

Technical and Bibliographic Notes / Notes techniques et bibliographiques

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

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

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- Additional comments:/
Commentaires supplémentaires:

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Continuous pagination/
Pagination continue
- Includes index(es)/
Comprend un (des) index
- Title on header taken from: /
Le titre de l'en-tête provient:
- Title page of issue/
Page de titre de la livraison
- Caption of issue/
Titre de départ de la livraison
- Masthead/
Générique (périodiques) de la livraison

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

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

ROYAL OIL CO., TORONTO
AND MONTREAL

CYLINDER
DYNAMO
ENGINE.....

OILS

HAMILTON FACINGS LIMITED Foundry Facings, Ceylon Plumbago, Core Compound and Foundry Supplies
 HAMILTON, ONT.

A. B. JARVINE & CO. MACHINISTS TAPS
 HESPELIER, ONT.

ANADIAN MANUFACTURER
 AND INDUSTRIAL WORLD
 DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

Vol. 38. TORONTO, JANUARY 20, 1899. No. 2.

Every Express Parcel...
 Sent out can be economized upon by being addressed with our famous
Invoice Tag Envelope.
 The saving in postage on one hundred will pay for one thousand printed. If your stationer does not handle the Invoice Tag Envelope write for sample.
The Barber & Ellis Co.,
 LIMITED.
 Nos. 43, 45, 47 and 49 BAY STREET,
 TORONTO.

ANILINE
 DOMINION DYEWOOD & CHEMICAL CO.
 TORONTO
LIZARINES
 PRODUCTS OF
 THE FARBENFABRIKEN VORM F. BAYER & CO.
 DOMINION DYEWOOD & CHEMICAL CO.
 SOLE AGENTS FOR CANADA TORONTO.

A. C. LESLIE & CO.,
 MONTREAL.
 ...
IRON, STEEL,
AND METALS.
 Close Prices for Import
 to Wholesale Buyers
 SANDERSON'S TOOL STEEL
 IN STOCK.

THE J.C. McLAREN BELTING CO.
 OAK EXTRA TANNED
 1856
 THE J.C. McLAREN BELTING CO. MANUFACTURERS
 MONTREAL TORONTO

ALSO MANUFACTURERS OF
CARD CLOTHING
 SFT IN IMPORTED OAK LEATHER BACKING.
 LOOM REEDS, ETC.
 AND
GENERAL MILL SUPPLIES.

FRICITION SURFACE RUBBER BELTING
THISTLE BRAND
 THE J.C. McLAREN BELTING CO.
 MONTREAL TORONTO
 MONTREAL TORONTO

Fensom's
ELECTRIC HYDRAULIC STEAM HAND-POWER
 All made of the best material and finest workmanship.
Elevators
 The Fensom Elevator Works...
 52, 54, 56 Duke Street Toronto, Ont.

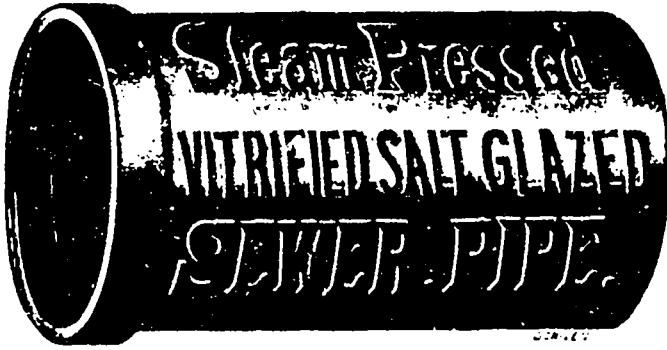
RUBBER GOODS OF ALL KINDS.

61 and 63 FRONT ST. WEST, TORONTO.

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

PATENTS Fetherstonhaugh & Co.

DIAMOND BRAND



Manufactured by The HAMILTON AND TORONTO SEWER PIPE CO. HAMILTON, ONTARIO.

REGISTERED..... BRAND

The Sampson Brand IS A HIGH GRADE OF Portland Cement.

..UNIFORM.. ..FINELY GROUND.. ..RELIABLE.. Quality equal to the best English and German Brands. Manufactured by the

Owen Sound Portland Cement Co., LIMITED SHALLOW LAKE, - ONTARIO.

The City of Toronto have contracted with us to supply our Sampson Brand Portland Cement for the requirements of the whole City for 1897 and 1898.

For Prices and further information address the Manager at Works, Shallow Lake, Ont., or

JOHN LUCAS, 377 Spadina Ave., Toronto, Ont. Correspondence Solicited.

CANADA CHEMICAL MANUFACTURING CO.

— MANUFACTURERS OF —

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

Mixed Acids for Explosives.

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

LONDON, - ONTARIO.

HAMILTON COTTON CO., HAMILTON, ONTARIO.

Yarn Manufacturers, DYERS AND BLEACHERS.

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

Twines, Lampwicks, Webbing, Etc.

Dyeing of all Colors, including GENUINE FAST BLACK.

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

Manufacturers of the well-known

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

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

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

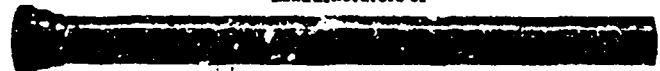
Offices: Canada Life Insurance Bldg., Montreal.

MONTREAL PIPE FOUNDRY CO... (Limited)

SUCCESSORS TO

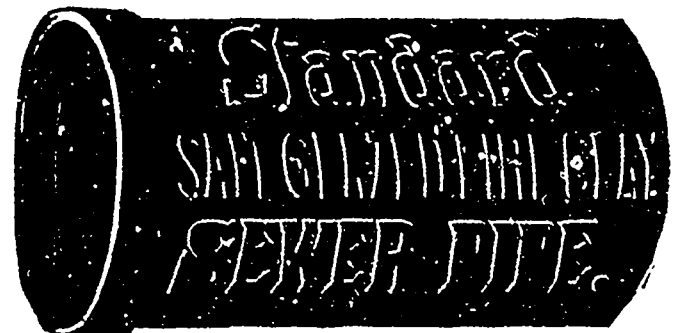
DRUMMOND-McCALL PIPE FOUNDRY CO. (Limited)

Manufacturers of



"Specials," Hydrants, Valves, Etc.

Offices: - - - Canada Life Building, MONTREAL



THE STANDARD DRAIN PIPE COMPANY, ST. JOHN'S, P.Q.

Manufacturers of Salt Glazed Vitrified Sewer Pipes, Double Strength Railway Culvert Pipes, Inverts, Vents, and all kinds of Fire Clay Goods.

The Standard Drain Pipe Co. of St. John's, P.Q. Ltd. W. C. TROTTER President.

The Whitelaw-Shepherd

...ENGINE...

SIMPLICITY, COMPACTNESS, PERFECT REGULATION, ECONOMY, AUTOMATIC LUBRICATION.



For Electric Lighting Mills, Factories, and other purposes where Economy, close regulation and enduring service is required.

Manufactured by..... R. WHITELAW, Woodstock, Ont.

The Goldie & McCulloch Co., (Limited)

GALT, - - - ONT.

MANUFACTURERS OF

STEAM ENGINES, BOILERS, WATER WHEELS

Flouring and Saw Mill Machinery, Wood Working Machinery, Wool Machinery.
Fire and Burglar Proof Safes, Vault Doors. Wood Rim Split Pulleys,
Friction Pulleys, Friction Clutch, Couplings, etc.

"Dumfries Foundry," - - Galt, Ontario, Canada.

THE Defiance Machine Works,

DEFIANCE, OHIO, U.S.A.

Established 1850

INVENTORS AND BUILDERS OF UP-TO-DATE
NINETEENTH CENTURY

AUTOMATIC Wood-Working Machinery

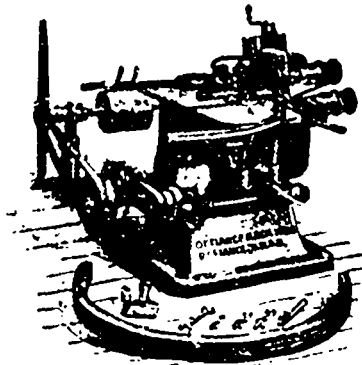
For Making

WAGON AND CARRIAGE WHEELS, HUBS, SPOKES, RIMS,
FELLOES, SHAFTS, POLES, NECK YOKES, SINGLE
TREES, BARREL HOOPS, Etc., Etc.

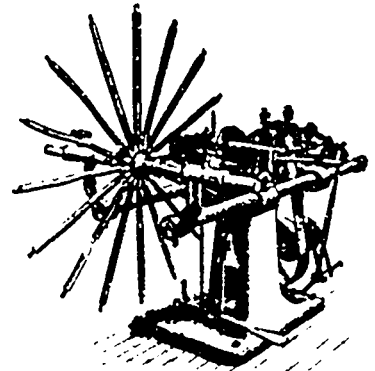
Send for 300-Page Catalogue - FREE
GENERAL CANADIAN AGENTS

ESTATE OF T. T. COLEMAN

SEAFORTH, ONTARIO, CANADA



RIM PLANING MACHINE.



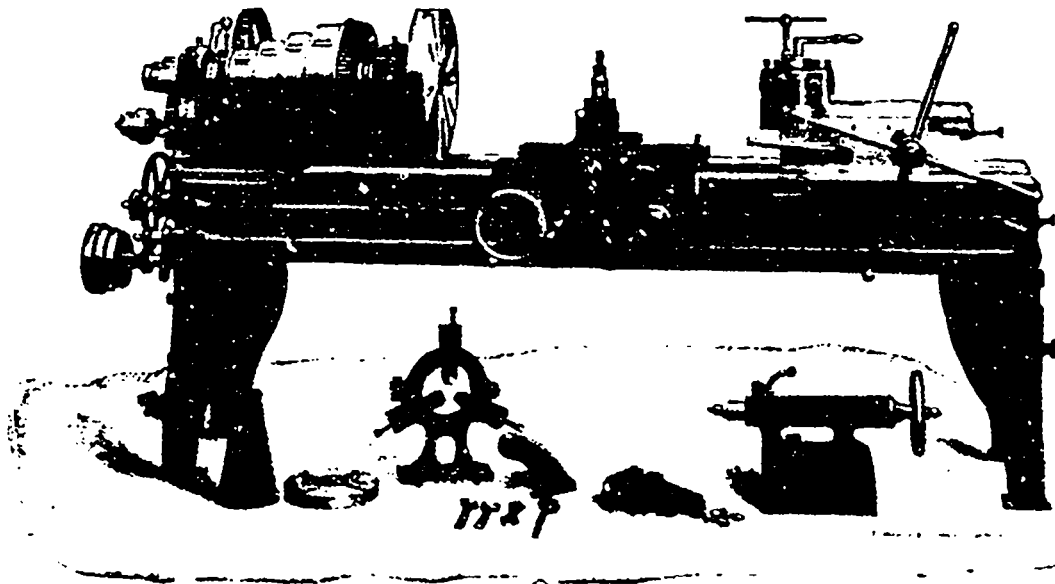
WHEEL TENONING MACHINE

JOHN BERTRAM & SONS,

DUNDAS, - - - ONTARIO.

We have a number of

Second-Hand Tools



ENGINE LATHE WITH TURRET ATTACHMENT.

Which being in
Good Order are
offered at

**Very
Low
Prices**

To clear out
Stock quickly

★

PLEASE
WRITE IF
INTERESTED

★

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

THE NOVA SCOTIA STEEL CO., LIMITED

MANUFACTURERS OF

BRIGHT COMPRESSED STEEL SHAFTING

FROM $\frac{1}{2}$ TO 6 INCHES IN DIAMETER. GUARANTEED STRAIGHT AND TRUE TO WITHIN $\frac{1}{16}$ OF AN INCH.

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

RAILWAY AND ELECTRIC RAILWAY CAR AXLES

FISH PLATES, SPIKES AND TRACK BOLTS

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

HEAVY FORGINGS a SPECIALTY.

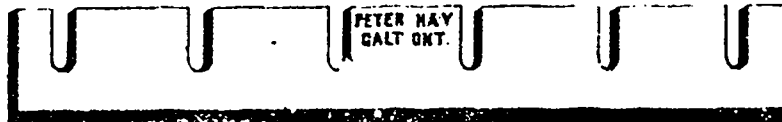
"FERRONA" PIG IRON, For Foundry Use.

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

Head Office—NEW GLASGOW, NOVA SCOTIA

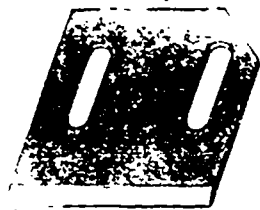
GALT Machine Knife Works

PETER HAY,



GALT, ONT.

Manufacturers of Every Description of



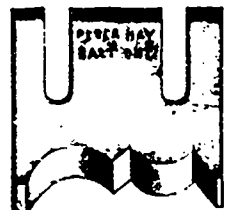
KNIVES,

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

BARK KNIVES
PULP KNIVES
RAG KNIVES
Etc., Etc.



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



Quality Guaranteed.

Special Knives Made to Order.

Send for Price List

DOMINION BRIDGE CO., Limited,



MONTREAL AND LACHINE LOCKS, P.Q.

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

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

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

ALWAYS ON HAND IN LENGTHS TO THIRTY FIVE FEET.

Post Office Address, MONTREAL.

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

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



WINN & HOLLAND,
MONTREAL,
SOLE AGENTS FOR CANADA.

BRUNNER MOND & CO.'S

Pure Alkali,
Bleaching Powder,
Caustic Soda, ^{ALL} STRENGTHS.
Bicarbonate of Soda,
Concentrated Sal Soda,
Soda Crystals.

Wm. J. MATHESON & CO., LIMITED

NEW YORK
BOSTON
PHILADELPHIA
PROVIDENCE
CHARLOTTE, N.C.
MONTREAL, CANADA

DYE . . . STUFFS

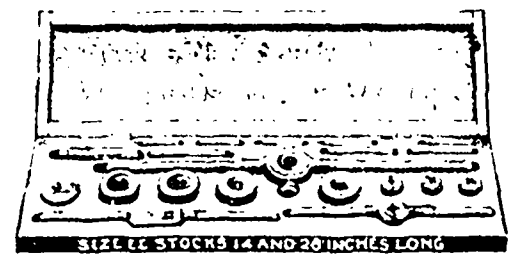
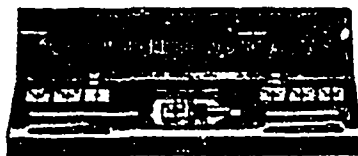
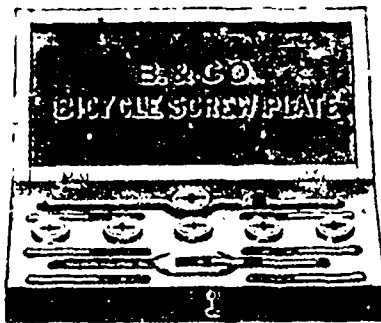
The Polson Iron Works, TORONTO CANADA.

THE BEST EQUIPPED BOILER AND ENGINE WORKS IN CANADA.

We Manufacture— **STEEL BOILERS**

The BROWN AUTOMATIC ENGINE, MARINE ENGINES (SINGLE COMPOUND AND TRIPLE), Hoisting and Mining Engines
STEEL STEAM VESSELS OF EVERY DESCRIPTION. STEAM YACHTS AND LAUNCHES.
GET OUR PRICES BEFORE ORDERING.

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



Bicycle Screw Plates, Reece Screw Plates, Derby Screw Plates, Blacksmiths' Stocks and Dies, Blacksmiths' Improved Screw Plates, Hand Taps, Machine Taps, Pipe Taps, every kind of Taps and Dies are manufactured by

BUTTERFIELD & CO., Rock Island, P.Q.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

ALBERT MANUFACTURING CO.

Manufacturers of the well-known

"HAMMER BRAND"

Calcined PLASTER

—AND—

Patent Rock Wall Plaster

HILLSBOROUGH, N.B., CANADA.

GET THE BEST

And at Same Time the CHEAPEST
HEARLE'S ANTI-SCALE POWDER
 The unequalled Boiler Purge.
 Send for Circulars with Testimonials.
C. C. HEARLE,
 023 LaGauchetière St., Montreal, P. Q.

WM. BARBER & BROS.

