the century is a peculiarly striking epoch to Her Majesty's subjects throughout the world when regarded as coincident with a turning point in the history of the Empire. To-day, another British nation enters on its constitutional career, to dominate in another quarter of the globe and it seems to me that this is an opportune moment to consider a subject which affects Canada in common with Australia.

A few weeks ago the House Government, with the governments of Canada, New South Wales, Victoria, Queensland and New Zealand, completed a long-delayed arrangement, by jointly contracting for the estab-

lishment of the Pacific cable. This act of co-operation involved the adoption of an entirely new principle in connection with ocean cables, that is to say, joint state ownership. This principal was first mooted in a report on the progress of the Canadian Pacific Railway, laid before Parliament in 1880. It was proposed by the Canadian delegates at the colonial conference in 1887, again at the conference of 1894 and ever since these conferences, in season and out of season, it has been strenuously advocated. It was recommended by the Imperial Cable Committee in its report of 1897. At length, the principle has been adopted and its adoption is, in my judgment, of far-reaching importance. If closely followed up, I am satisfied that the Pacific cable, established as now determined, will prove to be the harbinger of a complete system of state-owned telegraphs, by land and sea, ramifying throughout the whole British Empire.

At one time the Empire was limited to the British Islands in Europe, known as the United Kingdom, but from various causes the flag now flies over vast territories in the four quarters of the globe. As a matter of exact knowledge, the United Kingdom occupies but a trifle more than one per cent. of the whole superficial area under Her Majesty's rule.

An entirely new empire, consisting of many nations, is steadily being evolved, and we cannot fail to recognize the vital importance of providing the best possible means of bring each member of the British family of nations into the closest possible contact with all other members. But as wide seas and oceans intervene, the desired end can only be accomplished by means of the electric wire.

Electric cables have, to some extent, already been employed for a number of years, and they have served a provisional purpose, but they are now wholly inadequate. In the progress of events since these cables were first established, a quarter of a century ago, in some instances, circumstances have altered, new conditions have arisen and new needs have been developed demanding modification and change. The existing lines of telegraph, between distant portions of the Empire, pass in part through foreign countries or traverse shallow seas in proximity thereto, where at a critical moment they are liable to speedy interruption. Moreover, these lines have been established by private companies who exact oppressive rates. Not a few Canadians are by painful experience during the last year familiar with the extortionate charges on messages between the Dominion and South Africa. The companies, too, not content with having long received heavy Government subsidies and having been rewarded for their enterprise by enormous profits have by force of combination created a powerful monopoly detrimental to the public interests. Complaints are frequent and well-founded. In the Times of November 14, 1900, there are letters from Sir Edward Sasson, M.P., and Lord George Hamilton, Secretary for India, on the telegraph rates between India and Europe, which corroborate the facts here stated. In one of these letters the effect of the combination is referred to as "medieval thralldom." The allied companies have taken every means to strengthen their monopoly, and since the colonial conference of 1887 have left nothing undone to defeat the project of a Pacific cable. The friends of the Pacific cable have,

Want Another

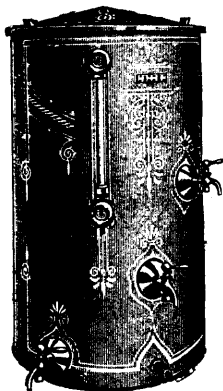
THE BURT MFG. CO., Akron, Ohio.

GENTLEMEN,—Kindly ship us as soon as possible, one No. 1 Special Cross Oil Filter same as billed to us under date of Feb. 8, 1898. Make shipment as soon as possible, and greatly oblige.

Yours truly,
THE BADGER BRASS MFG. CO.,
Per W. J. Frost, Sec.,
Kenosha, Wis.

No argument was necessary. The first one was perfectly satisfactory—they wanted another

CROSS OIL FILTER.



We're the largest Oil Filter makers in the World.

Write us to-day for Catalogue 26.

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Largest Mfrs. of Oil Filters in the World.

Better than an Insurance Policy

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however, never relaxed their efforts on its behalf, and one reason above all others why they have persisted against adverse influences and patiently struggled to overcome every obstacle is the vitally important fact that the Canadian route between England and Australia is absolutely the only route by which the globe may be girdled by an all-British chain of telegraphs.

It is well-known that it has fallen to my lot for many years to take an active interest in the pan-Britannic system of telegraphic cables. Last month I addressed the Governor-General of the new Commonwealth of Australia on the subject, and specially directed His Excellency's attention to a striking peculiarity of the electric telegraph which it will be impossible to turn to public advantage while the cables and telegraphs of the Empire are controlled by a combination of private companies. The cost of sending a message by telegraph is not, as is generally supposed, governed by distance. It is true that the companies charge according to distance, but this is simply an expedient for obtaining from the telegraphic public larger profits. As a matter of fact, there is practically no more current outlay incurred in transmitting long than in transmitting short-distance messages. It may be contrary to practice, it may not agree with preconceived ideas, but it is a fact, nevertheless, that there is no known means by which communications may be sent a less actual cost than by telegraph. A mail or a letter cannot be conveyed by railway or ocean steamer without the consumption of coal and expenditure on machinery, on oil, in wages and other things to keep the train or ship in motion. The

expenditure is constant for every hour, and continuous for every mile. The circumstances are entirely different in the case of the telegraph; when once established, equipped with instruments and manned by operators, messages may be transmitted 100 or 1,000 miles with as much ease and at no greater actual cost than one mile.

This remarkable anomaly, added to the equally remarkable, although better known fact, that transmission by the electric wire is instantaneous, points to a system of state-owned cables and telegraphs as the ideal means of communication for an empire under such conditions as ours. If it be the case, and it is indisputable, that long-distance messages can be sent at no more actual outlay than short-distance messages, we have happily a means at our command, which, if we have the wisdom and forethought to apply, it will greatly tend to unify and consolidate the widely scattered portions of the empire.

In the determination to establish a trans-Pacific cable from Canada to Australia, the first essential step is now taken. It should be followed by state cables from Australia across the Indian Ocean to India and to Africa, thence through the Atlantic to the West Indies and to England, as set forth in my letter to Mr. Chamberlain of October 28, 1898, and in other documents made public. With our whole telegraph system nationalized as suggested, I do not hesitate to say that messages will be transmitted to and from the most distant British possessions at one-eighth or one-tenth the rates now levied by the companies.

A single word in conclusion. Of late we have witnessed great events occurring in

rapid succession, and the evolution of the empire making steady progress. To-day we stand at the opening of a new chapter in our history. If it has been decreed by a wise Providence that there shall be a galaxy of nations under one sovereign, so aptly indicated by the Prime Minister, Sir Wilfrid Laurier, we have, indeed, a high purpose before us, and we must be true to our duty and our destiny. The subjects of the Queen must see to it that the rivets of a gigantic monopoly are loosened. There must be no isolation or partial isolation of any of our sister states. British subjects in Canada, in Australia, in New Zealand, in India, in Africa, as well as in the mother country, must unite in securing complete emancipation from the grasp of the great "cable combine." Thirty years ago it became expedient for Parliament to expropriate the then existing lines and nationalize the telegraph service of the United Kingdom. Experience has proven the wisdom of that policy and furnished irrefragable reasons for its general application.

At the threshold of the twentieth century, high imperial interests demand the cheapest possible telegraph transmission and the greatest possible freedom of intercourse between all the subjects of Her Majesty wherever they may be domiciled around the globe. I respectfully submit, therefore, that action cannot be taken a day too soon to nationalize our telegraph system by land and sea throughout the whole empire.

The Canada Woolen Co's mills at Lambton, Ont., were destroyed by fire January 19. Loss about \$80,000.