Georgetown, Ont.

Manufacturers of... **Book and Fine Papers.**

THE TORONTO PAPER MFG. CO., Cornwall, Ont.,

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

KEMP MFG. CO.

TORONTO.

Galvanizing

DONE FOR THE TRADE.

GET OUR PRICES.

WELLAND VALE MANUFACTURING CO.

Limited, ST. CATHARINES ONT.

Manufacturers of ...
Axes, Edge Tools, Saws, Farming Implements and Bicycles.

F. W. Hore's Sons, HAMILTON, ONT.

Manufacturers of

Wheels, Wheel Materials, Shafts, etc.

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

Manufacturers of... **FINE GLOVES AND MITTS**

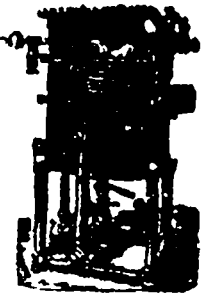
In every variety and style. **Moccasins.**

CANADIAN OFFICE & SCHOOL FURNITURE CO. LIMITED
 PRESTON ONT.
 FINE BANK OFFICE, COURT HOUSE & LOGGING STORE FITTINGS.
 OFFICE SCHOOL, SHOPS, & ALL KINDS OF FURNITURE.
 SEND FOR CATALOGUE

WEBSTER VACUUM Feed Water Heater

IN PROPORTION

<p>MAXIMUM EFFICIENCY ECONOMY DURABILITY CONVENIENCE SIMPLICITY</p>	<p>To the extent that Feed Water Heaters in general are investigated and understood the more the WEBSTER VACUUM FEED WATER HEATER and PURIFIER is appreciated</p>	<p>MINIMUM ATTENTION SPACE WASTE REPAIRS COST</p>
--	---	--



< FOR THE REASON THAT IT REPRESENTS >

BEFORE PURCHASING ELSEWHERE GET A BID FROM US.

Particular experience for ten years in this department of engineering and the fact that over 100 Webster Heaters are in use is self explanatory.

Satisfying particulars embracing details of construction, materials, operation, and exclusive results, will be sent on application. Built in several types and construction for special needs and service.

DARLING BROS., RELIANCE WORKS, Montreal.

The Packard Electric Co., Limited.

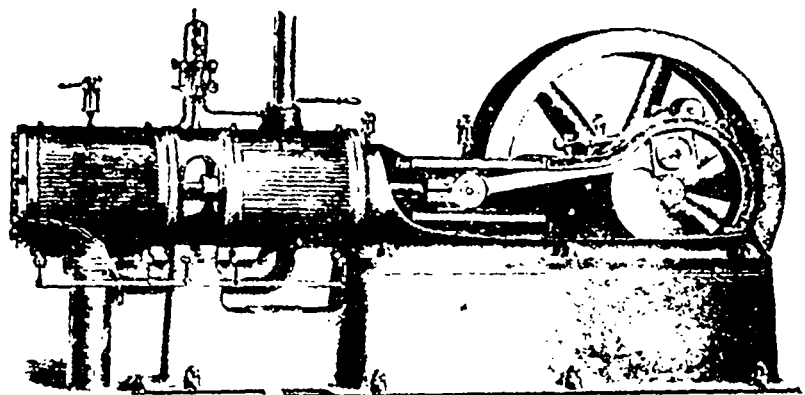
MAKERS OF

Lamps and Transformers

Sole Agents for SCHEEFFER RECORDING WATT METERS
 ST. CATHARINES, ONT.

Robb-Armstrong Automatic Engines

CENTRE OR SIDE CRANK



In the Tandem Compound the high pressure cylinder is placed next the frame, and both pistons and cylinder heads may be withdrawn through the low pressure cylinder without disturbing the cylinders, valves or other parts. Both valves are controlled by the governor, so arranged that an equal amount of work is done in each cylinder.

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

WM. McKAY, Seaforth, Ont., Traveller.

The Wellington Mills, LONDON, ENG.

GENUINE EMERY

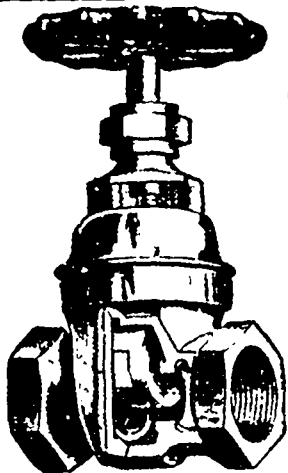
Oakey's Flexible Twilled Emery Cloth.
Oakey's Flint Paper and Glass Paper
Oakey's Emery Paper, Black Lead, Etc.

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

Manufacturers JOHN OAKEY & SONS, LIMITED, Wellington Mills, Westminster Bridge Road, London, Eng.

Inquiries should be addressed to

JOHN FORMAN, 650 CRAIG ST., MONTREAL.



The WEBBER Patent
STRAITWAY VALVE

For
...Steam, Water or Gas...

EVERY VALVE TESTED.

The Keer Engine Co., Limited

WALKERVILLE, ONT.

Sole Manufacturers for Canada. Send for Price List.

The CANADIAN
RUBBER COMPANY

OF MONTREAL



This is a facsimile of the Brand upon our Fast-running ELECTRIC BELT.

Manufacturers of
RUBBER BELTS
FOR ALL PURPOSES.
RUBBER HOSE

OF ANY DESCRIPTION.
AND
A FULL LINE OF

.. RUBBER GOODS ..

Factories and Head Offices, - MONTREAL.

BRANCHES:

TORONTO—Cor. Front and Yonge Sts.

WINNIPEG—Princess Street.

The Royal Electric Co'y

MONTREAL, QUE.

Western Office.... TORONTO, ONT.

S.K.C. Two-Phase Alternators

Incandescent Light, Arc Light and Power from same Dynamo and Circuit.

Highest Efficiency

Best Regulation

Slow Speed

Least Attention



No Collector

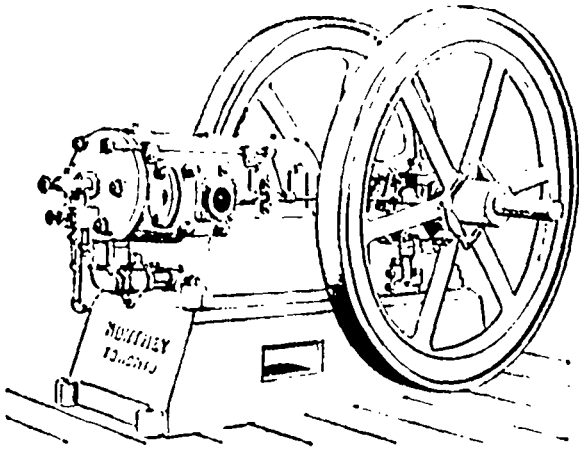
No Moving Wire

No Exposed Parts

No Compounding

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

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



Our Horizontal NORTHEY GAS OR GASOLINE ENGINE

4 TO 100 H. P.

It is CHEAPER than any other power, whether you want 4 h.p. or 200 h.p. It is replacing even Water Power. Let us hear from you as to your power needs. We furnish SMALL POWERS, geared to Electric Plants, for factory and house lighting.

Northey Mnfg. Co., Limited, 1000 King St. W.
Toronto.

Manufacturers of STEAM AND POWER PUMPS OF ALL KINDS.

Exporters from Canada..

Desiring information regarding the best facilities for shipment abroad, with whom correspondence may be had, and to whom consignments may be made, should correspond with.....

THE CANADIAN MANUFACTURER

Toronto, Canada

NO CHARGE MADE FOR GIVING INFORMATION.

Calcium Carbide

WE are also Wholesale Dealers in

We stock Carbide in 100 lb. Tins, and can fill orders promptly.

ELECTRIC SUPPLIES

Lamps, Wire, Rosettes, Switches, etc.

WE HAVE CATALOGUE.

JOHN FORMAN, - 644 Craig Street, - Montreal.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



ESTABLISHED IN 1880.

PUBLISHED ON THE FIRST AND THIRD FRIDAYS OF EACH MONTH

*Official Organ of the Canadian Manufacturers' Association.***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.**J. J. CASSIDY, Editor and Manager*

**W. B. HOPE, Business Representative in Canada, McKinnon
 Building, Toronto.**

**LE GRAND BENEDICT, 23 Park Row New York, Sole Agent for
 New York City and Vicinity.**

**J. D. MORRISON, Jr., Winthrop Building, Boston, Mass., Sole
 Agent in New England States, Philadelphia, Penn.,
 and Baltimore, Md.**

**C. A. G. BROWNE, 145 Fleet St., London, E.C., Eng., Sole Agent
 in Great Britain.**

TRADE CONDITIONS OF EGYPT.

Egypt, owing to its natural resources and to its situation with reference to the Suez Canal, the main highway of commerce between Europe and Asia, is a market well worthy of the attention of manufacturers and business men. It has an area of 394,240 square miles. The cultivated and settled parts aggregating 12,976 square miles.

Nineteen hundred years ago the population of Egypt was 8,000,000; under the rule of the Mamelukes (1517), it was reduced to 3,000,000. In 1875, the population was 6,000,000; and under the rule of Tewfik and his son Abbas II., since 1882, its population has steadily increased, so that at present it is between nine and ten millions. The capital of Egypt is Cairo, with a population of about 400,000. The commercial centre is Alexandria, with 250,000 inhabitants. Port Said and Ismaila have become important towns since the opening of the Suez Canal.

The dominant religion is Mohammedan, although about one-tenth, or more, of the population are Copts, who profess the Christian faith.

The language of the people is Arabic, while that of commerce is increasingly English. In Cairo, French and Italian are also largely used in commercial transactions.

The Khedive, under a partial suzerainty of Turkey, is the sovereign of Egypt; but practically at present and since 1882, Egypt is and has been entirely under British influence. Ismail Pasha, during whose rule the Suez Canal was built, borrowed large sums of money at exorbitant rates. When the interest came due, he was unable to pay. The European governments interfered on behalf of their subjects who were bondholders, deposed Ismail Pasha, and took charge of the

finances, placing England and France in control. In 1882, in the reign of Tewfik Pasha, son of Ismail, there was a rebellion against foreign rule, headed by Arabi Pasha. This was suppressed by the British, and Arabi Pasha, after his defeat at Tel el Kebir, was banished to Ceylon. Great Britain then took the entire management of Egyptian affairs into her own hands.

The people of Egypt, the bondholders, and the world at large, so far as their commercial interests are concerned, have largely profited since the banishment of Arabi. The land tax, which was formerly \$24 a foddah (about an acre), is now \$7.50, in this way benefiting the masses of the people. The bonds are selling at 106 and over and are perfectly secure. Justice prevails in the administration of the laws, and fellahen and nobles, natives and foreigners, can all secure their rights in a legal way. This has been notably demonstrated by the condemnation and sentence of an Egyptian prince to seven years' imprisonment for an attempted murder.

The fertility of Egypt is entirely dependent on the Nile, and its yearly inundations. As a rule, the river commences to rise in June and reaches its maximum in September; but this is not always the case, and the time and duration of the inundations vary considerably. A regular irrigation of the country is therefore necessary.

In modern times, Mehmet Ali (in 1842) commenced the construction of a large Nile dam—the Barrage—which was, however, after a short period of time, so much damaged that it was practically useless from 1867 to 1883; but since the country has been under British influence, the great Nile dam has been repaired and the canal system regulated and completed. The importance of these irrigation works is best shown by the enormous influence they have had on the fertility of the country. The average value of the crop has increased, since 1883, \$4,000,000 per annum; thus it can be seen that, financially, Egypt has been greatly benefited by the irrigation improvements of the last ten years. At present, the cultivated and revenue-paying area is about 5,000,000 acres. This will be considerably increased by the new dam that is about to be constructed at Assouan, the contract for which has already been placed; and if no political difficulties arise, Egypt will reap the full benefit of its fertile soil.

Beyond its interest to tourists, arising from its wonderful ruins and its antiquities, Egypt has not attracted much attention from the new world. The doings of the Hebrew prime minister, Joseph, in the days of the Pharaohs, are known in every household. The history of Egypt is familiar to every schoolboy who ever studied ancient history. Yet the names of Mehemet Ali and Arabi Pasha and the wonderful progress that Egypt is making under the present enlightened Khedive, Abbas II., seconded by the British, are almost unknown outside of that country and Europe. The commercial importance of Egypt and the opportunities for trade have never been properly appreciated.

In no way is the industrial progress of Egypt better illustrated than by the present development of its railway system. In proportion to the population, Egypt has more railway mileage than Austria-Hungary, Spain, or Portugal. All railways are Government property, with the exception of a short railway in the neighborhood of Alexandria (fifteen mil-

in length) and another joining Port Said and Ismaila on the Suez Canal. These railroads, private as well as Government, are very profitable. The income from the Government lines is pledged to certain European bondholders as a consequence of the extravagance of Ismail Pasha. Egypt has at present 1,400 of railway, the most important lines being those connecting Alexandria and Cairo; Cairo, Ismail and Suez, and the Nile Valley Railroad on the left bank of the Nile. The present cost of construction, where bridges over irrigation canals are numerous, is about \$29,000 per mile of normal gauge. In Upper Egypt, it is not more than \$26,000, while narrow-gauge extensions (1 meter - 39.37 inches) cost only \$13,000. The railways are managed by an administration board of three, the chairman of which is an Englishman; the others, are respectively, French and Egyptian. The receipts of the railroads increased from \$7,000,000 in 1890 to \$9,000,000 in 1894.

The imports of Egypt in 1875 amounted to about \$25,000,000; in 1896, they amounted to \$50,900,000, being an increase of 100 per cent. in twenty-one years.

River navigation on the Nile and in the Delta is considerable. Since 1883, many agricultural roads have been built, more are contemplated, and the use of wheeled transport is becoming common. Roads, in the true sense of the word, did not exist until 1891, since when and up to the end of 1897 about 1,750 kilometers (1,087 miles) have been constructed throughout Middle and Lower Egypt. When it is remembered that the area of these two divisions of Egypt is about 1,500,000 acres, the number of roads is still very small. Wheeled vehicles for the transport of produce are as yet very little employed, nor is it reasonable to expect much development in this direction until roads are far more numerous.

A very important step toward improving the means of inland transport has been effected by the Egyptian Government during the year 1897, by granting concessions to companies for the construction of several light railways. For the most part, these lines are to be laid on the newly-made roads; but nothing prevents lines being made elsewhere if the companies find it to their advantage to do so. With these light railways and properly constructed roads putting them into communication with every village, the cost of transport ought to be very largely reduced and the time occupied en route much less than at present.

The exports from the United States to Egypt in 1896 consisted of the following items:

Agricultural implements.....	\$17,174
Iron and steel machinery.....	13,481
Oil.....	99,498
Perfumery.....	134
Spirits, distilled.....	6,028
Woods, and manufactures of.....	29,117
All other articles.....	50,498
Total.....	\$215,540

United States imports from Egypt in 1896 amounted to \$4,632,000, consisting almost entirely of cotton. In the first eleven months of 1897, cotton imports from Egypt amounted to \$4,277,618, sugar imports from Egypt amounted to \$3,034,273. This trade is carried on by British vessels. Cotton raising is becoming more general every year in Egypt. The importance of this line of agriculture may be seen by an examination of the exports. In 1875, they

exported 239,222 bales of cotton; in 1896, 680,960 bales. This shows that they have doubled their exports of cotton in twenty-one years.

It was only ten years ago that Egyptian cotton was introduced into the United States. The trade has increased with marvellous rapidity; in 1890, 18,900 bales, and in 1896, 59,339 bales were imported. The development of the cotton industry in Egypt dates from the time of the civil war in America. England is anxious to have its growth encouraged, in order to have another market from which to draw supplies for Lancashire mills. This development has not been without its influence on other agricultural products, as can be seen in the increased importation of flour. From 1881 to 1892, the annual imports amounted to 25,000 barrels; in 1894, 107,000 barrels; 1895, 191,000 barrels; 1896, 350,000 barrels. In 1896, 80 per cent. came from Marseilles, France; the rest from Odessa, Trieste, etc.

The total exports of Egypt in 1896 amounted to \$68,000,000, consisting of cotton, cotton seed, cane sugar, beans, wheat, onions, skins and natural woods. England takes about 35 per cent. of the exports.