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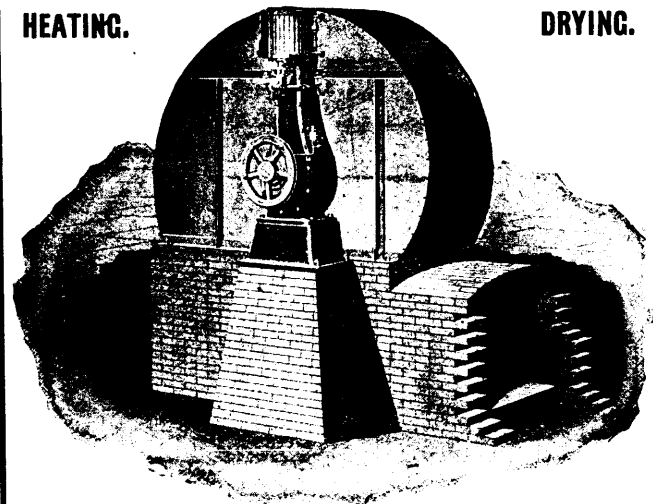
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CANADIAN IRON INDUSTRY.

No industry in Canada has shown more remarkable progress during the past year than that connected with the production of iron, and none in Canada has a more promising future than the one in question. So enthusiastic are some of the people interested in it that they declare the Canadian iron industry will, in the future, have a more important bearing on the industrial development of the Dominion and be of more value to the country than its gold mines, not including those in the rich gold fields of the Klondike, says a correspondent of Bradstreets'. The product of the Canadian smelters is eagerly sought by Canadian manufacturers, and good prices are obtained for the iron in the home markets. There is still room for the industry to grow in this country, because while the production of iron in Canada at present is only 100,000 tons annually, the consumption is at least 800,000 tons a year.

There are now four iron-smelting works in Canada, and three of them are in Ontario, while the other is in Sydney, N.S. One is at Hamilton, which has been working successfully for years; another is at Deseronto, Ont., and the third is at Midland, on Georgian Bay, Lake Huron, this latter having been formally opened last week. This latest addition is owned by the Canada Iron Furnace Co., the prime movers in the enterprise being George E. and T. J. Drummond and J. T. McCall, Montreal. It is hoped that with the new enterprise at Midland the supply of native iron will come much nearer to the requirements of the Canadian manufacturers. And as the demand increases, as it is considered certain to

do when the superior grade of the Canadian ore is understood, the Midland company intends to increase its capacity for smelting the Canadian ore, and it is expected that the iron industry will so develop in time that not only the iron users of Canada will be able to secure all the iron they need in the home market, but that the Canadian smelting companies will export their product to foreign markets.

Vessels have been brought out from England to carry the ore of the Michipicoten iron mines on the Algoma Central Railway to Midland, and next year eight large powerful ore carriers will be plying Lake Huron with raw material. The harbor at Midland is an excellent one, having a depth of twenty feet, and the company has made arrangements with the railways for the carriage of their product from the smelter east at favorable rates. The new smelter is thoroughly up-to-date in every respect, has a capacity of 150 tons a day, and has been so constructed that it can be easily increased.

The mines at Michipicoten are favorably situated for the cheap transportation of the ore to the smelter. The mines can be operated at a comparatively low cost, as vast quantities of ore are lying on the surface, requiring only to be loaded on the cars now running into the mine. The ore is of a high grade, and has been pronounced by experts to possess all the qualities required in general structural work, and, in fact, for all sorts of light and heavy iron work. The first product of the Midland smelter this week was purchased by a large stove manufacturer of Toronto, who intends to use it in his foundry.

The smelting works at Sydney, in Nova Scotia, have attracted much attention from

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capitalists in the United States as well as in Canada. The work there is being carried on on a very large scale. From a comparatively quiet town a few years ago, Sydney has in the past eighteen months developed into one of the most active industrial centres of the kind in the Dominion. Within the past week the parties interested there have arranged for the placing of \$5,000,000

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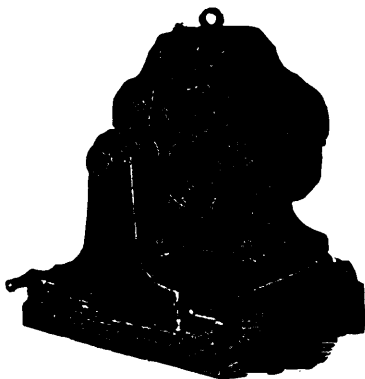
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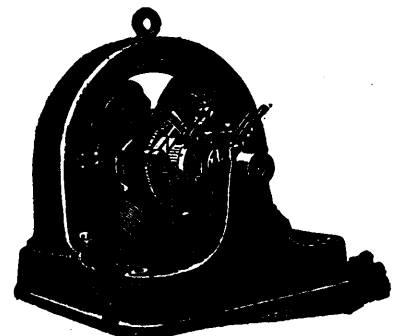
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additional capital in their enterprises in order to enlarge their plant and extend the scope of their business. It is now proposed to turn out ships, plates and steel rails. The initiatory steps have already been taken to that end, and it is expected that before the end of 1902 the new industry will be in going order. It is hoped that in connection with this proposed new industry shipbuilding in the east will show renewed vigor, and on an extensive scale never before deemed possible in Canada. The Sydney works are favorably situated for the export business, in the development of

which the capitalists hope for great results in the way of extending their output.

VARIOUS NEW THINGS THAT ARE MADE OF PAPER.

There seems to be no end to the many valuable articles which are being made out of paper, observed a wholesale dealer in various paper novelties recently. Some of the latest uses to which the material has been put are in the manufacture of bicycle frames, carpets and bathrobes. The bicycle frame is just as strong and about fifty per cent. lighter and cheaper than those formed of metal. It is an American invention, and is made out of paper fibre similar to that used in the construction of railroad car wheels. The tubes are now made and sold in large quantities, and it is claimed by the manufacturers that the paper will soon supersede the use of metal tubing for bicycles.

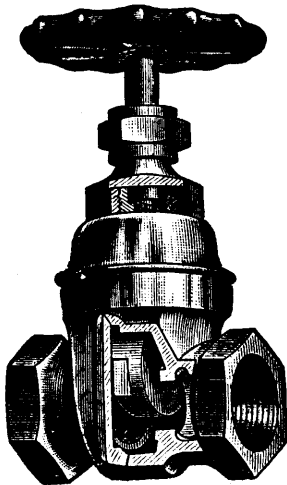
Although the paper carpet has only been in the market for the past nine months, it has become a great favorite with thousands of housekeepers as a floor covering. It comes from Japan in rolls of forty yards and somewhat resembling matting in appearance. It is, however, much thicker than the latter article, and being compact and solid is much warmer to the feet, and therefore makes a more substantial floor covering than matting. The material is especially well adapted for use in dining rooms, halls and pantries, where cleanliness and neatness are desirable. It costs fifty cents a yard, and is made in 230 different patterns. The thread forming the warp is of ecru and blends prettily and inconspicuously with blues, greens, reds and rose tints, which form the ground of the various patterns.

The paper bath robes—a German invention—are somewhat thick, and look like common white or brown blotting paper. They cling to the body immediately after

being put on, and as the paper takes up the moisture very eagerly the drying of the body takes place rapidly. Furthermore, the paper is a bad conductor of heat, and as such it acts as a protection against quick changes of temperature, preventing the wearer from catching cold.

The Richelieu & Ontario Navigation Co's new passenger steamer, Kingston, which will be an improved and enlarged Toronto, was launched from Bertram Engine Works Co's shipyard January 19. The dimensions of the steamer are as follows:—Length over all, 290 feet; extreme breadth over guards sixty-four feet; molded depth of hull, fourteen feet; depth of steamer from top of dome deck to bottom of keel, forty-three feet. The steamer has five decks, viz: the orlop or the lower deck, the main deck, saloon deck, gallery deck and hurricane deck. The machinery consists of an inclined three-crank triple-expansion engine, with cylinders twenty-eight inches, forty-four inches and seventy-four inches in diameter, respectively, having a common stroke of six feet. The paddles are twenty-two feet in diameter. The steam is furnished by four cylindrical return tube boilers, eleven feet in diameter, and twelve feet long, passed by the Canadian Government inspectors for 184 pounds working pressure of steam. The boilers are fitted with the Howden hot draft system for economical working of boilers. In this connection it might be mentioned that the sister ship Toronto, on her trials for economy, made a record as low as 1.68 pounds of coal per indicated horse-power per hour, the highest record for economy of any paddle wheel engine known. The Kingston will be complete and ready in every detail, it is expected, to make her initial trip when the line opens for the season on June 1. It is the avowed purpose of the Richelieu & Ontario Navigation Co. to have one, or possibly two more boats built after the Kingston has been given a trial.