The Egyptian imports are increasing from year to year, having now reached the sum of \$50,000,000, of which the United States furnishes the insignificant sum of \$215,000, or less than one-half of one per cent.

The following articles and the value of them imported into Egypt in 1896 indicate the possibilities of trade with that country:

Articles.	Value.
Writing Paper.....	\$172,000
Wrapping Paper.....	228,000
Lumber for building.....	2,192,000
Furniture.....	230,000
Coal.....	2,125,000
Soap.....	450,000
Cotton yarns.....	810,000
Cotton fabrics.....	7,500,000
Iron hardware.....	2,355,000
Copper brass goods.....	565,000
Machinery and parts of.....	2,164,000

The past few years have been marked by unusual activity in engineering works in Egypt. New sugar factories have been erected, many bridges built, light railroads for agricultural purposes constructed, and there is no doubt that the coming year will show a great increase in the amount of Egyptian imports. The increase of the imports in iron and machinery in 1896 was the result of the development of the sugar industry and the introduction of electrical tramways in Cairo and Alexandria.

The portable-engine trade, as well as that of steam pumps, is extensive, and would be greater if there were less difficulty in obtaining permission for pumping purposes from the Government.

Fixed engines and corn grinding mills, from 12 to 25 horse power, are being sold all the year around, and lately compound engines have been in demand, as the present class of engineers have more experience and are better able to work these engines than a few years ago.

The use of thrashing machines is making strides in the country, and, besides two Government land departments, a few other large landed proprietors are working them.

Of pumps for irrigating purposes and mills for corn grinding, England is the leading exporter to Egypt.

In engineering tools, England gets a large share, although from time to time American makes are placed on the market.

Files for Egyptian Government railway administration have been a sore point to the English manufacturers for some three years; they have been furnished by Belgian and Italian firms at lower prices than the English files.

Almost the whole of the cotton piece-goods trade is in the hands of German and French firms. These firms, resident in Manchester, have branch houses in Egypt or are represented by German agents. Their travellers, principally German, are sent out every year and remain for from three to five months in the country. There is at present a strong and increasing competition from Germany in the lower qualities of cotton prints. In woolen goods, there is a growing competition from France, Italy and Germany, although at present England predominates.

The demand for paper boards is growing from year to year. In former years, Austria was the chief importer of this class of goods. During the past few years, Germany has been gaining in the trade in this and other lines of paper.

A careful study of the possibilities of the Egyptian market for the introduction and sale of manufactured articles suggests the following:

Articles of carpentering, such as door frames, wood frames, sash, and venetian blinds, wooden ware, tools, hinges, bolts, wire nails, wood screws, door and window furnishings, wood moldings for picture frames and other purposes — plain, gilt, and colored; agricultural implements and tools, such as shovels, plows, hoes, cornshellers, etc; mining, milling, and hydraulic machinery, sewing machines, typewriters, wagons, carriages; wheelbarrows, wood and iron; novelties, boots and shoes, coal-oil lamps, gas meters, gas and electric light fixtures of good design and low cost, stoves and ranges that burn soft coal, petroleum, or gas, dental appliances, fire extinguishers, furniture, patent medicines, photographic apparatus, including kodaks; steam and hot water heating apparatus, rubber hose and rubber goods, cigarettes, chewing gum, confectionery, canned goods and fancy groceries, cereals, such as rolled oats, wheaten and corn grits, etc.; baked beans, meats, canned and cured flour, soap.

AGRICULTURAL IMPLEMENTS—A POINTER.

Consul Fleming, at Edinburgh, Scotland, in writing to his Government states some facts to which careful consideration should be given by Canadian manufacturers of agricultural implements. He says:—

American-made agricultural machinery is widely used on the farms of Scotland. Most kinds of machinery for farm purposes manufactured in the United States have long been preferred by farmers here, on account of price, quality and design. While the obvious merits of their machines have been the essential recommendation, it is nevertheless true that American manufacturers in this line have obtained the market by the readiness with which they met the special requirements of the Scotch farmer. They adapted their machinery to the market. I refer to Scotland in particular, but the same thing may be said generally of the United Kingdom.

The old style American reaper or harvester cut on the right side. This did not suit the Scotch farmer, he wanted a machine that cut on the left side. Therefore, he would not buy the American machine, and the English-made reaper was practically without a competitor. When the self binder

was invented, it commended itself at once as a labor saving device, besides cutting on the left side, but it encountered difficulties in Scotch fields. There is here a heavier stand of grain than in most parts of the United States. Moreover, the farmers sow grass seed with the barley, so that after the barley has been cut the sheep may feed on the field. This grass is exceedingly fine and also dense. The new reaper was a failure at first, owing chiefly to the fact that the undergrowth of grass in the barley interfered with its working. The blade of the machine was too light, and the canvases were not properly adjusted. No sooner were these defects—from the Scotch point of view—ascertained, than a heavier blade was introduced and the canvases were altered. In less than two years the American self binder was an established favorite; it still holds the market. British manufacturers of reaping machines have not been able to make any headway against it.

The chilled plow was not at first suited to the needs of Scotch farmers. They prefer a narrow furrow and do not deem it a good plan to throw the furrow over; they wish, rather, to set it on edge. The plow was changed to meet their ideas as to the proper way to turn up the ground, and the result was that the American plow has gained almost universal favor.

American farm machinery of nearly every description has had to be altered in some important respects, to adapt it to the different conditions found here. Most manufacturers have been quick to make the necessary changes, and their enterprise has been abundantly rewarded. Not only are there great and increasing sales annually of these classes of machinery, but any new American invention is readily taken up by the farmers on this side.

Self binders and chilled plows have been mentioned as instances where our manufacturers have captured the Scotch market by considering the needs of the consumer. Threshing machines may be mentioned as an instance of the failure of American manufacturers thus far to exactly meet the requirements of farmers in this country. Owing to the rank growth and humid atmosphere, the weight of straw (and of grass mixed with it) to be thrown off is much greater than is the case in the United States. A much heavier and stronger machine is necessary for general use. It has not yet been provided by American manufacturers.

CANADA'S AGRICULTURAL RESOURCES.

Mr. George Johnson, Dominion Statistician, is the author of a most interesting and instructive article, "Canada's Agricultural Resources and Her Opportunity," that appeared in the recent holiday edition of *The Farmers' Advocate*; and we are sure that those of our readers who did not see it in the pages of our contemporary will thank us for reproducing it here. The article is as follows:—

The world is becoming more and more densely peopled. The population is not standing still. The "hatches, matches and despatches" do not balance each other. The natural increase of the peoples of the world may be estimated to be six per cent. in ten years. It may possibly be greater. Improvement in sanitary conditions and reduction in the destruction of life by war may overbalance that general disposition to put reproduction under bonds which some of our clerical friends believe that they have discovered. The food requirements of the world are, therefore, increasing yearly. There are more mouths to feed. Further, as the owners of these mouths grow in the grace and knowledge of civilization they require better food. Content with rye or rice during the formative period of their life, the nations become in their later stages of development more and more desirous of wheat products as the highest form of vegetable aliment. The world at large, and the black, yellow and red races, as well as the white race, are doing very much as the people of Canada

have done. It is within the memory of living men and women when rye formed a much greater proportion of the food of the people of Ontario than it now does. In 1852 there was an acre of rye for every twenty of the population—so rapidly and greatly has rye dropped out of the list of desirable foods. If Russia develops in civilization as rapidly as she has done, the greatest rye-eating population of the world will consume less rye, and the demand for wheat will proportionately increase. The changes taking place in Russia are seen in the fact that while the population increased during the present decade about ten per cent., the consumption of rye decreased by sixteen per cent. If Russia attain to the normal average of the wheat-eating proclivities of other countries, the home demand upon her acreage in wheat would exhaust, within a score of years, all her possibilities under conditions similar to those to-day existing. These are factors making for increase in the consumption of wheat. If all the world's population arrived at the stage of civilization to which Great Britain, the United States and Canada have attained, the demand for wheat would be about 7,000,000,000 bushels a year, and the supply at present rates would be not more than 2,500,000,000 bushels. To meet the world's demand, based upon the requirements of the three countries named, would call for an acreage three times that now sown in wheat.

It must not, however, be forgotten that we do not really know the possibilities of an acre. Regarding it as a bank to be drawn upon without depositing, we all know that there must come a time when the farmer will hear the ominous words, "No funds to credit." Regarding the acre as a laboratory, to be managed scientifically, no man knows the limit of production. Taking only the world's acreage under wheat in 1897 and applying it to the English standard, there would be 4,750,000,000 bushels, or more than double the actual yield, and even England's standard of recent times has been exceeded in her past history, and can easily exceed again, if it pays. To take our own country, the census of 1891 showed that we had in the year 1890 in wheat 2,723,883 acres, yielding 42,000,000 bushels, or about fifteen bushels an acre. This yield could easily be doubled.

But it is in the possibilities of the extension of the wheat area that Canada's future position as contributor to the world's stock of wheat is interesting and important. According to the "Statistical Year Book for 1897," the land area of Canada (not including the Boothia and the Melville Peninsulas, and the great aggregation of islands within the Arctic Circle, forming the District of Franklin) is over 3,000,000 square miles, or 1,920,000,000 acres. Of that vast area we have given under 3,000,000 acres to wheat-raising. What proportion of the 1,920,000,000 acres is available for wheat is not known.

In Manitoba and in the Provisional Districts of Assiniboia, Alberta, Saskatchewan and Athabasca, the Federal Government have 270,000,000 acres of land available for settlement. The Canadian Pacific Railway has unsold about 17,300,000 acres, of which 1,200,000 acres are in Manitoba. Other railway companies have about 5,500,000 acres available for settlement. The Canada Northwest Land Co. have 1,800,000 acres. Commissioner Chapman says "the Hudson's Bay Co. has a land grant in the fertile belt which amounts to 7,000,000 acres, of which about 500,000 acres have been sold, leaving say 6,500,000 acres available." The swamp lands of Manitoba are under the control of the Provincial Government and have an area of about 1,000,000 acres. Here, then, in the new western part of Canada, there are over 300,000,000 acres of land fit for settlement. Now, suppose that only one-half of that is suitable for wheat growing, and that the average yield would be but one-half the English standard, you would have 2,250,000,000 bushels. If it pays, that average yield can be doubled.

It does not seem to me at all likely that in the near future the world's growth in population and in civilization will overrun the world's possibilities in wheat-growing even if we leave out of the discussion the enormous acreage in the other

cereals, corn, oats, rye, buckwheat, and in potatoes and rice, all of which foods are used in greater or less quantity, according to the price of wheat.

What seems to me at present of greater importance to Canada is the question, "Are our farmers making the most of the market they have in the Motherland?" The United Kingdom imported in 1897 of foods:

	Pounds.
Fish foods.....	274,369,760
Meats of all kinds.....	2,180,300,000
Butter, cheese, lard, milk, eggs, etc.....	1,251,000,000
Vegetable foods.....	20,948,000,000
Fruits.....	279,000,000
Total.....	24,932,669,760

It is difficult to grasp the meaning of these huge figures. A railway freight car holds about 50,000 pounds. It would take 500,000 cars to carry the food products Great Britain imports in a single year. These cars would form a train that would stretch from Belleville, Ont., to Montreal, and from Montreal to Vancouver—over 3,000 miles—in one continuous line. If put into barrels of a capacity of 200 pounds each, the annual food supply imported by Great Britain would require 124,663,348 barrels.

If ten thousand of these barrels were taken as the base, the column of barrels would rise in the air as high as two Mount Blancs, one on top of the other, with enough over to meet Mount Carmel on the top of the second Mount Blanc to equal the height.

Mount St. Elias, the top of which is partly in Canadian and partly in United States territory, is said to be 18,000 feet high. Take that mountain, pile on it Versuvius, Ben Nevis, Hecla, and the Rock of Gibraltar, and you would have just about the height of the 10,000-barrel column formed out of the foods imported into Great Britain in a single year. The highest mountain in the world, Mount Everest, in the Himalayas, would not be equal, by several thousand feet, to this food column.

Put ten thousand barrels together to form the base and pile all the remaining on that base, and the column would overtop Mount Chimborazo and on the top of it thirty of the highest edifices in the world, including the Eiffel Tower, Cologne Cathedral, St. Peter's (Rome), the Pyramid of Cheops, St. Paul's (London), etc.

These illustrations may help to give an idea of the vastness of the demand there is in Great Britain for food from the outside world.

Now as to value. The food imports of Great Britain are valued:

Fish foods.....	\$ 16,645,547
Meats of all kinds.....	189,490,838
Butter, cheese, etc.....	156,954,413
Vegetable foods.....	277,385,703
Fruits.....	16,698,957
Total.....	\$656,275,458

Taking the last five years, the production of gold in the British Empire is about \$100,000,000 a year, and in all the other countries of the world about another \$100,000,000. The production of silver the world over is about \$210,000,000. You would have \$410,000,000, and to make up the difference between these figures and the value of the catables imported into Great Britain you would have to search through a long list of minerals before you attain your object.

It would take a great many Klondikes and South African and Australian gold fields to equal the value of the food imported annually by Great Britain.

The consumption of coal in the world is about 640,000,000 tons a year, valued at the pit's mouth at, say \$1 a ton. The value to the coal owners of all the coal mined and consumed in driving all the steamships, all the locomotives, and all the factories, and in heating all the homes and hearths of all the world, is just about equal to the value of the yearly imports of food supplies into Great Britain.

Now, what share in this enormous business has Canada, with all her vast acreage, her splendid climate, her capacity for transport by rail, river, canal, and cool ocean route? If the cars measuring the quantity of foods required by John Bull from outside countries were divided into sections, according to the countries supplying the demands Canada's section of the 3,125 miles of cars would be 243 miles long, or just 20 miles shorter than the distance between Montreal and Peterboro, Ont., by the C. P. Railway. Roughly, the section between Montreal and Peterboro would represent what we have managed to do; that between Montreal and Vancouver would represent what other countries have done, in which we could and should have an appreciable proportion. With over three thousand miles of freight cars to fill, we have thus far in our agricultural history only succeeded in filling 243 miles of freight cars.

Now to come to particulars. Take the meat supply. Great Britain imports, as already stated, 2,180,300,000 pounds of meats of all kinds. Canada sends as her contribution 141,973,000 pounds, or 1 pound in every 15 pounds of the import. Canada could do a good deal better. Look at some of the articles. Of bacon, Great Britain imports 560,550,480 pounds. Canada supplies 32,511,696 pounds, about 1 pound in every 17½ pounds needed. Of hams, the British imports were 193,298,000 pounds, and Canada's portion in that quantity was 13,342,896 pounds, somewhat more than 1 pound in every 14½ pounds needed. Of beef, salted and fresh, the United Kingdom imported 398,497,000 pounds, and Canada supplied 1 pound in every 168 pounds wanted. Of live cattle, Canada supplied 1 beeve in every 5 Great Britain imported, and of sheep, 1 in every 10. We have no show at all in fresh and preserved mutton, though Great Britain needs to import 368,000,000 pounds weight in the year. Australia cuts us out of this business, and we don't begrudge our sister colony the trade.

To revert to our railway freight car illustration: of the 272 miles of cars that would be requisite to transport the meat imports of Great Britain during a year, Canada's share would be carried in 18 miles of cars.

In butter, cheese, lard, milk, eggs, and honey, Canada does, on the whole, somewhat better. The British demand is equal to 156 miles of freight cars, and Canada's supply would need 24½ miles of cars. In bare figures the demand was 1,251,000,000 pounds, and Canada's share in the supply of that demand was 196,292,000 pounds.

Of vegetable foods, wheat, peas, beans, barley, corn, rye, oats, flour, and meal and vegetables generally, Great Britain imports 20,948,000,000 pounds. These would require 2,625 miles of cars to convey them. Canada's share would be represented by only 195 miles. Look into some good map and see what a little dab the 195 miles is upon 2,625 miles.

Of fruits, Great Britain imports 279,000,000 pounds. To transport this quantity 35 miles of cars would be required. Canada's portion would be carried by 5 miles of cars. That Canada is able to supply one-seventh of all the English demand upon the world at large for fruits is very good evidence of the capabilities of the country in fruit culture.

There remains yet one feature to be considered. That is the extent to which we are dependent upon the Mother Country for a market for the products of the farm. Speaking in the large, we send out of Canada in the year, of meats, of butter, cheese, etc., of vegetable foods and of fruits, 2,800,000,000 pounds, and of this quantity, 1,900,000,000 pounds go to the Motherland. Roughly, and on an average, 70 per cent. of the exportable surplus of our farms and our orchards go to Great Britain, leaving but 30 per cent. for all other countries, and this percentage to Great Britain is an increasing percentage, notwithstanding that Great Britain's age greater and greater year after year. What Canada has wisely elected to do is to cultivate this constantly increasing English market as her best possible market. In corroboration of the statement of the developing character of the British market, it is only necessary to give the figures for the last few years. In 1894,

Great Britain imported of the above foods \$580,000,000 worth, which in 1897 had increased to \$640,000,000—60,000,000 more in three years.

In conclusion I may point out that the present Minister of Agriculture in the Federal Government, Hon. Mr. Fisher, has applied himself earnestly, energetically, and with great skill and success, to the various questions of scientific farming; of adaptation to the wants of other countries; and of transportation, including cold storage, by which improvement in the net results obtained from our disposable surplus has been so wonderfully marked, as the figures show.

A LESSON IN ECONOMICS.

In a speech made at Hastings, England, on May 18, 1892, Lord Salisbury, Prime Minister, said: "Every nation is trying how it can by agreement get the greatest possible access to the markets of its neighbor, and such negotiations are constantly going on. Nobody cares two straws about getting the commercial favor of Great Britain, because we have deliberately stripped ourselves of the armour and the weapons by which the battle is fought. Foreign nations negotiate their commercial treaties on this basis. If you make your duties such as I can sell in your markets, I will make my duties such as you can sell in my markets. Englishmen say:—We will levy no duties upon anybody, and that they regard it as contrary and disloyal to the sacred doctrine of free trade to levy duties upon anybody for the sake of getting anything out of it. I can only say that such action may be noble, but it is not business-like, and that on those terms you will get nothing. I would impress upon you that if you intend in this conflict of commercial treaties to hold your own you must be prepared, if needs be, to inflict upon the nations which injure you, a penalty which is in your hands of refusing them access to your markets as long as they shut you out of their markets. Some time after the Hastings speech a Manchester gentleman wrote to Mr. A. J. Balfour, M.P., regarding the falling off in British exports since 1890, as the result of the McKinley Tariff Act. Mr. Balfour replied in the following terms:—"On the general question with which you deal, you will find some observations by Lord Salisbury in a speech delivered at Hastings in the earlier part of the present year. With Lord Salisbury's opinions I entirely concur."

In 1888 Mr. W. E. Gladstone stated:—"To my astonishment, protection has made progress in this country." On May 12, 1890, he stated at a Cobden Club meeting held at Prince's Hall, Piccadilly:—"They must recognize with great disappointment how much ground had been lost by the doctrine of free trade within the last twenty five years."

EDITORIAL NOTES.

Hiram Walker, of the old and well-known firm of manufacturers of Hiram Walker & Sons, and the founder of the town of Walkerville, Ont., died at his residence in Detroit, January 12th, in the eighty-fourth year of his age. Mr. Walker was a member of the Canadian Manufacturers' Association from its inception some twenty-five years ago.

The Springfield, Mass., Republican is inclined to be satirical with regard to the favors which it was taken for granted the Americans would return Great Britain for her moral support

during the war. "The quid pro quo," says The Republican, "has had opportunity to develop itself. But what do we see? The first answer from the United States is to announce a purpose to bring Hawaii within the coast line of the United States and exclude British ships from the carrying trade between the islands and the mainland. The next step is to bring Porto Rico within the coast line and exclude British ships from that trade. The third quid pro quo demonstration is to evince a purpose to knock over the Clayton-Bulwer treaty and kick Great Britain out of a joint or any measure of control of the Nicaraguan canal. And now the Administration at Washington decrees a military government for Cuba, which shall permit United States ships to participate in the island's coasting trade, but which shall exclude the ships of all other powers, including England. Finally, the open door is promised in the Philippines only during the military government of the archipelago."

In response to an enquiry from the Secretary of the Canadian Manufacturers' Association, Mr. W. G. Parmelee, Deputy Minister of Trade and Commerce, states that the duties upon silver-plated ware going into the several Australian Colonies are as follows:—

New Zealand	20 per cent.
Victoria	25 "
Queensland	25 "
New South Wales.....	Free.
Tasmania	20 per cent.
Western Australia.....	15 "
South Australia	25 "

The New York Commercial says that reciprocity in manufactures between the two countries would lead to the domicile of many United States industries in Canada, and it therefore opposes reciprocity. "Flat reciprocity," it says, "in cotton manufactures, for instance, would be likely to move all of the New England cotton concerns across the line into Canada as quickly as the moving could be done." Strange, but our restrictionists say it would have exactly the opposite effect. Some one must be wrong.—The Globe.

The Globe knows, and we all know that the adoption by Canada of tariff protection to our manufacturing industries resulted in the investment of millions of American capital in industrial enterprises in this country. The removal of that protection, whether by reciprocity or in any other way, would result in the withdrawal or destruction of much of that capital. It is not probable that under reciprocity any American manufacturing concern would abandon its larger home market to locate in a smaller foreign market. The hope of the Canadian manufacturer is that there will be no reciprocity.

Le 3 janvier courant, avait lieu, sur invitation, une reunion de representants de journaux de commerce au bureau de M. J. J. Cassidey, le directeur du "Canadian Manufacturer" a Toronto. Les journaux suivants etaient representes a cette reunion: Canadian Manufacturer, Lumberman, Electric News, Architect and Builder, Contract Record, Canadian Grocer, Canadian Hardware Merchant, Dry Goods Review, Printer and Publisher, Bookseller and Stationer, Canadian Druggist, Le Moniteur Du Commerce, Canadian Pharmaceutical Journal, Baker and Confectioner, Canadian Shoe and Leather Journal, The Merchant, Engineer, Journal of Fabrics, Monetary Times. Le but de l'assemblee etait de discuter certaines matieres interessant les journaux de com-

merce en general. Apres mur examen, l'entente suivante fut etablie a savoir: Que bien que des affaires puissent etre acceptees par l'intermediaire d'agences de publicite honnetes et responsables, lorsqu'il convient aux annonceurs de faire leur publicite par leur entremise, il n'y aura pas lieu, pour aucun motif, de payer une commission aux agences de publicite qui, en pareil cas, devront etre considerees comme etant a l'emploi des annonceurs, pour le controle des annonces, etc., Le Moniteur du Commerce.

Just before the departure from Washington in December, of the Canadian Commissioners to the International Conference, The Hamilton Spectator published the following as an item of "Good News":—

The news from Washington is of the very best. It is to the effect that the Canadian Commissioners have been unable to make any arrangement with Uncle Sam. That's good. Under present circumstances it is utterly impossible to change existing arrangements without loss to Canada. We do not want to send pine logs, pulpwood or nickel ore to the United States under any circumstances, no matter whether Uncle Sam permits the importation of sawn lumber free, or imposes \$10 a thousand upon it; no matter whether he allows the importation of pulp and paper free or not; no matter whether he is willing to share the nickel business with Canada or wants the whole of it. All these things are ours, and Canada will be foolish indeed if she shares these rich gifts of Providence with any foreign nation. We don't want to permit Americans to have equal privileges with our fishermen in the North Atlantic fisheries; we don't want these fisheries ruined in a few years by reckless and wasteful American methods. We must not permit American warships built in the ports of the great lakes the freedom of our canals. To give them that privilege would be to invite disaster; it would be disloyal to Canada and to the Empire, and would give the United States the upper hand if there should happen to be war between this country and the United States. We don't want the United States to regulate our gold mines or our railroads. We don't want to give away a sealing business worth \$750,000 a year for nothing. We don't care particularly whether or not Do Barry continues to bounce Canadians; they will be better off at home. And, above all, we don't want reciprocity of any sort which Uncle Sam is willing to give. Therefore the news from Washington to the effect that nothing can be done is exceedingly good news, and we sincerely hope it is true.

The Toronto Globe, speaking of "The Growing Time" at Stratford, Ont., says:

Never in its history have business men felt so much confidence in it and in their prospects. This is due to several causes, possibly, but largely no doubt to the readjusted and practically stationary tariff of the Liberal party.

"Readjusted and practically stationary tariff" is a rather ambiguous phrase, whatever it may mean, but we will let it go at that. If the Liberal party will keep hands off the tariff, the Growing Time throughout Canada will continue to grow, and the Liberal party are quite welcome to all the credit it can obtain from it.

Mr. D. M. Rennie, Canadian Commercial Agent in the Argentine Republic and Uruguay, writing from Buenos Ayres acknowledging receipt of The Bulletins of the Canadian Manufacturers' Association, which are sent to him regularly, says that business in Argentina is dull, the recently imposed duty of ten per cent. on imports having a depressing effect. The wheat crop, which was then being harvested, was very large, and harvest lands commanded high wages. There are many Toronto binders at work in the wheat fields of Argentina, and their reputation is considered as A1 in every respect.

CANADIAN MANUFACTURERS' ASSOCIATION.

President:

J. F. ELLIS.

First Vice-President:

JAMES KENDREY, M.P.

Second Vice-President:

P. W. ELLIS.

Treasurer:

GEORGE BOOTH.

Chairman Executive Committee:

R. W. ELLIOT.

Chairman Tariff Committee:

W. K. McNAUGHT.

The Executive Committee meet on the Second Tuesday of each month.

OFFICES

McKinnon Building,

TORONTO.

Tel. 1274.

J. J. CASSIDEY, - SECRETARY.

THE OBJECTS OF THIS ASSOCIATION ARE:

To secure by all legitimate means the aid of both Public Opinion and Governmental Policy in favor of the development of home industry and the promotion of Canadian manufacturing enterprises.

To enable those in all branches of manufacturing enterprises to act in concert, as a united body, whenever action in behalf of any particular industry, or of the whole body, is necessary.

To maintain Canada for Canadians. Any person directly interested in any Canadian manufacturing industry is eligible for membership.

CANADIAN INDUSTRIAL LEAGUE.

President, **JAS. KENDREY, M.P.**

WOOLEN MANUFACTURERS' ASSOCIATION,

President, **BENNETT ROBAMOND, M.P.**

KNIT GOODS MANUFACTURERS' ASSOCIATION,

President, **JOHN PENMAN.**

CARPET MANUFACTURERS' ASSOCIATION,

President, **J. P. MURRAY.**

GLOVE MANUFACTURERS' ASSOCIATION,

President, **A. R. CLARKE.**

REPRESENTATIVES TO

TORONTO INDUSTRIAL EXHIBITION ASSOCIATION.

R. W. ELLIOT.

GEORGE BOOTH.

W. K. McNAUGHT.

A. E. KEMM.

J. J. CASSIDEY.

CANADA'S COMMERCIAL AGENTS.

Following is the correct official list of Canada's Commercial Agents in Great Britain, British Possessions and foreign countries.

- J. S. Larko**, Sydney, N.S.W., agent for Australasia.
- G. Eustace Burke**, Kingston, Jamaica, agent for Jamaica.
- Robert Bryson**, St. John, Antigua, agent for Antigua, Montserrat and Dominica.
- S. L. Horsford**, St. Kitts, agent for St. Kitts, Nevis and Virgin Islands.
- Edgar Tripp**, Port of Spain, Trinidad, agent for Trinidad and Tobago.
- C. E. Sontum**, Christiania, Norway, agent for Sweden and Denmark.
- D. M. Ronnie**, Buenos Ayres, Argentine Republic, agent for Argentine Republic and Uruguay.

In addition to their other duties, the undermentioned will answer inquiries relative to trade matters, and their services are available in furthering the interests of Canadian traders.

- J. G. Colmer**, 17 Victoria Street, London, S.W., England.
- Thomas Moffat**, 16 Church Street; Cape Town, South Africa.
- G. H. Mitchell**, 13 Water Street, Liverpool, England.
- H. M. Murray**, 40 St. Enoch Square, Glasgow, Scotland.
- Harrison Watson**, Curator Imperial Institute, London, England.

IMPORTANT.—An enquiry addressed to **J. J. Cassidey**, Secretary Canadian Manufacturers Association, Toronto, Canada, will place you in communication with the leading Canadian Manufacturers of the articles you mention. Merchants and Importers in all parts of the world are invited to make free and full use of the facilities afforded by this Association when they desire information about anything produced in Canada. No charge whatever for answering inquiries.

REBATES OF DUTY ON GOODS IMPORTED INTO CAPE COLONY.

The Government of the Colony of the Cape of Good Hope has reduced the rebate on imported goods passing through the colony to the inland states, from 5 per cent. to 3 per cent. This reduction applies to the South African Republic, Orange Free State, and Rhodesia, and marks an important departure. The colony transit rate has by this act been brought down to the level of the Delagoa and Beira rates, in Portuguese territory, and when Natal has followed suit, which will be soon, it will insure uniformity of the transit rate throughout South Africa.

TRADE OPENINGS IN SOUTH AFRICA.

A number of reports dealing with various lines of imports into South Africa have been received from Consul-General Stowe, of Cape Town. Some of these openings he discusses as follows:

COLD-STORAGE PLANTS.

It may be of interest to know that there appears to be no limit to the possibilities of the erection of cold-storage plants in South Africa. The cities of Cape Town and Port Elizabeth in Cape Colony; Pretoria and Johannesburg, in the South African Republic, and Durban, in the colony of Natal—all have taken steps to establish local cold storage, but as yet no definite action has been reached.

The loss of so many cattle by the rinderpest is the cause of the movement. It is alleged that thousands of people who at one time would not think of eating frozen meat are now eating

the meat imported in cold-storage steamers, and are pleased with it.

VEHICLES.

Imports of vehicles into South Africa in 1897, through all ports except Lourenco Marquez, were valued at \$472,804.54, the United States furnishing \$355,985.28.

The United States has thus far been prominent in the vehicle trade in this country. Merchants here have in some instances been able to induce our manufacturers to build vehicles that would meet the demand, and in such cases both the merchant and the manufacturer have profited.

The vehicle that has a large sale is known as the four-wheel, four-and-six-seat, extension top barouche, and is called here the "handy carriage." This vehicle is built on the same lines as the one used in America; it has the same "track" but the seats are made not less than six inches wider. The Dutch people of this country want comfort, and, being large themselves they want room.

The most popular vehicle for passengers, and one manufactured largely in this country, is a four-seat, extension-top, two-wheel cart, known as the "Cape cart," which sells at \$400 up; the "cab cart," which has two wheels, two seats and extension-top, sells for \$200 up. The Malays, who do about all the livery business, and the farmers near the town use these carts almost universally.

The American buggy of the piano box style has made some friends and is making more, but they should be constructed so as to be very strong and durable. It seems to me that our park wagons, three-spring wagons, and side-spring road wagons, all with tops, would sell well. Quite a number of regular express wagons with panel sides and canvas top is also sold.

Our manufacturers should meet the demand, and not try to send what is not wanted. The demand here will increase from year to year.

Horseless carriages are being introduced for passenger service, and are quite successful.

BICYCLES.

Imports of bicycles and accessories into all ports of South Africa, except that of Lourenco Marquez, for 1897 were:

Country.	Amount.	
United Kingdom	£244,709	\$1,190,876
Mauritius	21	102
New South Wales	59	287
Victoria	15	72
Belgium	1,051	5,114
Denmark	5	24
Holland	1,631	7,937
Germany	9,665	47,034
Franco	1,542	7,504
Austria	8	38
United States	35,897	174,692
Other countries	791	3,840
Total	£295,394	\$1,437,534

Perhaps no country, in proportion to its white population, does a larger business in bicycles than does South Africa. Here the bicycle is used not only by the whites but also by the Malays.

Municipal authorities estimate that there are three thousand bicycles in Kimberly, or about one for every seven of the population. The imports from the United States in 1896 were £13,202 (\$64,248), and the increase for 1897 is estimated at 171 per cent. All the English makes are sold here and several American. It is to be regretted that some very cheap bicycles have been imported from the United States, which has injured the trade. There being a lull in the demand, it was believed that a cheaper machine would find a market: but it was soon found that a cheap machine was not an economical one, and now only the best are in demand.