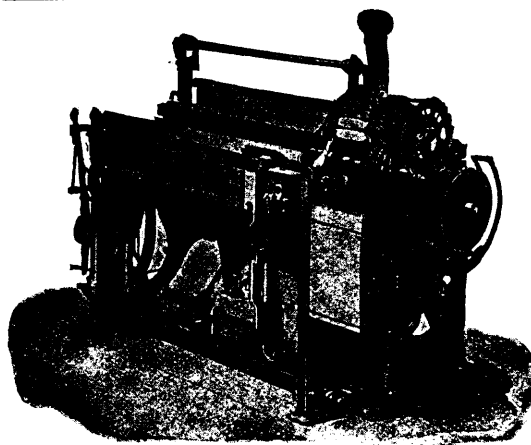
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Wire Screens for Every Class of Material.

Perforated Metal of Steel, Copper, Brass, Zinc for all purposes.

Special Attention given to Miners' Requirements

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.

398. A German firm desirous of importing from Canada carriages, sporting goods, boat motors, etc., all kinds of wood goods,—office and other furniture, toys etc., will be glad to hear from Canadian exporters open to do business.

399. Canadian firms desiring a representative in Scotland, can be furnished with the name of a gentleman in Glasgow, who wishes to take up agencies.

400. A Canadian firm of windmill makers desire to obtain a market in Great Britain for their goods.

401. A correspondent at Toronto, who manufactures curtain pole trimmings, brackets, ends, rings, etc., asks for addresses of British curtain pole makers, who would be disposed to buy such fittings.

402. A civil engineer at St. Catharines, Ontario, is open for engagement by capitalists, contractors or engineers, who may desire examinations or reports on projects or works in Canada.

403. The names of the principal paper and

wood pulp makers in Canada are asked for by a North of England firm.

404. The proprietors of a saddle soap, for cleaning saddles, harness, military accoutrements, and brown leather goods generally, desire to place their Canadian agency in the hands of a responsible firm willing to take up the article.

405. A Staffordshire firm of Sanitary Pottery Manufacturers make enquiry respecting the opening in Canada for such goods as they turn out—porcelain basins, lavatories, wash-up sinks, enamelled fire-clay baths, fire-clay sinks for hospitals, etc.

406. A stationary firm manufacturing albums, scrap books, and fancy leather goods, enquire as to the prospect of doing business in Canada and are open to appoint agents to represent them.

407. A London firm who have a branch in Sydney, N.S.W., are anxious to get into touch with Canadian manufacturers of boots and shoes, rubber goods, etc., with a view to representing them in Australia.

AUSTRALIA.—The similarity between building construction in California and Australia has given American manufacturers a marked advantage in supplying tools to Australia in general and New South Wales in particular. British manufacturers are much concerned with the loss of trade in this line in Australia and are striving hard to regain it. Two or three years ago a Sydney importing house sent a case of specimen American tools to a British maker, mentioning the market rates and asking for quotations. The British firm replied that they could supply goods equal to sample at much lower rates, but did not care to add fresh lines to their business. As the pressure of trade in the factory is now relaxed we may look to see some attempt on the part of British makers to push Australian trade. British hammers are now being sold in Australia in increased quantities.—The Iron Age.

United States Consul Bray, at Melbourne, writing with reference to the proposed new cable to Australia, says:—

The postmaster-general of Victoria announces that the tender of the Telegraph Construction & Maintenance Co., of London, has been accepted for the laying of the Pacific cable, at a cost of £1,795,000 (\$8,735,367), the installation and surveying to cost £204,000 (\$992,766), making a total cost of the cable when completed of \$1,999,000 (\$9,728,133). The cable is to be completed and in working order by July 31, 1902, provided the company is allowed to start laying the Australian section first. The Australian section comprises cables from the New South Wales and New Zealand coasts to Norfolk Island and thence to Fiji. The other section will be from Fiji to Fanning Island and thence to Vancouver, British Columbia. When completed, it is anticipated this cable will materially reduce the existing charges to the United States.

Regarding this cable, the Melbourne Age

says:—The route decided upon is from Vancouver via Fanning or Palmyra Island, Fiji, and Norfolk Island, with branches from the last named station to Auckland, New Zealand, and Queensland. The length of the cable over this route would be, allowing ten per cent. for "slack" actually used, 7,986 nautical miles, viz., Vancouver to Fanning Island, 3,561 miles; Fanning Island to Fiji, 2,093 miles; Fiji to Norfolk Island, 961 miles; Norfolk Island to New Zealand, 537 miles; and Norfolk Island to Queensland, 834 miles. Some 1,900 soundings over 500 fathoms in depth have been made, which relate directly to the route along the bed of the ocean, the greatest depth being 3,200 fathoms, but the general average much less.

It is estimated that with the use of 650 pounds of copper and 400 pounds of gutta-percha, 1,940,000 words might be transmitted in a year. Great Britain and Canada have agreed to defray five-ninths of the total cost; New Zealand, one-eighth; and New South Wales, Queensland and Victoria have pledged themselves to contribute the remainder between them.

As to the revenue to be derived from the cable, it is anticipated that the returns for the first year, on a tariff of 2s. (49 cents) a word, will be £109,807 (\$534,376), and that by the fourth year of its working the cable will become a paying concern. It has been proposed to charge 3s. (73 cents) a word for messages right through—that is, crossing Canada and the Atlantic, in addition to the Pacific—and 2s. (49 cents) for the Pacific cable section.

BRAZIL.—The consumption of ice in Santos, and, indeed, in the State of Sao Paulo generally, is increasing every day. This is due principally to the unceasing demand for ice in the restaurants, hotels, and other public places where drinks are served. Foreigners—chiefly Americans, Englishmen, and

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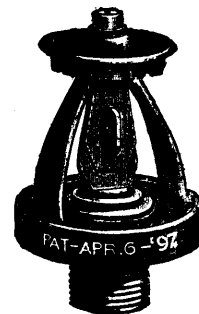
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Germans—who are unaccustomed to a tropical climate, are loudest in the call for this commodity. No doubt the use of ice would be far more general if companies similar to those in the United States were organized to deliver it from house to house. In my opinion, the organization of an ice company here in Santos would prove a profitable undertaking. I visited the fish markets a few weeks ago, and, to my great surprise, discovered that the use of ice was almost unknown there. One dealer informed me, in answer to my inquiry, that ice was not only too dear, but was very difficult to procure. The same condition exists in the vegetable and meat markets, and it is not surprising that by the end of the day everything in the nature of fresh meat and fish should be pretty well cooked by the heat of this tropical region. I have no doubt but that a large quantity of ice could also be sold to vessels arriving and departing from Santos.

I believe also that American refrigerators would sell well in Brazil. In this state only

the best hotels have refrigerators, though they are beginning to be employed in a few saloons, where they have been found most useful and convenient. So far, however, they have not been introduced to any extent in private houses. When I say that only about one out of twenty meat dealers uses refrigerators, one may judge of the opening here for these useful articles. Properly introduced, there is no reason why they should not meet with a ready sale.—United States Consul Girimondi, at Santos.

CHILE.—According to The Engineering and Mining Journal, the producers of nitrate of soda in Chile, after much discussion as to the best means of improving the industry, have formed a new combination. This new agreement will be based on a restricted production, and it is intimated that during the first year, at least, the output will be between 30,000,000 and 30,500,000 quintals (quintal equals 220.4 lbs.) The production in 1900 is estimated at 32,000,000 qtls., while in 1899 it amounted to 30,759,775

qtls., showing an increase of 1,240,225 qtls., or 3.9 per cent. The world's consumption in the nine months ending September 30, 1900, is estimated at 25,079,260 qtls., which compares with 26,140,000 qtls. in the corresponding period in 1899; a decrease of 1,160,740 qtls., or 4.4 per cent. in 1900. This decreased consumption is offset by the higher prices ruling last year, and it is intimated that still higher prices will rule later on. A conservative estimate places the year's exports for 1901 to all countries at 28,000,000 qtls., though it is believed that this will be exceeded.

FRANCE.—During the last three years French imports of machinery have increased at a rate that is little short of extraordinary, the figures being:—1898, 55,303 tons, valued at 65,053,000 francs (\$12,555,229); 1899, 73,298 tons, valued at 86,024,000 francs (\$16,602,652); and 1900, 98,853 tons valued at 119,271,000 francs (\$23,049,303). This increase is at the rate of eight-three per cent. for three years. It is largely due

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to the great demand for electrical machinery and equipment which French manufacturers have been unable to supply, and also to the increased demand for modern machine tools, both of which demands have been very largely supplied from the United States.

GERMANY.—For years, a substitute for benzine has been in demand. The objectionable points about benzine are its high inflammability and volatility, the danger of poisoning the atmosphere, etc. This was one of the chief topics of discussion at last year's Chemical Congress at Hanover, and this fall the subject came up once more at the meeting at Cassel, when a premium of about \$250 was offered for an effectual substitute for benzine, or for means of rendering it less dangerous.—United States Consul Hughes, at Coburg, Germany.

United States Consul Hanauer, of Frankfurt, under date of December 7, 1900, notes that commercial and industrial interests in Germany are opposed to the retention of the double scale (maximum and minimum rates) in the tariff which is now being prepared. One of the chief organs of the German textile and clothing trades points to the danger which the export trade would incur if the Government were to adopt this double-scale tariff, which is in the interest of a few large agrarian landholders, and inimical to all other producing classes in Germany.

I am advised that in Heidelberg University, near this city, where about fifteen hundred students are in attendance, only a small number of fountain pens are in use, and few, if any, are offered for sale. The students carry ink in bottles to and from classes. It would appear that our lower priced pens should find a market there and in other parts of the district, including Mannheim, where fountain pens are rarely seen.

The attention of American manufacturers has been called to this field as a possible market for safes. I note that a comparatively small number of safes are in use in this city. The few employed are, for the most part, crude-looking affairs, with old-style locks. Judicious efforts on the part of our manufacturers should result in large sales of medium-sized store and office safes. German offices and stores are rapidly adopting modern furniture, including desks, typewriters, file cases, cash registers, etc., and safes should prove equally as popular.

Improved devices for registering the attendance of employees at factories are being introduced to some extent, though as yet many factories do not employ them. So far as I can learn, the various devices in use in the United States for registering the whereabouts of watchmen employed in factories at night are not used here. As the city of Mannheim and its suburbs are largely devoted to manufacturing, and new plants are being constantly added, it would seem that a market in this line might be secured.—United States Consul Harris at Mannheim.

On November 30 last, the convention of Swiss, Austrian, Swedish, Norwegian, and German manufacturers of calcium carbide, which was in session at Frankfurt, combined in establishing price schedules and a mode of controlling the sale of their products. The Deutsche Gold und Silber Scheide-Anstalt, of Frankfurt (which has branches in the United States and other countries), was appointed the sole agent for the sale of the syndicate's products. It is expected that by this combination the acetylene industry will be considerably strengthened. The mem-

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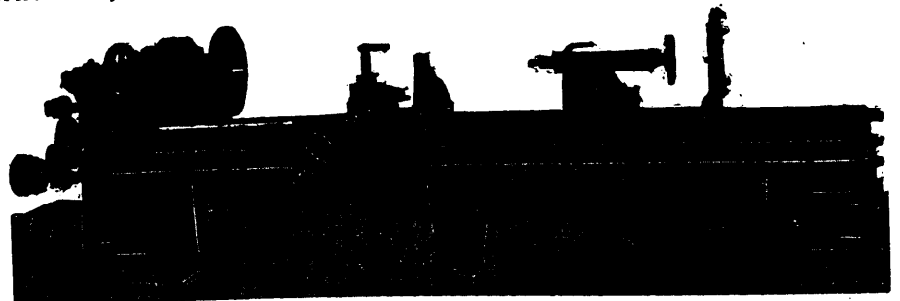
The London Machine Tool Co., LONDON, ONT.

LATHES,
PLANERS,
DRILLS,
SHAPERS,

MANUFACTURERS OF

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PUNCHES,
PRESSES.

General Machinery



WM. R. PERRIN & CO., 122 CHURCH ST., TORONTO.

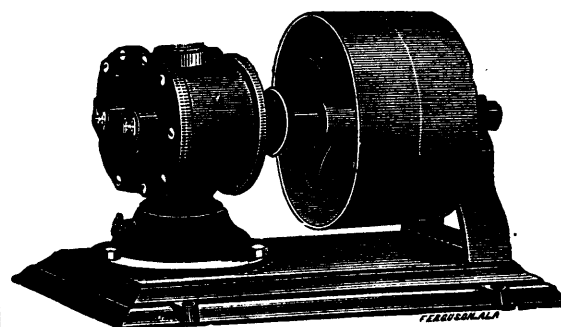
WE BUILD

**Rotary
Pumps**

POWER
OR
HAND.

MANUFACTURERS

**PACKING HOUSE MACHINERY
AND PRESSES.**



When writing to Advertiser kindly mention THE CANADIAN MANUFACTURER.

bers have adopted measures to avoid the fluctuating and ruinously low rates, which, owing to heretofore existing sharp competition, have made the manufacture of their products unprofitable. The German acetylene industry is very important, there being

at present in the Empire over 200,000 plants producing this gas. New patents for improved methods of production are constantly being issued. Thirty-two of the smaller towns in Germany are lighted by acetylene gas, and a number of other plants are in

course of erection. The gas is also used by the railroads for lighting passenger cars.

This year's production (1900) of calcium carbide in Germany is estimated at 20,000 metric tons, equivalent to 360,000 hectoliters (9,500,000 gallons) of petroleum.—United States Consul Hanauer at Frankfurt.

Imports of leading classes of machinery into Germany for the first nine months of 1900 have been officially reported as follows: Locomotives and automobiles, 3,771 metrical tons, valued at \$403,044; sewing machines with stands, 2,750 tons, valued at \$293,620; agricultural machinery, 27,940 tons, worth \$2,986,227; cotton spinning machinery, 6,509 tons, worth \$695,680; and machine tools, 5,370 tons, worth \$573,940. In the German official estimates the value of machinery imported is given at \$106.88 per metric ton, while that of machinery exported is \$214.72. This is because the machinery imported is largely of cheaper kinds, such as commoner sorts of agricultural machinery. The locomotives imported come largely from Belgium, the sewing machines from Belgium and the United States; agricultural machinery from the United States to some extent; spinning machinery from Great Britain, and machine tools almost entirely from the United States.

There is a growing demand in all parts of Germany for modern office furniture and equipment, especially for improved safes, cash registers, roll top desks, typewriter desks, letter files, and watchmen's clocks.

The recent vote of the German Commercial Diet against any increase in the new Imperial tariff of the existing duties on breadstuffs is a most interesting indication of what may prove to be the final attitude of the Reichstag. The Diet, which was attended by representatives of Chambers of Commerce and industrial and commercial associations from all parts of the German Empire, voted 147 votes to 143 against an increase. As a short time ago large increases in the import duties on foodstuffs were regarded as certain, this victory for the anti-Agarian interests is highly significant. Resolutions were also passed at the Diet against the proposal to fix minimum as well as maximum duties in the new tariff bill. This proposition also emanated from the Agarian party and is opposed by the manufacturing interests, which believe that it will have a tendency to injure Germany's export trade.—Dun's Review.