The duty on bicycles is nine per cent. They sell here at about the same price as in the United States, with freight and duty added.

AGRICULTURAL IMPLEMENTS.

The imports of agricultural implements into the ports of South Africa for 1897 were to the value of \$525,827.70, of which United States furnished \$295,662.96. The figures speak for themselves.

There should be openings for mowing machines, corn cultivators, grinders and shellers, wheat binders, potato diggers, etc. Africa can raise as good wheat as any other country, and the Government is now buying seed wheat and testing several kinds. A large number of small, cheap plows, both steel and cast, cutting from seven to fourteen inches, have been sold, and there is a demand for a light gang plow, the two small plows held together by an iron frame, with iron handles and no wheels.

The five-tooth cultivator is also in demand. I am of the opinion that hand corn planters, hand seeders, disk harrows, and in time sweep corn grinders, will sell. One dealer said to me that he wanted for immediate delivery 100 feed cutters, and could not get them. Only the cheapest implements are purchased now, but in the future, when farmers farm as they should, the larger and better ones will find a place.

Agricultural implements of all kinds are admitted free of duty. Durable goods should be made, and, although they may not be expensive and such as are used at home, in time the best will be wanted.

It would pay manufacturers to exhibit at the fairs held here during the months of February, March and April.

HARNESS

The imports of harness into South Africa in 1897, with the exception of Natal and Lourenco Marquez, were:

Country.	Value.	
United Kingdom	£108,017	\$525,664
Natal	1,108	5,392
New South Wales	65	316
Victoria	22	107
Belgium	328	1,596
Franco	27	131
Holland	21	102
Germany	1,102	5,362
United States	2,864	13,937

For Natal the total value was £57,906 (\$281,789), the countries of origin not being given.

Samples of harness sent to the United States could be duplicated and again sent here, at a less price than now charged, with a good margin of profit. Pack saddles for mules, head collars with ring, Boer saddles, team harness, barouche, cab and other harness, if made to meet the demand, would find a market, as well as all kinds of girths, etc.

The harness used here is usually of "russet" color. An ordinary single harness sells at \$55 to \$75; double harness, \$125 to \$250; and cart harness is offered as low as \$25.

The duty on harness is £9 on every £100 value.

IMPORTS.

Speaking of imports into South Africa Consul Stowe says:—

Trade in South Africa has untold possibilities, but one of its obvious features at present is the foothold gained by United States goods. While this trade is mainly in food stuffs, other lines have been rapidly coming to the front.

In electrical goods and appliances, articles of iron and steel, galvanized iron, steam and water piping, tools, shovels, hoes, forks, silver-plated ware, hardware, furniture, house furnishings and window glass the trade has held its own during the past year. An improved demand for drilling and hoisting machinery as well as for oil gas engines is noticed. England sent more goods in 1897 than ever before.

The imports into South Africa in 1897 amounted to \$129,150,128.54, divided as follows:

Cape Colony	\$87,148,927.08
Natal	29,082,242.54
Delagoa Bay	12,918,958.92

This trade came from the following countries:

Great Britain and possessions	\$38,670,362.42
United States	13,151,071.24
Germany	5,122,738.36
Other competing countries	15,745,291.22
Foreign countries not competitive	6,460,665.30

Total 129,150,128.54

TRADE WITH GERMANY.

Germany recognizes the importance of this market, and through her new steamship line and low rates of freight is preparing to foster her trade. She is imitating the United States in goods and methods of packing. To show her trade on the east coast, it can be stated that during January, 1898, out of a total tonnage of 22,496 tons discharged at Delagoa Bay, British ships delivered 8,290 tons, and German, Norwegian and Swedish ships 11,334 tons. Of this, lumber represents 9,878 tons; railway material, 2,034 tons; coal, 400 tons; and general merchandise, 10,184 tons. Germany is sending to South Africa a monthly Trade and Export Journal, the purpose of which is to make German industry known to the world's markets and to prove its ability to compete with all civilized nations.

TRADE WITH ENGLAND.

British manufacturers exported to South Africa in February, 1897, \$3,254,440.96, and in February, 1898, \$2,765,689.92. The largest increase was in railroad iron and steel, viz., \$183,416.40; woolen and cotton goods and paper also increased. The decrease is shown in machinery and millwork, bar and angle iron, steel wire, beer and ale, hardware and apparel.

British manufacturers are calling attention to the attractive advertising of Americans.

TRADE WITH UNITED STATES.

The principal increases in 1897 were:

Articles.	Value.
Flour	\$ 284,659.59
Salted beef	21,199.04
Lard	112,970.70
Hams	12,519.36
Bicycles and parts	171 per cent.
Builders' hardware	15,226.38
Cotton manufactures	79,685.56
Tobacco (raw)	98,630.84
Leather goods	21,795.04

Tinned beef decreased to the value of \$168,243.48, and agricultural implements, \$39,370.86. Other decreases were in sewing machines, hides, bacon, etc. The heavy loss of cattle and crops caused lessened importations of implements, vehicles, etc.

GENERAL REMARKS.

Speaking of trade generally Consul Stowe says:

"I am surprised at the small imports in fish, particularly cured fish, such as mackerel, salmon, halibut, etc. It would seem that with the large production of glue by the packers of America, we ought to have the bulk of the glue trade. England imported 137,959 pounds, and the raw material must have come largely from the United States. The same applies to candles, of which England sent 4,000,000 pounds and America 175,000 pounds, and to antifriction grease, imports of which from England were five times as large as from America.

"In ale and beer, the United Kingdom furnished nearly 60,000 gallons and Germany 200,000.

"England sent 6,000,000 percussion caps; the United States only 198,000; in guns and pistols, England sent twenty times more than the United States; in dynamite, England furnished over 4,000,000 pounds and the United States about 2,000,000.

"England supplied nearly 10,000 gallons of cider. America, with its large apple crops, none.

"England furnished all the malt. How much of this was made from barley sent from the United States? The United States supplies the world in raw cotton, yet other countries furnish the piece goods. Of wire fencing, produced so largely in the United States, England sent twice as much as our country. The United States furnished 800 pounds of bar iron, the United Kingdom nearly 150,000 pounds. Of corrugated and galvanized iron the United States supplied none; the United Kingdom nearly 400,000 pounds.

"Bacon and all other salted and cured meats come from the United Kingdom in the ratio of 10 to 1, as compared with the United States; yet the bulk of the raw meat came from the United States, and was cured in the United Kingdom.

"Silver-plated ware was furnished by the United Kingdom to the value of nearly \$180,000, and the United States, the great silver-producing country, sent only about \$10,000 worth.

"Sheep dip, valued at some \$250,000, was furnished by the United Kingdom; none came from the United States.

"Three hundred and forty-one thousand six hundred and eighty-seven gallons of whisky came from the United Kingdom; 1,103 gallons from the United States.

"The United Kingdom exported 139,217 pounds of manufactured tobacco; the United States 14,226 pounds."

MANUFACTURES OF WOOD IN SOUTH AFRICA.

Consul-General Stowe, of Cape Town, writes:

"There is little timber in this country, and consequently all furniture and other articles made from timber must be imported. American oak, ash, and even the cheaper woods stained or painted and varnished, are acceptable. Medium-priced furniture is what is wanted, although much of the elaborate and high priced could be sold.

"I have seen only one screen door here, and that was made by an American for his own home. I received a bid recently

for four cheap screen doors and seven windows (lower cash only), the wire on the windows to be simply tacked on, and the price was \$27.50. The doors would have been very light and far from strong, on account of the high price of lumber. The people here know nothing of fly screens, though they are as necessary as in America. I am of the opinion that the demand would be large if they were once introduced, but the price must be satisfactory. All the screen wire is imported and is very high, and the mesh is too large. The fine wire used in the United States is not found here. Such goods would very likely come in under the head of furniture, the duty upon which is 9 per cent. ad valorem, and the freight would be comparatively light on account of the small space the doors would occupy on the ship.

"Very few window and door frames are made here; nearly all are imported. In order to successfully meet the demand and establish a trade, the best and safest plan would be for some one posted in the manufacturing of such materials to come here and see how the houses are built. The doors and window frames differ in several respects from those used in America. Manufacturers must disabuse their minds of the opinion that what is good in shape, form, and finish in America is good for the whole world. People in different countries build differently, on account of location, climate, etc., and their tastes must be catered to. One of the lessons to be learned by the manufacturer is that he must adapt his products to the wants and needs of the foreign buyer."

A BELGIAN REPORT ON ANGOLA.

A recent report by the Belgian Vice-Consul at Mossamedes gives the following particulars regarding some articles that are and others that could very well be supplied by Canadian manufacturers:

PLOWS.

The class of plow made in the United States is sold mostly amongst the Boers in the interior. They are not imported direct from the country of their origin, but occasionally from Cape Town, those costing there about £3 apiece selling in the interior—at Humpata, for example—for 36,000 reis (6,400 reis = £1). Portuguese plows—obtained from the Centro Agricola Industrial, of Lisbon—have proved of no use for this country. A new brand of recent introduction is the Rud. Sack, of Leipzig, an all iron plow, sold at Humpata for 41,000 reis. The use of iron plows, however, is somewhat disadvantageous, there being no smiths in the country.

AXES AND HATCHETS.

The following are the types and prices used here: Large axe American make, 3,500 reis apiece at Mossamedes (6,400 reis = £1), Collins' lath hatchets, 800 reis apiece at Catumbela, ordinary helled hatchet, black blade, 9 cm. broad, 1,500 reis at Humpata; hatchets, Mark Mathieson, No. 2, yellow helve, 1,500 reis at Benguela; American hatchets, hickory handles 1,500 reis at Mossamedes, chingling hatchets, 8 cm. broad, 1,500 reis at Humpata, 2,500 reis at Caconda. These goods are in great demand throughout the whole of Southern Angola.

SAWS.

Saws are of great importance in the interior of the country. The following types are the most recommendable: (a) trimming saws for forest work, triangular teeth, steel sockets, two handles; length of blade, 153 cm., price, 12,000 reis at Humpata; 183 cm., price, 18,000 reis at Humpata; (b) single-handed saw, length of blade, 1m.06; 6,000 reis throughout the whole of the Planalto region; (c) ordinary hand-saw, American type, length of blade, 66 cm., price, 3,000 reis at Humpata. This latter is the type most frequently found in the interior. Saws, with teeth arranged like those of trimming saws, will be most in demand.

PADLOCKS.

The padlocks sold here are small copper ones of the brand

of Joseph Showell & Co., they cost 120 reis each, and are imported in cardboard boxes of one dozen. The brand of G. Gottschalk & Co, of Birmingham, costs 650 reis per dozen in packets of four dozen, twelve being fixed on a card. These could be imported in all sizes, as they are in great demand and have an easy sale. The natives are beginning to use them for closing the doors of their "cubates." In the Boer centres, where the use of cupboards is almost unknown, they are used as locks for boxes, doors, etc.

LANTERNS.

Stable lanterns, all copper, fetch 5,000 reis apiece; in tin they cost from 1,000 to 3,000 reis according to quality. Stable lanterns can only be imported with success by submitting them for sale on the coast; in the interior they meet with no sale. For hunting the "Springhazen" (the jerboa) a rodent which commits terrible ravages in the corn-fields, the Boers require dark lanterns, with bull's-eye lens, and not rectangular, as in the case of carriage lanterns.

CHAINS.

Iron chains for ox-carts are sold especially in the centres where the Boers are established. There is a great lack of these chains throughout the whole colony; those found here come from Cape Town, and are only occasionally imported. It is advisable to introduce them in seven-foot lengths. Steel wire chains should also be of the same length, and terminate in a well-rounded off eye of 6 cm. diameter.

WEIGHING MACHINES.

Of weighing machines we have the brand "Globe Bedford," adapted to the metric system and able to weigh up to 500 kilos; price at Benguela, 50,000 reis; weighing up to 300 kilos, 40,000 reis. A smaller scale, for counting-house use, of the same brand, able to weigh up to 18½ kilos, costs 8,000 reis at Benguela.

OIL COLORS.

These must be imported in tins all ready for use. The tints most in demand are as follows in order of importance: "English red," brown, Prussian blue, chrome yellow, dark green, light green, white. The most widespread brands are those of Messrs. H. W. Freyne & Co. of Hull and Liverpool.

OIL STOVES.

Single burners oil stoves are sold here; they are of copper, the upper part being of brass. The brand of Hjorth & Co., of Stockholm, costs 9,000 reis at Benguela. All the stoves imported here should only have one burner.

JACKS.

The "transportrijder" Boers alone require these appliances: they prefer arched or rounded jacks capable of lifting 3 tons. They are sold at Humpata for 10,000 reis (6,400 reis—£1.)

POSSIBILITIES OF TRADE IN LOURENCO MARQUEZ.

The following extracts are from the report of Consul Hollis, of Lourenco Marquez:

There is a very good market for beer of all kinds here. Large quantities of English ale and stout are consumed; but these beers are too heavy and are unsuited to the climate, and the old resident after a while drops them for something lighter, such as German Pilsener beer.

Lately, several parties have endeavored to introduce American lager beer here, and, considering the present commercial depression, I think they have made some headway. The brands that have been sold here are generally well liked, and, when trade improves, a very good business in this line can be worked up by American brewers of really first-class beers.

There is little or no demand for bicycles in Portuguese East Africa. There are but a few miles of hard roads in Lourenco Marquez, and parts of these are very steep. The remaining roads are sandy, and it is an absolute impossibility to ride a bicycle over them.

In the Transvaal, there is always a demand for bicycles, and when the country recovers from the present depression, the demand for bicycles will improve greatly.

All the butter consumed in this country is imported. The Danish and Dutch brands, in 1-pound tins, are generally preferred to the Italian and French brands in kilogram and half-kilogram tins. The duty on butter here is 100 reis (10.8 cents) per kilogram (2 1.5 pounds); but if the duty is paid in Portuguese silver, instead of in English gold, it only amounts to about 7½ cents per kilogram.

The latest quotations for 1-pound tins of the best Danish butter are from 2s. to 2s. 6d. (48 to 60 cents) per tin.

In my opinion, there is an opening here for the introduction of first-class American butter, packed in 1 and 2 pound tins that can be opened by a key attached to each tin, and without the use of a can opener or other similar instrument. All butter tins that I have seen upon this coast are opened by keys, upon which narrow strips of tin—soldered so as to join the body of the tin to the cover—are wound, and in this manner removed.

A very good trade in stamped-metal ceilings may be done here. These have lately been introduced by a few enterprising builders, and it is becoming the custom now to put them in all good houses.

There is a large and constantly increasing demand for whisky upon this coast and in the Transvaal. Practically everybody here consumes more or less whisky, either with quinine or without; and, in fact whisky is considered as much of a necessity or butter, condensed milk, tea or coffee.

The present prices quoted by the dealers in American yeast and Canadian club whiskies are from \$15 to \$16 per case.

There are now three steamship lines running from New York to this port. The new York agents are Barber & Co., 35 Broadway; Henry W. Peabody & Co., 68 New street; Norton & Son, 115 Produce Exchange.

EGYPT.

The recent successful termination of the British campaign in the Soudan and prospects of sooner or later a British thoroughfare "from Cairo to the Cape," has naturally turned the attention of manufacturers to Egypt as a field for their goods. Trade with Egypt has great possibilities, but needs careful nursing and energetic pushing.

AGRICULTURAL MACHINERY.

Ploughing, threshing, and general farming implements are still not much in vogue, except on very large estates, and Government lands. The land being flat, is most suitable for their use, and, if the Egyptian army is to be kept up to a greater strength than at present, hand labor will become scarcer, and this class of machinery will replace it. Lately the system adopted abroad of letting out on hire threshing machines and traction engines was contemplated, but the scheme has fallen through for the present. These machines are now made to perfection, whereas at the outset, the mechanism for cutting and bruising the straw, to adapt it as food for cattle, was defective.

PUMPING PLANT.

There is now an increased demand for pumping plant consequent upon several important concessions, which have been given out by Government for permission to irrigate in Upper Egypt. They consist of centrifugal pumps of thirty-six inch and forty inch diameter, with necessary motors, and almost all of British manufacture, although a foreign make of engines and boilers is gradually gaining a footing in Egypt. Pumps of French manufacture are also being introduced, whilst hitherto they came all from England; these latter at the outset are more expensive, but prove very efficient and economical in the long run. The old "sakihs" and "shadoofs" are gradually being abandoned and replaced by portable engines and centrifugal pumps. Many British agricultural machinery makers are represented in Egypt by foreign agents

whose extreme eagerness to secure business creates a very marked competition amongst themselves, and renders spot prices for these articles of British industry lower than those ruling in other foreign countries.