GREAT BRITAIN.—American exports of machinery to Great Britain have made a remarkable gain during the last few years. In 1898 imports of American machinery into Great Britain amounted to \$7,321,254, in 1899 to \$9,804,496, and in 1900 to \$12,679,924. No other country makes anything approaching this showing. The nearest competitor of the United States in this trade is Germany, which exported in 1899 machinery to Great Britain to the value of a little over \$1,200,000. The only other states sending important quantities were France, Belgium and Holland, in the order named. The figures by countries for last year have not yet been published by the British Government, but in the report regarding Trade and Navigation for the year 1900, it appears that the imports of machinery have fallen off slightly. This may, however, be apparent rather than real since imports of electrical machinery are now classified separately for the first time. These amounted to \$6,152,590, a very large portion of which came from the United States.—Dun's Review.

During the past year the amount of capi-

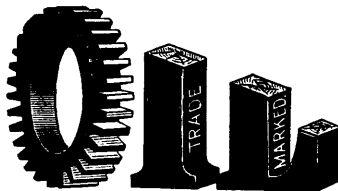
"Capitol" Cylinder

"RENOWN" ENGINE

"ATLANTIC" RED

RELIABLE WELL-KNOWN BRAND

ALL ORDERS PROMPTLY FILLED



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THE EUGENE F. PHILLIPS ELECTRICAL WORKS

MONTREAL, CANADA (LIMITED)

BARE and INSULATED ELECTRIC WIRE

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INCANDESCENT AND FLEXIBLE CORDS,

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RUBBER-COVERED, MAGNET, OFFICE AND
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CABLES FOR AERIAL and UNDERGROUND USE.

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Manufacturers of
CARRIAGE, WAGGON, AND SLEIGH WOOD WORK.

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What the Trade Wants

YOUR OWN PAPER
MADE INTO

ENVELOPES

ANY SIZE OR
SHAPE.

WE SELL
TO THE
TRADE ONLY.

YOUR OWN PAPER—YOUR OWN LABEL—YOUR OWN BANDS.
NO NEED TO BUY FOREIGN GOODS.
OUR GOODS ARE MADE EQUAL TO THE BEST IN THE WORLD.

The Trade will find it to their advantage to get our prices.

L. P. BOUVIER, Envelope Manufacturer, 31 Lombard St., TORONTO.

The Yeakley Vacuum Hammer.

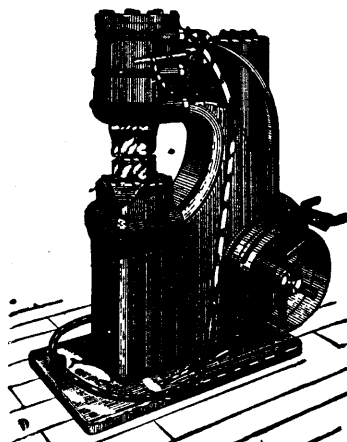
Canadian Patent November 9, 1897.

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

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EAGLE FOUNDRY,

MONTREAL.



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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.**

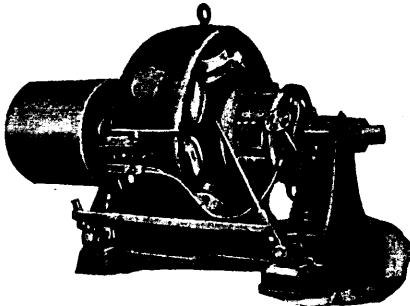
These Generators are extensively used in Europe, and are on exhibit at the Paris Exposition. Particulars by applying to

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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.

Thompson, Worth & Martin

ELECTRIC
SUPPLIES
NITROUS OXIDE
and OXYGEN GAS

**Electrical
Contractors**

SWITCHES AND SWITCH BOARDS MANUFACTURED

Dynamos and Motors

Built and Repaired. We have a well-equipped Machine Shop, Model and Experimental Work a specialty. Inventions perfected. All work perfectly confidential. Correspondence solicited.

35 to 39 ADELAIDE ST. W., TORONTO
PHONE 8494.

tal invested in British electrical enterprises, including light, traction, power supply and general manufactures, has increased from some \$530,000,000 to more than \$600,000,000. This is exclusive of Government telegraphs and telephones, but includes municipal enterprises. In five years the capital in various private electrical enterprises in Great Britain has been doubled. The municipal loans for similar purposes have increased during the same period sevenfold, while the number of new municipal undertakings at present authorized by Parliament, but not as yet begun, exceeds all previous records.

The British Board of Trade has just issued a report on the trade unions of the United Kingdom, an abstract of which will be of special interest to similar organizations at the present time. The number of unions for which comparative statistics of membership are given for the period 1892 to 1899 is 1,685. Some of these unions were not in existence during the whole of this period, and the number on the list at the end of 1899 was 1,292, compared with 1,218 at the end of 1892. The membership of all the unions at the end of 1899 was 1,802,518, as compared with 1,503,232 at the end of 1892, an increase of twenty per cent. in the eight years. During 1899, the total number of trade unions decreased from 1,310 to 1,292. This decline of eighteen is due to amalgamation of that number of smaller unions with larger organizations, the number of unions (thirty) formed during the year being the same as the number dissolved. The total membership, however, of the trade unions rose during the year from 1,649,231 to 1,802,518, an increase of 153,287, or nine per cent., the greatest proportionate gain in any of the eight years covered by the report. This increase is due to the general rise in the membership of unions of every trade, with the single exception of the unions in the clothing trades, which show a small decrease. The unions which most largely increased their membership during the year were those in the mining and quarrying industries, which showed a gain of 71,084 members, or twenty per cent.

With regard to the sex of members, the returns show that 139 unions included women in their membership, the number being 120,448, or nearly seven per cent. of the total membership of all trade unions and thirty-nine per cent. of the membership of the 139 unions which include female members. The bulk of this membership is to be found in the textile trades, which include 109,076, or over ninety per cent. of the total number of female trades-unionists. Figures with regard to income, expenditure, etc., of 100 only of the principal unions, with a membership of 1,117,465, show that their funds at the end of the year amounted to £3,282,922 (\$15,976,640). The total income was £1,864,006 (\$9,060,185). Compared with 1898, the figures show an increase in the funds and total membership, but a decrease in the income and expenditure, the loss in both cases being principally due to the comparative freedom of the year from disputes of any magnitude. The decrease in expenditure in the metal, engineering, and shipbuilding group of trades amounted to no less than £168,612 (\$917,880); the expenditure in 1899 being £459,147 (\$2,234,439), as compared with £627,759 (\$3,054,989) in 1898.

Among the more important of the machinery contracts recently placed in the United States by Mr. Charles Churchill, of

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.
BASLE, SWITZERLAND

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PEOPLE'S BANK BUILDING, MONTREAL.
Twelve Years' Examiner in U. S. —No PATENT
Patent Office. Write for Red Book. —No PAY.

TALISMANIC BELT DRESSINGS WILL INCREASE YOUR POWER



Prevents Belts Slipping.

Prolongs Life of Belts.

"What We're On We'll Cling To."
TALISMANIC BELT CLINCH—For Leather Belts
TALISMANIC RUBBER FAGING—For Rubber Belts
TALISMANIC ROPE PRESERVER

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67 Adelaide St. E. Toronto, Ont.

CHARLES F. CLARK, President. JARED CHITTENDEN, 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:
Halifax, N.S. Hamilton, Ont.
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THOMAS C. IRVING, Gen'l Manager Western Canada, TORONTO.
JOHN A. FULTON, Gen'l Manager Eastern Canada, MONTREAL.

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

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.