LIGHT RAILWAYS AND ENGINEERING TOOLS.

Light railways along the newly established agricultural roads are a new feature in Egypt, and are proving a great benefit to the cultivators. New workshops have been built by the Egyptian Railway Administration, and large and heavy tools and machinery erected, necessary to keep up with the increased traffic. These orders, almost without exception, went to the English market, but their execution was delayed in consequence of the recent engineering strike. Electric lighting is another branch of trade which is progressing, especially for household purposes. It is offered at cheap rates, and will no doubt meet with public favor, being far preferable, especially in the hot climate, to the very ordinary quality of gas supplied by the gas company, to whom their concession gives the right of supplying also the electric light. Up to the present moment the electric light is used on two trains only of the Government railways, with scarcely satisfactory results, and, besides, the expense being incurred for so small a supply is decidedly excessive.

LOCAL REPRESENTATION WANTED.

It is stated that although the commercial travellers of British nationality are more to be seen in Egypt than formerly, they are still inferior in point of numbers to those of their Continental competitors, and their forces undoubtedly require to be increased. The French and Italian languages are those most commonly known amongst the middlemen here, with whom the travellers would have to deal, and of those tongues, or at least one of them, they ought to possess a colloquial knowledge. The visits to Egypt of these agents with such frequency and at such seasons as may be found expedient in their respective lines of business, could not fail to have an influence infinitely superior to the most lavish distribution of trade circulars.

CIRCULARS AND CATALOGUES.

Trade literature, when destined for other than British houses, should be either in French or Italian, and the weights and measures of the metric system employed. If the Egyptian tariff piastre—of which $97\frac{1}{2}$ form One Pound Sterling—were used for the price quotations, these publications would attain the maximum of clearness and intelligibility for all classes of foreign purchasers of British goods residing in Egypt. Quotations thus made in the money of the country would necessarily imply that any loss on exchange in getting the funds home would be for account of the British vendor, and in cases where the latter would be unwilling to accept this as one of the possible charges on the business, a note to that effect might be inserted in the circulars.

TRADE IN THE SOUDAN.

In the report from which we are quoting, though dealing

with the outlook last year, there is an instructive paragraph on the prospects of trade with the Soudan. It states that an important market is no doubt opening up for British goods in the extensive territory now being recovered for Egypt in the Soudan, which might be advantageously worked by agents directed from a central office established in Cairo. It must, however, not be forgotten, that for many years past these countries have been under a blighting despotism, which cannot have failed to result in an impoverished population, who will require some years of good government before the tide of prosperity amongst them can be expected to set in. It will, therefore, no doubt, be cheap goods—and cheap goods only—which, in the immediate future, will find a ready sale in the new provinces.

A PRELIMINARY STEP.

To those desirous of opening up a business connection with Egypt it might be found very advantageous to obtain membership with the British Chamber of Commerce at Alexandria of which Mr. D. Baker is secretary. Mr. Baker, who is in touch with local requirements, in a recent letter says: "There is a considerable importation of certain articles of American manufacture, such as horse hoes, aeromotors, hand pumps, and small machine tools, which I am told can be brought here, in spite of the extra freight, at a lower price than from the United Kingdom, and even large machine tools from the United States are now to be seen here. The Egyptian Government are also having a number of locomotives manufactured for them in America."

FURNITURE IN SYRIA.

Consul Washington, at Alexandretta, Syria, writes:

"There appears to be little or no importation of wooden articles of furniture into Syria, except in the line of chairs, since factories do not exist, all ordinary articles are made by hand by local workmen. The work is of a poor type and the prices high. I refer to ordinary articles of use, such as dining tables, side boards, clothe chests, chairs, office desks etc.

"The one article which is brought to this district is a cane-seated, twisted-wood chair imported from Austria, not put together, and which sells through northern Syria for about \$1.

"Owing to the climate, iron bedsteads are universally used, and these must be provided with a framework to support mosquito nets. Petroleum stoves for heating purposes, of an attractive design, should also find a ready sale.

' Import duty on furniture, 8 per cent. ad valorem."

A scheme is on foot in the County of Halifax, Nova Scotia, to construct an electric railway from the town of Waverly to the city of Dartmouth, and from that point to Musquodoboit Harbor.

Transfer Ornaments, AMERICAN MADE.

TRADE MARKS, DECORATIONS, NAME PLATES, ETC.

Guaranteed Quality.

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

Sketches submitted free of charge. Being home makers can deliver promptly. Write us.

THE MEYERGORD CO., Inc., MAIN OFFICE—

CHAMBER OF COMMERCE, - CHICAGO.

NEW YORK OFFICE—805 St. James Building.
ST. LOUIS OFFICE—621 Holland Building.

Largest Makers in the World Guaranteed Decalcomania Transfers.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

CAPTAINS OF INDUSTRY.

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

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, belt- ing, lubricants, machinery supplies, wood or iron working machinery, ventilating and drying apparatus; pumps, valves, packing, dynamos, motors, wire, arc and incandescent lamps, and an infinite variety of electrical supplies, chemicals, acids, alkalies, etc. It is well worth the while of every reader of the Canadian Manufacturer to closely inspect all items under the head of Captains of Industry.

Mr. Richard Wood's flour and grist mill at Port Dalhousie, Ont., was destroyed by fire January 2nd, loss about \$6,000.

The electors of the town of Prescott, Ont., have voted to raise the sum of \$15,000 for a municipal electric lighting plant.

The electors of the town of Merriton, Ont., have voted to raise the sum of \$6,000 for the extension of its waterworks.

The unoccupied works of the Gardner Tool Company, at Sherbrooke, Que., were destroyed by fire Dec. 29th. Loss about \$13,000.

The Empire Tobacco Company, with head office at Granby, Que., has been incorporated with a capital stock of \$300,000, to manufacture tobacco, cigars, etc.

The Moore Patent Pocket Company, Montreal, has been incorporated with a capital stock of \$50,000 to manufacture a newly invented tailor's device for pocket for clothing, etc.

The Royal Telegraph Company, Ottawa, are applying for incorporation with a capital stock of \$100,000 to build and operate telegraph and telephone lines in Canada.

Messrs. Knight Bros., Burk's Falls, Ont., have ordered a sixty horse power automatic engine from the Robb Engineering Co., Amherst, N.S.

The Toronto Rubber Shoe Company's factory at Port Dalhousie, Ont., was destroyed by fire January 2nd, loss about \$100,000. Some 300 hands were thrown out of employment.

The foundation for W. H. Fowler's new flour mill at Carleton, N.B., are being put in, and the structure will be pushed to completion as rapidly as possible.

The Ogilvie Milling Co's new oatmeal mill at Winnipeg, Man., was placed in operation in December. The company has also completed handsome offices with all modern conveniences in connection with its mills.

The Gurney Foundry Co., of Hamilton, Ont., are now operating their entire works by electric power. They have installed two 20 h.p. and one 30 h.p. S.K.C. two-phase motors, obtaining their current from the Cataract Power Co.

The new 300-barrel mill being built by the Frontenac Milling Co., at Kingston, Ont., when completed will be one of the most up-to-date and finest equipped mills in Canada.

Benadine's hotel at Terrobonne, Que., was destroyed by fire Jan. 2nd. Loss about \$10,000.

The Dominion Radiator Co., Toronto, have purchased land adjoining their works on Dufferin street, 150x130 feet, upon which a large addition to their works will be erected.

The Canadian Rubber Co., of Montreal, has ordered a thirty horse power engine from the Robb Engineering Co., Amherst, N.S.

The B. Greening Wire Co., Hamilton, Ont., have installed in their works a fifty h.p. S.K.C. induction motor. This motor is driving on the same shafting with their steam engine and is working very sat

isfyingly. They intend to replace their steam power entirely with electric motors.

The Massey Harris Co. have placed an order for cinematograph films with Messrs. Marvin & Fenton, the makers, of Toronto. The set comprises scenes of the self-binder at work, both front and rear views, and also of the mower, tedder and horse rake. These scenes, which were taken at Dentonia Farm, the property of Mr. W. E. H. Massey, the president of the company, were shown at the recent Toronto, London and Ottawa fairs and attracted great attention. The name of the company appears on the moving picture, and is an excellent advertisement. The present order is intended for a similar use in London, Eng.

The Desbarats Stove Co., Desbarats, Algoma, Ont., has been incorporated with a capital stock of \$5,000 to manufacture stoves and to do a general foundry business.

The Cloverdale Butter and Cheese Manufacturing Company, of Hillier, Ont., has been incorporated with a capital stock of \$2,000 to manufacture butter, cheese, etc.

The Grand River Electrical Power Co., Paris, Ont., has been incorporated with a capital stock of \$95,000 to supply electrical energy for commercial purposes.

As will be seen by an advertisement in another column the Toronto Carpet Manufacturing Co are about to vacate the premises now occupied by them on the Esplanade, Toronto, and will open up more commodious works near the King St. Subway. The Esplanade premises are now to lease. For railway and shipping facilities they are unsurpassed.

The report of the Dominion Fisheries Department, which will be presented to Parliament at the coming session, will contain some interesting statistics in relation to the sealing industry of British Columbia. It is generally known that as regards this industry only thirty-five vessels left port last season. Notwithstanding this fact, the catch in 1898 was in excess of 1897 by nearly three thousand skins. The number of skins taken during the past season was 30,410, as against 27,865, and considering the fact that the market price of sealskins is rapidly improving, British Columbia sealers who sent their vessels out during the past season have every reason to be satisfied with the work accomplished.

Joyner & Elkington's grist mill at Fort Qu'Appelle, Man., was burned Jan. 9th. Loss about \$25,000.

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.O. RAT PORTAGE, ONT. HALIFAX, N.S.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Messrs. Dowling & Ottowell will build a 100-barrel flour mill at Edmonton, N.W.T.

The sixty k.w., S.K.C. generator of the Dundas, Ont., Electric Co., has been placed in position. They expect to have their water power in operation in a few days, when they will begin the lighting of the city.

The by-law voted upon and passed by the ratopayers of Toronto, at the recent municipal election, appropriating \$40,000 to build new wharves and landing places on the water front between Bay and Lorne streets, was well considered, and when the work is completed will add greatly to the facilities of traffic.

The Montreal Street Railway Company will spend \$500,000 upon the construction of car shops at Hochelaga. Cars for the lines at Montreal, Toronto, London, Winnipeg and St. John, N.B., will be constructed there.

The flour mill of Lake & Bailey, Hamilton, Ont., is being driven by a seventy-five h.p., S.K.C. synchronous motor, which has been in operation some two weeks and is giving perfect satisfaction. They have shut down their steam plant and hope they will not have to go back to it again.

The Toronto Packing Co., Toronto, has been incorporated with a capital stock of

\$40,000 to do a general meat packing business. Messrs. Thomas Crawford, Frank Hunnisett, John Dunn and associates are the promoters.

The Grand Calumet Mining Co. has discovered one of the richest zinc mines in Canada, near Rosport, in the Lake Superior district, Ont., and intends opening it up at once. It will be worked all winter. The company has several mines at Calumet Island, and has formed quite a settlement there, having erected cottages for its workmen, about sixty in number. The company shipped 1,500 tons of ore during the past summer.

Messrs. Herbert Saunders & Co., London, Eng., will make a large exhibit of chemicals and other of their products at the Central Canada Fair, at Ottawa, next fall.

Nearly forty years ago Mr. D. K. Clark testified to "the advantage of a rapid, or rather intense draft, in perfecting combustion and extinguishing smoke," upon which Mr. C. Wyo Williams was led to remark: "But the difficulty lies in obtaining this 'intense draft.' The absolute command of draft for the generation of the required quantity of steam, to enable the engines to work their full power, being then so essential, it becomes a question whether other means than the natural draft should not be resorted to, since, independently of the uncertainty in

the amount of draft, the consequent irregularity in the working effect of the engines, the cost of sustaining that draft may be so much in excess of what an artificial draft would be." M. Peclot also at this time investigated the subject, showed the low efficiency of the chimney as compared with a fan, and recommended the use of rotary fans, applied for exhausting on the induced system. From Treatise on Mechanical Draft, published by the B. F. Sturtevant Co., Boston, Mass.

The Hamilton, Ont., Electric Light and Power Co., are installing in their lighting station two 240 k.w. and one 350 k.w., S.K.C. synchronous motors. They are to drive the shafting from which is operated the Arc machines and the motor power service. The current for these motors is to be supplied by the Cataract Power Co. It is expected that the steam plant will be entirely shut down by the first of February. The incandescent light has been furnished from the Cataract Power Co's current for the past three months and has been very satisfactory.

The Toronto Carpet Mfg. Co., have purchased the big Fernbrook ingrain carpet plant formerly operated by Messrs. W. & J. Sloan, Philadelphia, Penn., and will erect it in their new factory now nearing completion in Toronto. Messrs. James P.

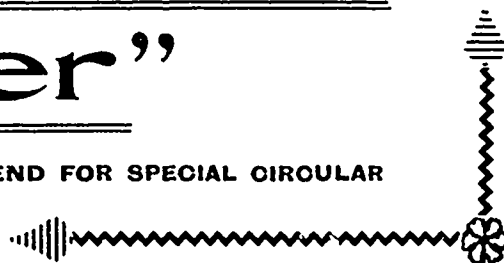
THE WM. HAMILTON MNFG. CO., LIMITED,

Engineers and Builders

MODERN MINING and MILLING MACHINERY

"Gyrating Vanner"

SHAKES LIKE A PAN—SEND FOR SPECIAL CIRCULAR



Department "E"



Contractors for the Design and Construction of Complete Stamp Mills, Concentration, Chlorination, Cyanide, and Smelter Equipments ...



PETERBOROUGH, ONT., or VANCOUVER, B.C.

Murray and F. B. Hayes, of the Toronto Carpet Company were in Philadelphia a few days ago and effected the transaction here alluded to. They expect to have their new factory completed and ready for occupation in March.

At a recent meeting of the Board of Trade of Parry Sound, Ont., a report was presented by a sub-committee, recommending the construction of an electric railway to connect Parry Sound and Depot Harbor. It was estimated that the cost of the road would be \$25,000, exclusive of a bridge, which would have to be constructed.

The Victoria Brewery, at Cobourg, Ont., owned by Bickel and Healey, was totally destroyed by fire Jan. 4th. Loss on contents about \$8,000, on buildings about \$12,000.

Mr. M. A. Bennett's hotel at Port Robinson, Ont., was destroyed by fire Jan. 5th.

The electric and gas works at St. Hyacinthe, Que., were destroyed by fire Jan. 5th, loss about \$10,000.

The Eagle Knitting Mills Co., Hamilton, Ont., have installed in their factory a 30 h.p. S.K.C. two-phase induction motor which drives their knitting machinery, replacing their steam plant.

The Dominion Radiator Company, Toronto, of which Mr. John M. Taylor is manager, are doing a very gratifying export trade. They report that they have recently furnished the radiators and other heating apparatus as follows:—The Berlin, Palace of Emperor William of Germany, the Stockholm Palace of King Oscar, of Sweden and the old Parliament Buildings at Dublin,

Ireland. They have also installed heating plants at Durban and Natal, South Africa.

Peat fuel is likely to be developed in York county during the coming year in large quantities. Mr. John Baylis of Lambton, Ont., has acquired the right for the county from the firm owning the patent of a fuel-making machine, and has also an option on two hundred acres of solid bog that will produce an unlimited amount of the new heating material. The cost, Mr. Baylis thinks, can be limited to \$2.50 a ton. A company is in process of formation to take up Mr. Baylis' rights.

Bell & Co's tannery at Tilsonburg, Ont., was destroyed by fire Jan. 10th, loss about \$15,000.

It has been mentioned that B. G. Reid & Sons, of Montreal, proposed to form a company under the name of the Newfoundland Bleached Pulp Company, with a capital of \$2,000,000. The scheme also includes the formation of the Newfoundland Pyrites Company, with a capital of \$1,500,000. Mills will be erected at Grand Lake, Newfoundland. It is stated at the Bay of Islands are deposits of iron pyrites containing 50 per cent. of sulphur.