McLaehlan Electric & Gasoline Motor Co., LIMITED.
94 ADELAIDE ST. WEST.
TORONTO

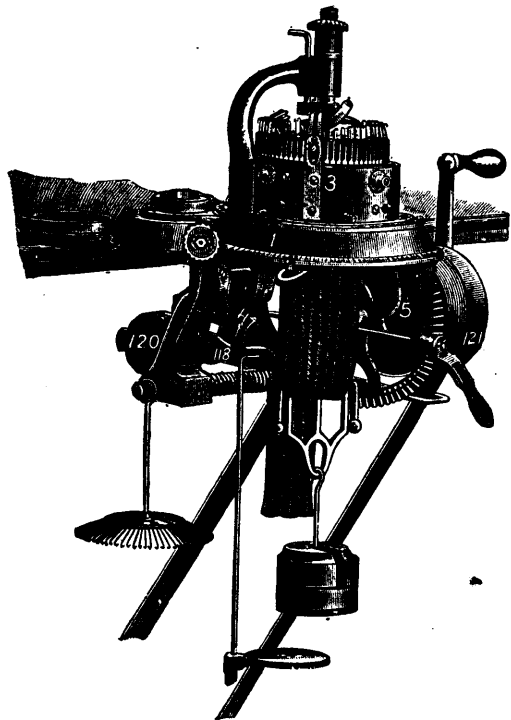
MAKE Gas or Gasoline Engines from 1 h.p. to 6 h.p.
Stationary or Marine and Electric Motors from ½ h.p. up.
Motor Carriages for Pleasure or Business. One cent spent for a postal will bring you any information you wish.

The Packard Electric Co., Limited.

ST. CATHARINES, CANADA,

Makers of **Lamps,**
Transformers

Sole Agents for Canada for SCHEEFFER RECORDING WATT METERS,
D. & W. ENCLOSED FUSES, and DIAMOND C.P. ELECTRICAL SUPPLIES.



Seamless Hosiery
**KNITTING
MACHINES**

WE have been hard at it for nearly
1/3 of a Century.

We have had Success.

Our Customers have had Success.

Why? MERIT and SUPERIORITY
in our Machines tells the story.

CATALOGUE FREE.

CREELMAN BROS.,

Manufacturers,

GEORGETOWN, ONTARIO, Canada.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Charles Churchill & Co., London, as reported in the New York Journal of Commerce and Commercial Bulletin are the following:—Some fifty gas furnaces; automatic screw machines to the value of about \$25,000, for installation in an English arsenal; various machine tools to the value altogether of \$50,000 for the Newcastle-on-Tyne works of Armstrong, Whitworth & Co. In addition to the foregoing, a contract has been placed for several large double radial drills, weighing twenty tons each, for the Brown Armor Plate Works, Sheffield, and another contract has been placed for four large boring mills to be erected in the Barrow-on-Furness ship-building plant of Vickers' Sons & Maxim, Sheffield.

INDIA.—Both the import and export trade of India has declined during the past six months, but the depressing conditions which have operated to produce these effects are now to a large degree removed, and it is likely that imports will increase somewhat during the first six months of the current year.

JAPAN.—An Imperial ordinance has recently been issued by the Japanese Financial Department, providing for the exemption from duty of certain articles imported into Japan for the purpose of undergoing additional manufacture. The principal articles comprised in this decree are: Articles imported for the purpose of being carved, engraved, or inlaid with gold or silver; porcelain or earthenware imported for the purpose of being painted or baked; tissues of woven fabrics imported for the purpose of being dyed, printed, or colored, embroidered or hemmed; furs imported for the purpose of being tanned.

MEXICO.—There are at present sixteen breweries in the Republic, none of them having been in existence more than a few years. One of these establishments, at Monterey, is quoted as occupying the first rank among the industries of the city. It has an actual capital of 2,000,000 pesos, and all the apparatus and machinery are of the most modern types used in Germany and the United States, and the capacity of production is about 800 hectolitres (11,600 gallons) a day. Other breweries are situated at Chilhuahua, Guadalajara, Oaxaca, Mazatlan, Cuernavaca, Mexico City, and at various other centres of population.

PATAGONIA.—In a recent report, say the Bulletin Commercial, of Brussels, the commercial attache to the German Consulate-General indicates various articles which would probably find a good sale in Patagonia, Argentine Republic.

The attention of exporters is particularly called to the enormous consumption of fencing wire in that country. Sheep raising is constantly developing in Patagonia, and as the cattle raisers all have their pastures fenced in, it is certain that the demand for wire will increase in large proportions. This article is now included in all shipments sent to that country.

Besides the five and six rows of smooth wire and the row of barbed wire, some of the owners of estancias re-enforced their fences by means of a wire cable in order to protect them from the depredations of guanacos (sort of alpaca or llama).

Corrugated and galvanized sheet iron is also a good selling article in Patagonia, where it is almost exclusively employed for

FACTORY FOR SALE or TO LET

Four Storeys, Modern, Central,
Elevator, etc.

W. M. COCKBURN
18 TORONTO ST.

Telephone 204.

The Patent Clothboard Co., of Parry Sound, Limited,

PARRY SOUND, - ONT., CANADA

Clothboards on Lapping and Rolling Boards
Veneers of Ash, Birch, Basswood and Elm.
Cheese Box Bands and Rims.
Box Shooks (Small and Fine).

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, 1 harness.
 - Two 92 in. Faisey " " 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, 24x64.

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.

Highest
Award
Paris



old
Medal
1900

AUSTRALIA AND NEW ZEALAND

The publishers beg to announce the preparation of new editions of the following works:

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

and desire to draw the attention of Canadian manufacturers to their importance as advertising mediums for making their goods known to buyers in Australia and New Zealand. Being the standard works they reach the very people whom manufacturers desirous of opening up or extending their export trade would desire to get in touch with—the actual Buyers themselves.

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:

Melbourne, Sydney, Adelaide, Dunedin, (N.Z.) Etc

roofing, and sometimes for the outside walls of houses.

Agriculture being still in a comparatively undeveloped state, the demand for agricultural machinery is consequently unimportant. On the other hand, light wooden wheelbarrows find a good sale, as well as hoops and coarse sheets of jute for covering bales of wool. Stoves and easily transported heating apparatus also sell well, as do canned meats and vegetables and potatoes. All articles destined to Patagonia should be very carefully packed, on account of the length and difficulties of transportation.

PERU.—A new tariff will come into operation in Peru, May 1, under the provisions of which nearly all imported goods will be assessed about twenty-five per cent. higher duties than formerly.

PORTUGAL.—There is continued agitation in Portugal for the passage of a law providing for a material reduction of import duties on certain goods imported from countries making corresponding concessions to Portuguese products. The point especially sought by the proposed reciprocity treaties is a reduction of foreign import duties on Portuguese wines, foodstuffs, cork and fruit. For these articles the most-favored nation treatment is desired, as well as the abolition of whatever differential taxes at present may anywhere be imposed on them. The reduction in Portuguese import duties proposed are thus summarized in The Chamber of Commerce Journal (London): General merchandise, average reduction about one-third; wool and woolen goods, one-fifth; silks, one-third; cottons, one-fourth; alimentary substances, one-third; linen, one-third; machinery, instruments, and hardware, two-fifths; various manufactures, one-half. It is not now likely that so large reductions as these will be made, but it is believed that some such measure will be shortly introduced as a basis for a new schedule of reciprocal duties with such States as make satisfactory arrangements.

RUSSIA.—A duty of four roubles, fifty kopeks per pound (about 6.4 cents per pound) is levied on all publications in the Russian language printed abroad by hectographic, lithographic, or similar processes, as well as by ordinary processes. The post offices are instructed to return at once to country of origin all such printed matter received in open wrappers. As this regulation applies equally to books, catalogues, circulars, price lists, etc., manufacturers desiring to circularize trade in Russia extensively, will do well to have their literature printed there. No duty is levied on such matter printed in German, which is almost as familiar as Russian to most business men in that country.