The bulletin of the Department of Agriculture shows that in the 1,161 cheese factories 1,455,937,148 pounds of milk were used and 137,362,916 pounds of cheese were made. There were 66,104 patrons, and the value of cheese produced was \$11,719,468. This is about \$3,000,000 more than the amount for 1896. The amount paid to patrons for milk supplied was \$9,709,004, as compared with \$7,040,927 the previous year. The quantity of butter produced was

7,708,256 pounds, and the value \$1,403,609, the production being nearly three times as much as in 1895.

Mr. Charles James, engineer and machinist, Hamilton, Ont., writes us as follows: "We were very busy during all of last year. We recently shipped to Sylvester Bros., Lindsay, Ont., who are going into the manufacture of Seeder Discs, a carload of special machinery for their work. We have had a large order from the Cockshutt Plow Co., Brantford, for special automatic grinding machinery, part of which has already been shipped to them. We have a large order on hand for special machinery for the Monitor Mfg. Co. Minneapolis, Minn. This firm are also going into the manufacture of Seeder Discs, and are getting their entire plant from us, although there are similar machines made in the United States. They are satisfied to pay the full cost of our machinery, and also the heavy duty put on machinery tools. This machinery has been all designed by myself, and we are applying for patents in the United States and Canada. We have already made three shipments to the Monitor Mfg. Co., and will have another shipment ready in a few days which will complete the order. We have also an order for a large number of air valves, and other special work. We have just completed a large hydraulic press and pump for pressing oil. I am contemplating going into a new factory this year and expect to take up the manufacture of grinding machinery, such as surface grinders, twist drill grinders, etc."

Mr. E. S. Jonison has completed the surveys for his power canal from Kakabeka Falls to Port Arthur, Ont. The project is

THE NEW PRINCIPLE IDEAL ACETYLENE GAS GENERATOR

Acknowledged by Experts and Insurance Inspectors as the only perfect and safe system for Generating Acetylene Gas.

Separate Ideal Generators supplied for attachment to present Gas Holders where Sprinkling Generators are now in use.

ADVANTAGES

Of New Style . . .
Carbide Submerging
Machine

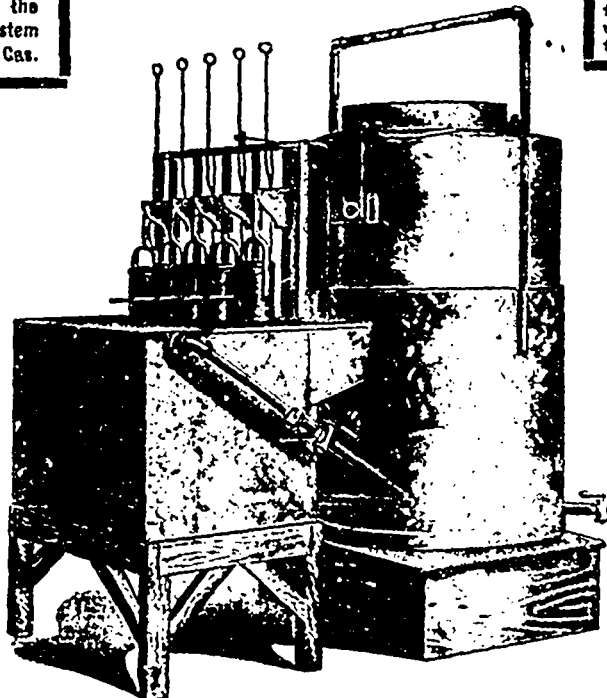
No Generator to Open to Recharge.

Gas is Generated under Water and is Cool and Pure.

200 Degrees less Heat in Generator than in Old Style.

Absolutely no Over Generation or Loss of Gas.

Can tell at a Glance exactly how much Carbide is Used, and how much Unused.



DEFECTS

In Old Style
Sprinkling Machines.

Generator must be Opened to Recharge, with Loss of Gas and Bad Odour.

Gas Generated by Sprinkling is Hot and Impure.

More or Less Over-Generation and Waste of Gas.

Cannot tell how much Carbide is or is not used without opening Generator.

J. WALLACE & SON, Manufacturers of **Acetylene Gas Apparatus,** 156 King Street East **HAMILTON, ONT.**

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

found to be perfectly feasible and simple. One hundred thousand horse power can easily be developed. The reservoir and storage basin will be situated on the highlands just west of Port Arthur, where a natural basin has been found. The reservoir will really be a big lake, four miles long, covering an area of four thousand acres, with a depth of from fifty to seventy-five feet, and its surface will be three hundred and three feet above Lake Superior, and at its nearest point will be distant three miles from the Canadian Pacific passenger wharf, which is the centre of the lake front in Port Arthur.

The General Engineering Co., Toronto, are having a very large demand for their underfeed stokers, the following being some of the steam plants which have lately been equipped with them:—The Canadian Colored Cotton Mills Co. Cornwall, Ont., the Canadian Colored Cotton Mills Co., Milltown, N.B., the Nova Scotia Steel Co., New Glasgow, N.S., Acadia Sugar Refinery, Halifax, N.S., Halifax Electric Tramway Co. Halifax, N.S., The Rathbun Co., Napawee Mills, Ont. Tests recently made by the Toronto Railway Company since their plant has been equipped with the stokers show a saving of from 16 to 20 per cent. Copies of these tests together with all particulars regarding same will be sent on application, and

no steam user of any consequence should fail to write for them. There has been seventy-eight tests made so far in Canada in plants where the improved Jones underfeed stoker has been installed, and only in two instances has the saving effected been below double the usual guarantee of ten per cent. made by the company. This is indeed remarkable, and all the more so when in some of the plants, the Toronto Railway Co. for instance, the best hand firing probably in Canada had to be contended with. The stokers are sold on a certain guarantee, and if the guarantee is not fulfilled they are removed without charge. The company are placing on the market their underfeed system as applied to house furnaces and the results are beyond all expectations. The cheapest kind of fuel can be burned with equal if not superior results to that of the best anthracite lump. Owing to the fact that the coal is introduced from below there is no chilling of the fires, in fact the reverse is the exact truth, when coal is put in the fire is brightened up, and from experiments, and from statements made by over one hundred customers, the fire will run without attention for forty-eight hours. The arrangement is so simple that a child can operate it. All information regarding this will be furnished by the company.

BUILDING IN TORONTO IN 1898.

The record of building permits issued by the City Commissioner of Toronto, during the year 1898, indicates that the growing times have been as noticeable a feature of the past year in Toronto as in other parts of the province, and the prediction made early in the summer that the record of 1897 would be doubled has been fulfilled. The number of permits issued in 1898 was 562, as compared with 396 in 1897, and that the buildings erected were of a superior class to those erected in 1897 is shown by the fact that the average cost in 1898 was \$3,000, as compared with \$2,400 in the previous year. There has been a revival of industry in the erection and improvement of dwellings, a further proof that the vacant houses are being occupied, and the large number of improvements in the old dwellings indicates that the property owners are feeling the beneficial effect of the growing times and are modernizing their houses. The total expenditure on new buildings and improvements to dwellings was \$620,000 as compared with \$440,000 in 1897. The great increase is in that class of buildings the erection and extension of which testify most conclusively to the return of confidence and the growth and development of the industrial

The KAY Electrical Manufacturing Co.

HAMILTON, ONT.

Begs to announce that in future it will conduct its business under the name of

The T. & H. Electric Co.

HAMILTON, ONT.,
255-257 James St. Phone 953.

TORONTO, ONT.,
58 Adelaide St. W. Phone 1214.

To Lease.

Two Large Four-Story Factories. One

140 x 40 ft.

The other 90 x 60 ft.

RENT, \$1,500 EACH PER ANNUM.

Well Lighted. Shipping facilities the very best by both rail and boat, premises being situated on water front at corner of

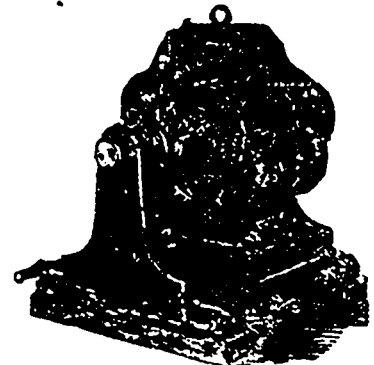
Explanade and Jarvis Streets, TORONTO.

Possession 1st April, 1899.

Apply to.....

TORONTO CARPET MFG. CO.
TORONTO.

The Electrical Construction Co. of London, Limited.



MULTIPOLAR MOTORS & DYNAMOS

And Direct Connected Plant for Isolated Lighting. Repair Work a Specialty.

HEAD OFFICE AND FACTORY:

No. 90 YORK STREET, London, Canada.
760 Main St., Winnipeg.
12 York St., Toronto. 131 Granville St., Halifax.

REDDAWAY'S ORIGINAL

CAMEL BRAND HAIR BELTING

STRONGEST BELT MADE. NO STRETCHING.

NOT AFFECTED BY DAMPNESS, HEAT OR STEAM.

WRITE FOR PARTICULARS. LARGE STOCK ON HAND.

Fire Hose, Steam Hose, General Mill Supplies.

W. A. FLEMING & CO., SOLE AGENTS FOR CANADA, 57 St. Francois-Xavier St., Montreal.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



and commercial interests of the city and to the improved prospects of trade. Upon new factories and warehouses and alterations, extensions and improvements to existing ones, there was expended no less a sum than \$5,701,630, an amount which nearly quadruples the expenditure on the same class of buildings in 1897.

This is a most gratifying proof of the general prosperity which is enjoyed by Toronto in common with the rest of the Dominion. The total value of building permits issued for the last ten years is as follows—

1889	2,250,174
1890	2,261,750
1891	4,288,900
1892	3,921,750
1893	1,261,800
1894	1,020,225
1895	1,246,810
1896	657,162
1897	958,618
1898	1,701,630

for 1897 and 1898 analyzed as to the value of each class of buildings erected are given as follows—

THE EDGES FOR 1897.

Dwellings	\$22,650
Alterations to dwellings	23,225
Stores and offices	127,300
Alterations to stores	46,710
Factories	61,200
Alterations to factories	18,970
Warehouses and additions	71,700
Churches and additions	82,000
Charitable institutions	14,000
Stables and additions	10,205
Music hall	12,000
Alterations to music hall	8,000
Printing office	25,000
Miscellaneous	24,000
Total	\$551,120

EDGES FOR 1898

161 Brick dwellings	\$181,000
Amount	

132 Brick dwellings, alterations and additions	83,585
33 Roughcast dwellings	29,350
33 Roughcast dwellings alterations and additions	15,740
32 Stores and offices	115,500
31 Stores and offices, alterations and additions	43,230
33 Factories	267,500
25 Factories, alterations and additions	92,665
27 Warehouses and additions	211,200
7 Churches and additions	23,600
15 Schools and additions	124,300
3 Colleges	57,200
7 Hotels and additions	54,200
2 Theatres and additions	27,200
2 Banks and additions	13,000
1 House of Industry addition	15,000
37 Stables and sheds	34,760
1 Hospital addition	4,000
Total	\$1,701,630