SALVADOR.—The Bureau of Foreign Commerce has recently published a translation of the present tariff of Salvador. As copies may be obtained free of charge by any one desiring them on application to the State Department, no summary of the tariff is here given. Following is a list of the articles added to the free list: Agricultural machinery, apparatus for extinguishing fires, barbed wire, iron cans for balsam, carbide of calcium, chalk for schools, raw cotton, filters and distilling apparatus, gasoline, hair of rabbits and hares, ink for printing and lithographing, looms, mining apparatus, platinum, silver, sulphide of carbon, surgical instruments, vaccine fluids and serums. The following articles, formerly included in the

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**SAVERY'S PATENT
SHAKE FRAMES**
—FOR—
Fourdrinier Paper Machines.
AS DESCRIBED IN
Canadian Patent No. 57,819.

PATENTS, TRADE MARKS, CAVEATS, ETC.
EGERTON R. CASE,
Registered Solicitor of Patents. Notary Public.
Member of the Canadian Manufacturers' Association.
TEMPLE BUILDING, - TORONTO, ONT.

**THE PITTSBURG
VISIBLE
TYPEWRITER**
\$85.00 INCLUDING COVER.

Everything open—everything handy—all parts interchangeable—nothing complicated. Universal Keyboard.

The PITTSBURG VISIBLE will invoice, make out detailed reports, headings, card indexes and tabular work of all kinds, with an ease that is surprising.

Machines sent on approval.

Canadian Typewriter Exchange,
45 Adelaide St. East,
TORONTO.

Bronzite ANTI-FRICTION

This is an entirely new Composition. Intended for all classes of bearings.

It is the invention of one of the most noted metallurgists in the world; is made from the very best materials, and guaranteed to be always the same.

It will give better service for the price than any metal yet put on the market.

A trial order is solicited.

Raneys Specialty Mfg. Co.

SOLE AGENTS FOR CANADA,

33 Princess St., - KINGSTON, Ont.

 "JUST THE PLACE"
FOR MANUFACTURING

Large 4 Storey BRICK BUILDING
160 FEET X 50 FEET

TO LET

APPLY TO

The Eby, Blain Co., Limited

COR. FRONT AND
SCOTT STREETS, TORONTO.

THE ABBEY IMPROVED CHILLED SHOT COMPANY, Limited, Newcastle.

What better testimonials do Sportsmen require than the following, viz.:
Output of Shot in 1899 exceeded 1897 by 5,040 cwt., or equal to the loading of (at 1 oz. per load) 9,031,680 Cartridges.
The winner of the All-England Championship Cup in December, 1898, fired with our shot, and speaks highly of it.

**E. B. THOMPSON,
CUSTOM HOUSE BROKER**

GENERAL FORWARDING
and TICKET AGENT,

Correspondence Solicited. **38 YONGE ST., TORONTO.**

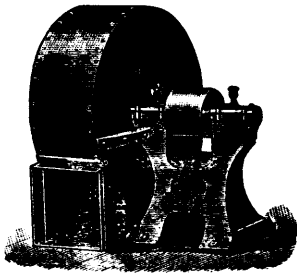
free list, are now taxed: Anchors, beans, boats or launches, corn, crucibles, diamonds and precious stones, hay or fodder, hops, houses, kettles and molds for sugar, magnets, models, music, photographs, printing presses, portraits, quicksilver, quinine, rice and rye. The method of collecting duties and surtaxes remains as complicated as heretofore, and the latter still fluctuate according to the varying necessities of the Government.

SOUTH AFRICA.—The present military situation in South Africa is tending to curtail orders for private account from that region somewhat, but not as yet to anything like the extent that might be anticipated. Several large shipments are now going forward, and the utmost confidence is still maintained on the part of those interested in the development of South African industries, that business will shortly be resumed, and that conditions in that country will then favor the greatest revival of commerce and industry ever known. British exports to South Africa for the latest month for which returns are complete show an increase of 64.5 per cent., American exports of 35.3 per cent., while German exports show a decline of 37.2 per cent.

SPAIN.—The United States Consul-General at Barcelona, states that the society established at Barcelona for the development of national industries, known by the name of the Fomento del Trabajo Nacional, has of late strained every effort to find means to alleviate the present depressed condition of Spanish trade. A commission was sent to Madrid to confer with the Government regarding certain reforms which are considered urgently necessary, in order to assist private enterprise to open up new markets for Spanish products. Little was at first expected from these efforts, but it now appears that one of the most important reforms suggested has every likelihood of being carried out by the establishment of what is called a "free zone" at Barcelona, where foreign products may be imported and stored free of duty, and where raw materials can be manufactured and prepared for re-exportation without having been taxed or their cost increased. Barcelona, owing to its geographical position, has long aspired to be the first commercial city in the Mediterranean, its formidable rival having been always the neighboring French port of Marseilles. The latter has also, for the past four years, been endeavoring to gain the concession of a "free zone" from the French Government, and it is perhaps the probability of this being soon obtained by Marseilles that has opened the eyes of the Spanish authorities to the fact that such an arrangement would mean a very serious blow to Barcelona, and has induced them to take prompt steps to furnish their own large commercial port with a similar incentive to foreign trade.

The commission, which has returned from Madrid, obtained the promise that a "free zone" would be granted to Barcelona.

UNITED STATES.—The announcement made this week that the Carnegie Co. had perfected plans for the erection of a large plant at which steel tubing will be manufactured has created considerable commotion in various directions. The new works, it is understood, will cost when completed over \$10,000,000, and are to be located at Conneaut Harbor, Ohio, the lake port which is now the terminus of the Pittsburg, Bessemer &



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.



Manufacturers of
Cotton, Jute, Hemp and Flax,
Twines and Cordage,
Mill Banding and Driving Ropes,
Chalk and Fishing Lines,
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Lake Erie Railroad, the line controlled by the Carnegie Co. It is naturally concluded that the intention is to institute vigorous competition with the National Tube Company, the combination of manufacturers of tubes which was formed in 1898, and which, though capitalized at \$80,000,000, in equal amounts of preferred and common stocks, has been one of the most successful of the newly-formed industrials. In 1899 it earned some \$13,000,000 net, and, after paying seven per cent. on its preferred and six per cent. on its common shares, had a surplus of over \$8,000,000. Such results would tend to invite competition, but in this case there are mutterings that the new project of the Carnegie Company is not unconnected with ulterior purposes. The sharp drop in the market price of National Tube stocks, which followed the announcement, has had, however, an unfavorable effect on the industrials as a class, and it is intimated that the powerful financial interests connected with the Tube Company, and having a part in the management of other steel properties, might be led to inaugurate a policy of reprisals upon the Carnegie Company, with unfavorable effects upon the whole trade situation. —Bradstreets.

United States Consul Plumacher transmits from Maracaibo, copy of a contract recently made by the government with the manufacturers of Scott's emulsion of cod liver oil authorizing the latter to establish a factory at the capital, and granting the free introduction into the country of the necessary machinery, bottles, etc. The contract is to last twenty-five years. Scott's emulsion is a product of a Canadian concern.

For the purpose of showing the comparative progress in the foreign trade of the United States as compared with other countries the following table has been prepared by The Iron Age, showing both exports and imports. It is based upon statistics covering corresponding periods in 1899 and 1900, which to facilitate comparison have been reduced in each instance to the monthly average. The periods in 1899 and 1900 for which the computations are made cover portions of these years, in most instances nine, ten or eleven months, although some of the less important are for shorter periods, according to the promptness with which the various governments obtained and issued official reports :

EXPORTS.

Taking the principal countries as alphabetically arranged, we find the volume of exports of Argentina, Austria-Hungary, Germany, Mexico and Portugal substantially unchanged, while losses more or less pronounced are seen in the returns from Belgium, France (both important competitors), British India, Italy and Spain. Increases are shown as follows: Canada and Egypt about twenty per cent., United Kingdom and Russia about ten per cent., and Switzerland a little over five per cent., while the United States, on the largest and a stupendous volume of business, is credited with an increase of about 15½ per cent.

It is specially interesting to note that late official figures, just announced, give the total exports for the calendar year ended December 31, 1900, as \$1,478,050,854, or \$202,582,883 in excess of the total for 1899, the highest previous record. It should be un-

derstood, however, that while the figures above do not include the exports of gold and silver, considerably over \$100,000,000, they do include the total of foreign merchandise re-exported, approximately \$25,000,000, which, however, does not enter into the computations in the table of monthly averages below.

In no month during the year did the aggregate fall below \$100,000,000. The total for December, \$145,994,606, made a new record for that or any one month. The imports for the year amounted to \$829,052,116, or \$30,084,706 in excess of importations in the twelve months of 1899. The balance of trade in favor of the United States for the period was \$648,998,738, which was an increase of \$172,498,177 over that of 1899.

The total foreign trade of the United States in the twelve months was valued at \$2,307,102,970, which exceeded by \$232,667,589 that of the year 1899.

IMPORTS.

Without analyzing the imports, with which we are not so much concerned, it is, nevertheless, interesting to observe the great values imported by our nearest neighbor, the United Kingdom, their average imports per month for the eleven months of 1900 being \$211,151,181, against \$196,579,727 for 1899. What is also a fact not discernible in these figures is that of the importations into the United States, manufacturers' materials were more freely imported than ever before and formed a larger share of the total imports than on any former occasion, and, per contra, manufactured articles were more freely exported than ever before, and formed a much larger share of the total exports than

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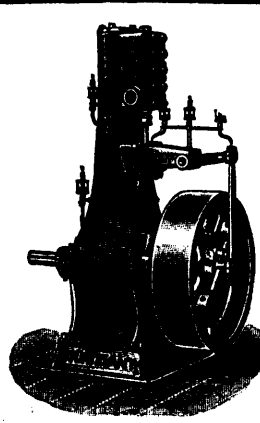
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at any previous time. Put in another form, where our imports increased it was for materials needed in manufacturing, which, of necessity, had to come from abroad, while our greatest export increase was in manufactured goods.

	Average monthly Exports, 1900.	Average monthly Imports, 1899.
Argentina.....	\$13,136,666	\$9,377,777
Austria-Hungary.....	31,795,400	28,088,700
Belgium.....	28,245,600	33,772,100
Canada.....	17,674,333	15,912,000
Egypt.....	6,352,625	5,065,375
France.....	64,707,400	70,388,300
Germany.....	79,340,000	105,779,888
British India.....	25,377,600	18,403,600
Italy.....	21,085,700	24,816,900
Mexico.....	5,526,000	4,780,500
Portugal.....	2,918,600	2,725,000
Russia.....	24,494,166	24,073,500
Spain.....	10,892,333	13,267,222
Switzerland.....	13,078,444	17,456,333
United Kingdom.....	118,494,545	211,151,181
United States.....	118,993,575	69,131,955

VENEZUELA.—In view of the rapidly growing trade with Venezuela, the following digest of the new tariff of that country, now in force, may be of interest. Imports are divided into nine classes, according to the amount of duty levied. These are as follows: (1) Goods admitted free of duty. (2) Goods liable to a duty of .10 of a bolivar per kilogramme. [A bolivar equals 19.3 cents.] (3) Goods liable to a duty of .25 of a bolivar per kilogramme. (4) Goods liable to a duty of .75 of a bolivar per kilogramme. (5) Goods liable to a duty of 1.25 bolivars per kilogramme. (6) Goods liable to a duty of 2.50 bolivars per kilogramme. (7) Goods liable to a duty of 5 bolivars per kilogramme. (8) Goods liable to a duty of 10 bolivars per kilogramme. (9) Goods liable to a duty of 20 bolivars per kilogramme. Following are the principle articles admitted free of duty: All articles for the Government; live animals; iron boiler plates and bottoms for boilers; rollers and apparatus for crushing cane; plows and plowshares, hoes, spades, sickles, billhooks and scythes; weeding hooks, hatchets, shovels and picks; machinery for generating steam from petroleum residues; machinery for generating gas and electricity and for lighting thereby; incubators, coal, carbons for electric light, barbed wire, fire engines, railway cars

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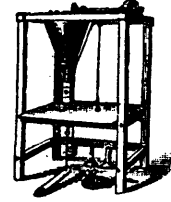
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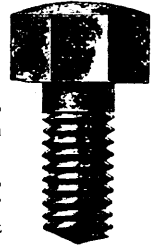
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MADAGASCAR.—United States Consul Gibbs report from Tamatave, that Mr. E. Cayeux, a sawmill owner of that city, invites correspondence in regard to liquid-air motors. Correspondence may be conducted in the English language.

The London Brass Works Co., London, Ont., of which Mr. George W. Armstrong is President, have sent us their new catalogue having reference to some of the lines manufactured by them. Mention is made of standard valves which are made in sizes from a quarter inch to three inches, including globe and angle, check, radiator, safety; peet, stop cock, hose, etc.; Jenkins' valves, same sizes, compression bibbs, which are made with flange, flange and thimble, flange and nut, bent coupling, and with loose and fast discs, etc. Other lines include compression air valves, all kinds; whistle valves, steam whistles, cylinder lubricators, expansion tank mountings, cylinder cocks, pet cocks, compression gauge cocks, Register's gauge cocks, water gauges, water columns, oil cups—brass and glass, brass fittings, hose branches, rush syphon valves, pantry and counter cocks, basin plugs, chain stays, etc.

J. S. Clarke, has been granted a bonus of \$2,000 to establish electric light works at Ayr, Ont.



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The Publishers beg to announce the preparation of the ninth edition of the "Building Trades' Directory" of Great Britain, the only complete Directory of the Building and Timber Trades published. Highest award—Gold Medal—Paris, 1900. For further particulars, charges for advertisements, etc., apply

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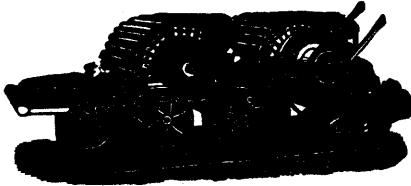
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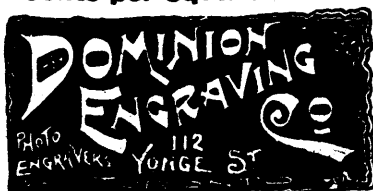
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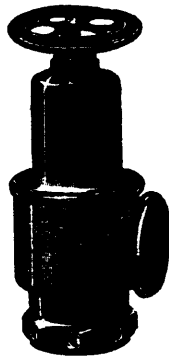
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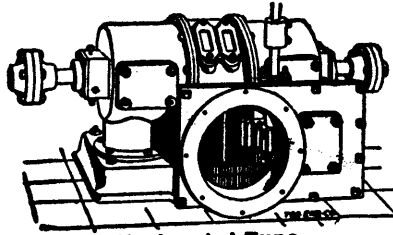
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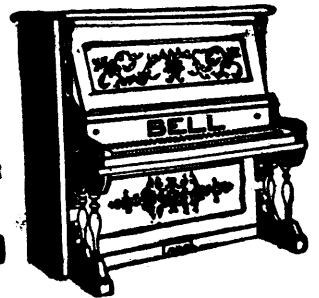
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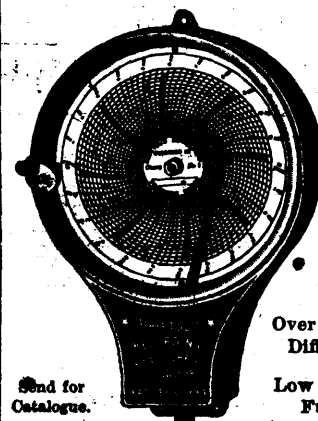
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