Total.....\$1,701,630
Increase for 1888.....\$ 750,500

For purposes of comparison the proceeds

THE TORONTO PATENT AGENCY, (INCORPORATED)
109-111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 149, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 377, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399, 401, 403, 405, 407, 409, 411, 413, 415, 417, 419, 421, 423, 425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 445, 447, 449, 451, 453, 455, 457, 459, 461, 463, 465, 467, 469, 471, 473, 475, 477, 479, 481, 483, 485, 487, 489, 491, 493, 495, 497, 499, 501, 503, 505, 507, 509, 511, 513, 515, 517, 519, 521, 523, 525, 527, 529, 531, 533, 535, 537, 539, 541, 543, 545, 547, 549, 551, 553, 555, 557, 559, 561, 563, 565, 567, 569, 571, 573, 575, 577, 579, 581, 583, 585, 587, 589, 591, 593, 595, 597, 599, 601, 603, 605, 607, 609, 611, 613, 615, 617, 619, 621, 623, 625, 627, 629, 631, 633, 635, 637, 639, 641, 643, 645, 647, 649, 651, 653, 655, 657, 659, 661, 663, 665, 667, 669, 671, 673, 675, 677, 679, 681, 683, 685, 687, 689, 691, 693, 695, 697, 699, 701, 703, 705, 707, 709, 711, 713, 715, 717, 719, 721, 723, 725, 727, 729, 731, 733, 735, 737, 739, 741, 743, 745, 747, 749, 751, 753, 755, 757, 759, 761, 763, 765, 767, 769, 771, 773, 775, 777, 779, 781, 783, 785, 787, 789, 791, 793, 795, 797, 799, 801, 803, 805, 807, 809, 811, 813, 815, 817, 819, 821, 823, 825, 827, 829, 831, 833, 835, 837, 839, 841, 843, 845, 847, 849, 851, 853, 855, 857, 859, 861, 863, 865, 867, 869, 871, 873, 875, 877, 879, 881, 883, 885, 887, 889, 891, 893, 895, 897, 899, 901, 903, 905, 907, 909, 911, 913, 915, 917, 919, 921, 923, 925, 927, 929, 931, 933, 935, 937, 939, 941, 943, 945, 947, 949, 951, 953, 955, 957, 959, 961, 963, 965, 967, 969, 971, 973, 975, 977, 979, 981, 983, 985, 987, 989, 991, 993, 995, 997, 999, 1001, 1003, 1005, 1007, 1009, 1011, 1013, 1015, 1017, 1019, 1021, 1023, 1025, 1027, 1029, 1031, 1033, 1035, 1037, 1039, 1041, 1043, 1045, 1047, 1049, 1051, 1053, 1055, 1057, 1059, 1061, 1063, 1065, 1067, 1069, 1071, 1073, 1075, 1077, 1079, 1081, 1083, 1085, 1087, 1089, 1091, 1093, 1095, 1097, 1099, 1101, 1103, 1105, 1107, 1109, 1111, 1113, 1115, 1117, 1119, 1121, 1123, 1125, 1127, 1129, 1131, 1133, 1135, 1137, 1139, 1141, 1143, 1145, 1147, 1149, 1151, 1153, 1155, 1157, 1159, 1161, 1163, 1165, 1167, 1169, 1171, 1173, 1175, 1177, 1179, 1181, 1183, 1185, 1187, 1189, 1191, 1193, 1195, 1197, 1199, 1201, 1203, 1205, 1207, 1209, 1211, 1213, 1215, 1217, 1219, 1221, 1223, 1225, 1227, 1229, 1231, 1233, 1235, 1237, 1239, 1241, 1243, 1245, 1247, 1249, 1251, 1253, 1255, 1257, 1259, 1261, 1263, 1265, 1267, 1269, 1271, 1273, 1275, 1277, 1279, 1281, 1283, 1285, 1287, 1289, 1291, 1293, 1295, 1297, 1299, 1301, 1303, 1305, 1307, 1309, 1311, 1313, 1315, 1317, 1319, 1321, 1323, 1325, 1327, 1329, 1331, 1333, 1335, 1337, 1339, 1341, 1343, 1345, 1347, 1349, 1351, 1353, 1355, 1357, 1359, 1361, 1363, 1365, 1367, 1369, 1371, 1373, 1375, 1377, 1379, 1381, 1383, 1385, 1387, 1389, 1391, 1393, 1395, 1397, 1399, 1401, 1403, 1405, 1407, 1409, 1411, 1413, 1415, 1417, 1419, 1421, 1423, 1425, 1427, 1429, 1431, 1433, 1435, 1437, 1439, 1441, 1443, 1445, 1447, 1449, 1451, 1453, 1455, 1457, 1459, 1461, 1463, 1465, 1467, 1469, 1471, 1473, 1475, 1477, 1479, 1481, 1483, 1485, 1487, 1489, 1491, 1493, 1495, 1497, 1499, 1501, 1503, 1505, 1507, 1509, 1511, 1513, 1515, 1517, 1519, 1521, 1523, 1525, 1527, 1529, 1531, 1533, 1535, 1537, 1539, 1541, 1543, 1545, 1547, 1549, 1551, 1553, 1555, 1557, 1559, 1561, 1563, 1565, 1567, 1569, 1571, 1573, 1575, 1577, 1579, 1581, 1583, 1585, 1587, 1589, 1591, 1593, 1595, 1597, 1599, 1601, 1603, 1605, 1607, 1609, 1611, 1613, 1615, 1617, 1619, 1621, 1623, 1625, 1627, 1629, 1631, 1633, 1635, 1637, 1639, 1641, 1643, 1645, 1647, 1649, 1651, 1653, 1655, 1657, 1659, 1661, 1663, 1665, 1667, 1669, 1671, 1673, 1675, 1677, 1679, 1681, 1683, 1685, 1687, 1689, 1691, 1693, 1695, 1697, 1699, 1701, 1703, 1705, 1707, 1709, 1711, 1713, 1715, 1717, 1719, 1721, 1723, 1725, 1727, 1729, 1731, 1733, 1735, 1737, 1739, 1741, 1743, 1745, 1747, 1749, 1751, 1753, 1755, 1757, 1759, 1761, 1763, 1765, 1767, 1769, 1771, 1773, 1775, 1777, 1779, 1781, 1783, 1785, 1787, 1789, 1791, 1793, 1795, 1797, 1799, 1801, 1803, 1805, 1807, 1809, 1811, 1813, 1815, 1817, 1819, 1821, 1823, 1825, 1827, 1829, 1831, 1833, 1835, 1837, 1839, 1841, 1843, 1845, 1847, 1849, 1851, 1853, 1855, 1857, 1859, 1861, 1863, 1865, 1867, 1869, 1871, 1873, 1875, 1877, 1879, 1881, 1883, 1885, 1887, 1889, 1891, 1893, 1895, 1897, 1899, 1901, 1903, 1905, 1907, 1909, 1911, 1913, 1915, 1917, 1919, 1921, 1923, 1925, 1927, 1929, 1931, 1933, 1935, 1937, 1939, 1941, 1943, 1945, 1947, 1949, 1951, 1953, 1955, 1957, 1959, 1961, 1963, 1965, 1967, 1969, 1971, 1973, 1975, 1977, 1979, 1981, 1983, 1985, 1987, 1989, 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019, 2021, 2023, 2025, 2027, 2029, 2031, 2033, 2035, 2037, 2039, 2041, 2043, 2045, 2047, 2049, 2051, 2053, 2055, 2057, 2059, 2061, 2063, 2065, 2067, 2069, 2071, 2073, 2075, 2077, 2079, 2081, 2083, 2085, 2087, 2089, 2091, 2093, 2095, 2097, 2099, 2101, 2103, 2105, 2107, 2109, 2111, 2113, 2115, 2117, 2119, 2121, 2123, 2125, 2127, 2129, 2131, 2133, 2135, 2137, 2139, 2141, 2143, 2145, 2147, 2149, 2151, 2153, 2155, 2157, 2159, 2161, 2163, 2165, 2167, 2169, 2171, 2173, 2175, 2177, 2179, 2181, 2183, 2185, 2187, 2189, 2191, 2193, 2195, 2197, 2199, 2201, 2203, 2205, 2207, 2209, 2211, 2213, 2215, 2217, 2219, 2221, 2223, 2225, 2227, 2229, 2231, 2233, 2235, 2237, 2239, 2241, 2243, 2245, 2247, 2249, 2251, 2253, 2255, 2257, 2259, 2261, 2263, 2265, 2267, 2269, 2271, 2273, 2275, 2277, 2279, 2281, 2283, 2285, 2287, 2289, 2291, 2293, 2295, 2297, 2299, 2301, 2303, 2305, 2307, 2309, 2311, 2313, 2315, 2317, 2319, 2321, 2323, 2325, 2327, 2329, 2331, 2333, 2335, 2337, 2339, 2341, 2343, 2345, 2347, 2349, 2351, 2353, 2355, 2357, 2359, 2361, 2363, 2365, 2367, 2369, 2371, 2373, 2375, 2377, 2379, 2381, 2383, 2385, 2387, 2389, 2391, 2393, 2395, 2397, 2399, 2401, 2403, 2405, 2407, 2409, 2411, 2413, 2415, 2417, 2419, 2421, 2423, 2425, 2427, 2429, 2431, 2433, 2435, 2437, 2439, 2441, 2443, 2445, 2447, 2449, 2451, 2453, 2455, 2457, 2459, 2461, 2463, 2465, 2467, 2469, 2471, 2473, 2475, 2477, 2479, 2481, 2483, 2485, 2487, 2489, 2491, 2493, 2495, 2497, 2499, 2501, 2503, 2505, 2507, 2509, 2511, 2513, 2515, 2517, 2519, 2521, 2523, 2525, 2527, 2529, 2531, 2533, 2535, 2537, 2539, 2541, 2543, 2545, 2547, 2549, 2551, 2553, 2555, 2557, 2559, 2561, 2563, 2565, 2567, 2569, 2571, 2573, 2575, 2577, 2579, 2581, 2583, 2585, 2587, 2589, 2591, 2593, 2595, 2597, 2599, 2601, 2603, 2605, 2607, 2609, 2611, 2613, 2615, 2617, 2619, 2621, 2623, 2625, 2627, 2629, 2631, 2633, 2635, 2637, 2639, 2641, 2643, 2645, 2647, 2649, 2651, 2653, 2655, 2657, 2659, 2661, 2663, 2665, 2667, 2669, 2671, 2673, 2675, 2677, 2679, 2681, 2683, 2685, 2687, 2689, 2691, 2693, 2695, 2697, 2699, 2701, 2703, 2705, 2707, 2709, 2711, 2713, 2715, 2717, 2719, 2721, 2723, 2725, 2727, 2729, 2731, 2733, 2735, 2737, 2739, 2741, 2743, 2745, 2747, 2749, 2751, 2753, 2755, 2757, 2759, 2761, 2763, 2765, 2767, 2769, 2771, 2773, 2775, 2777, 2779, 2781, 2783, 2785, 2787, 2789, 2791, 2793, 2795, 2797, 2799, 2801, 2803, 2805, 2807, 2809, 2811, 2813, 2815, 2817, 2819, 2821, 2823, 2825, 2827, 2829, 2831, 2833, 2835, 2837, 2839, 2841, 2843, 2845, 2847, 2849, 2851, 2853, 2855, 2857, 2859, 2861, 2863, 2865, 2867, 2869, 2871, 2873, 2875, 2877, 2879, 2881, 2883, 2885, 2887, 2889, 2891, 2893, 2895, 2897, 2899, 2901, 2903, 2905, 2907, 2909, 2911, 2913, 2915, 2917, 2919, 2921, 2923, 2925, 2927, 2929, 2931, 2933, 2935, 2937, 2939, 2941, 2943, 2945, 2947, 2949, 2951, 2953, 2955, 2957, 2959, 2961, 2963, 2965, 2967, 2969, 2971, 2973, 2975, 2977, 2979, 2981, 2983, 2985, 2987, 2989, 2991, 2993, 2995, 2997, 2999, 3001, 3003, 3005, 3007, 3009, 3011, 3013, 3015, 3017, 3019, 3021, 3023, 3025, 3027, 3029, 3031, 3033, 3035, 3037, 3039, 3041, 3043, 3045, 3047, 3049, 3051, 3053, 3055, 3057, 3059, 3061, 3063, 3065, 3067, 3069, 3071, 3073, 3075, 3077, 3079, 3081, 3083, 3085, 3087, 3089, 3091, 3093, 3095, 3097, 3099, 3101, 3103, 3105, 3107, 3109, 3111, 3113, 3115, 3117, 3119, 3121, 3123, 3125, 3127, 3129, 3131, 3133, 3135, 3137, 3139, 3141, 3143, 3145, 3147, 3149, 3151, 3153, 3155, 3157, 3159, 3161, 3163, 3165, 3167, 3169, 3171, 3173, 3175, 3177, 3179, 3181, 3183, 3185, 3187, 3189, 3191, 3193, 3195, 3197, 3199, 3201, 3203, 3205, 3207, 3209, 3211, 3213, 3215, 3217, 3219, 3221, 3223, 3225, 3227, 3229, 3231, 3233, 3235, 3237, 3239, 3241, 3243, 3245, 3247, 3249, 3251, 3253, 3255, 3257, 3259, 3261, 3263, 3265, 3267, 3269, 3271, 3273, 3275, 3277, 3279, 3281, 3283, 3285, 3287, 3289, 3291, 3293, 3295, 3297, 3299, 3301, 3303, 3305, 3307, 3309, 3311, 3313, 3315, 3317, 3319, 3321, 3323, 3325, 3327, 3329, 3331, 3333, 3335, 3337, 3339, 3341, 3343, 3345, 3347, 3349, 3351, 3353, 3355, 3357, 3359, 3361, 3363, 3365, 3367, 3369, 3371, 3373, 3375, 3377, 3379, 3381, 3383, 3385, 3387, 3389, 3391, 3393, 3395, 3397, 3399, 3401, 3403, 3405, 3407, 3409, 3411, 3413, 3415, 3417, 3419, 3421, 3423, 3425, 3427, 3429, 3431, 3433, 3435, 3437, 3439, 3441, 3443, 3445, 3447, 3449, 3451, 3453, 3455, 3457, 3459, 3461, 3463, 3465, 3467, 3469, 3471, 3473, 3475, 3477, 3479, 3481, 3483, 3485, 3487, 3489, 3491, 3493, 3495, 3497, 3499, 3501, 3503, 3505, 3507, 3509, 3511, 3513, 3515, 3517, 3519, 3521, 3523, 3525, 3527, 3529, 3531, 3533, 3535, 3537, 3539, 3541, 3543, 3545, 3547, 3549, 3551, 3553, 3555, 3557, 3559, 3561, 3563, 3565, 3567, 3569, 3571, 3573, 3575, 3577, 3579, 3581, 3583, 3585, 3587, 3589, 3591, 3593, 3595, 3597, 3599, 3601, 3603, 3605, 3607, 3609, 3611, 3613, 3615, 3617, 3619, 3621, 3623, 3625, 3627, 3629, 3631, 3633, 3635, 3637, 3639, 3641, 3643, 3645, 3647, 3649, 3651, 3653, 3655, 3657, 3659, 3661, 3663, 3665, 3667, 3669, 3671, 3673, 3675, 3677, 3679, 3681, 3683, 3685, 3687, 3689, 3691, 3693, 3695, 3697, 3699, 3701, 3703, 3705, 3707, 3709, 3711, 3713, 3715, 3717, 3719, 3721, 3723, 3725, 3727, 3729, 3731, 3733, 3

THE PACKARD ELECTRIC COMPANY.

The Packard Electric Company, St. Catharines, Ont., have sent us a "Retrospective and Prospective" circular in which they say:

"At the close of another year it seems fitting and proper to glance retrospectively over what has been accomplished, as well as look forward to the coming year which in prospective is one of much promise to the electrical fraternity. Everyone interested in matters electrical can look back to the year just closed as one of great development in Canada, and feel justly proud of results.

"Many important enterprises have been inaugurated and completed; central stations have largely increased their equipment almost without exception, as manufacturers have had their factories taxed to their utmost capacity, and in many instances

have been unable to cope with the demand. We ourselves anticipated a fair increase, and prepared for the same, but the unexpectedly large demand this season found our factory facilities inadequate. During the last two months we have made large extensions to our plant, and can from now on fill all orders with which we may be favored, with our usual promptness.

"The increasing demand upon the part of central stations for efficient apparatus and high grade supplies is one of the most encouraging signs to the maker of standard goods, that station managers are studying their interests in the light of modern development.

"We take pleasure in announcing to our many friends that we have arranged with the makers of the "Diamond C. P." supplies to handle these exclusively in the future. The quality attained in these supplies, both

electrically and mechanically, will be found as high as in our other well-known specialties. The trade mark will be their guarantee."

THE ORILLIA ELECTRIC POWER PLANT.

The Orillia, Ont., Municipal Council have awarded the contract for the electric power transmission plant subject to the by-law being approved of by the ratepayers.

The electric machinery will be furnished through W. A. Johnson Electric Co., of Toronto, the plant to consist of two 400 h.p. revolving field Westinghouse three-phase 60-cycle generators, each having an overload capacity of 60 per cent. These will be located at the Ragged Rapids, on the Severn river, 18½ miles from Orillia.

There will be provided the necessary high tension switch-boards and controlling apparatus. Six step up 100 K.W. Static Transformers, self-cooling type, will raise the voltage to 22,000 for the transmission line.

At the receiving station at Orillia there will be six step down 100 K.W. transformers, of a similar type, to reduce the pressure to 1,000 or 2,000 volts, so that the alternating incandescent circuits now used for commercial lighting, can be connected direct to the transformers.

There will also be provided a 25 h.p. Tesla induction motor, for driving the water-works pump, now operated by steam, and a 50 h.p. motor of the same type to drive the three Ball, 25-light, arc dynamo, which have been used for street lighting for some years.

The Switchboard apparatus lightning arresters, etc., have been carefully selected and so arranged that uniform service and safety in handling can be relied upon, notwithstanding the high voltage.

This is believed to be the first long distance power transmission plant yet purchased by any municipality in Canada, Orillia being one of the first towns to do its own arc lighting and also its commercial incandescent lighting. The present steam plant and incandescent dynamo now in operation within the town limits to be shut



Coach Screw. 1

WE

MANUFACTURE

*Track Bolts and Nuts,
Bridge and Roof Rods,
Wrot and Cast Washers,
Railroad and Contractors' Supplies,
Carriage, Machine, Plow and Special Bolts,
Bridge and Boiler Rivets, Drop Forgings of all Kinds.*

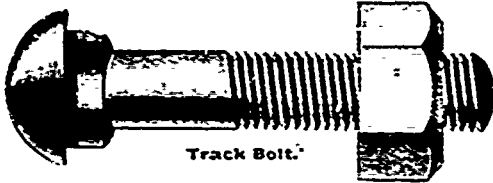
The Swansea Forging Co.

Limited,

SWANSEA

Near
Toronto.

Send for
Illustrated
Catalogue.

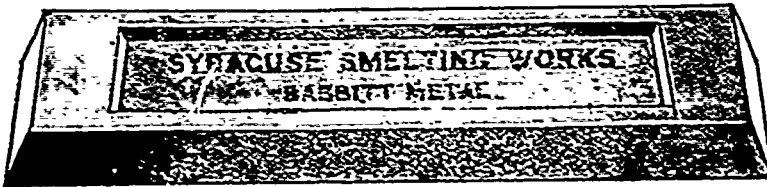


Track Bolt.

Use Syracuse Babbitt Metal

IT IS THE BEST AND CHEAPEST FOR

WORKS:
332 WILLIAM STREET,
MONTREAL,
Canada
AND
SYRACUSE,
N.Y., U.S.



Paper and Pulp Mills, Saw and Wood Working Machinery, Cotton and Silk Dynamos, Marine Engines and all kinds of Machinery Bearings.

Fig Tin, Lead Ingot, Copper, Brass, Aluminum, Zinc, Spelter, Antimony, etc., furnished promptly.

SYRACUSE SMELTING WORKS.

AGENTS IN CANADA. A. R. WILLIAMS MACHINERY CO., Toronto; MECHANICS SUPPLY CO., Quebec; JOHN J. BARRY, St. John. N.B.; H. H. FULLER & CO., Halifax. N.S.

down when the water power transmission is in operation.

The Central Construction Co. are the bulk contractors for the entire equipment.

The Stillwell Bierce & Smith Vale Co. are sub-contractors for the water wheels.

A DUST-PROOF GENERATING SET.

In the illustration which accompanies this description, is shown a generating set which is, above all, remarkable for the novelty of its appearance. The engine which has two cylinders, and is operated by a single piston

sight feed oilers and tubes, serving to apply oil continuously to all bearings, and rendering it unnecessary to open the engine under ordinary conditions of operation.

The cranks, which are two in number, are set at an angle of 180 deg. so that the reciprocating motion is balanced, and high speed is made possible.

Regulation is secured by means of a governor of special construction.

Directly connected to the end of the engineshaft by means of a flexible coupler is the armature shaft, which is supported in two bearings provided with ring oilers, one

sides of which the hemispherical ends are bolted. The ends are provided with doors, which render the interior perfectly accessible. The machine is of the four-pole type, with independent windings for series and shunt.

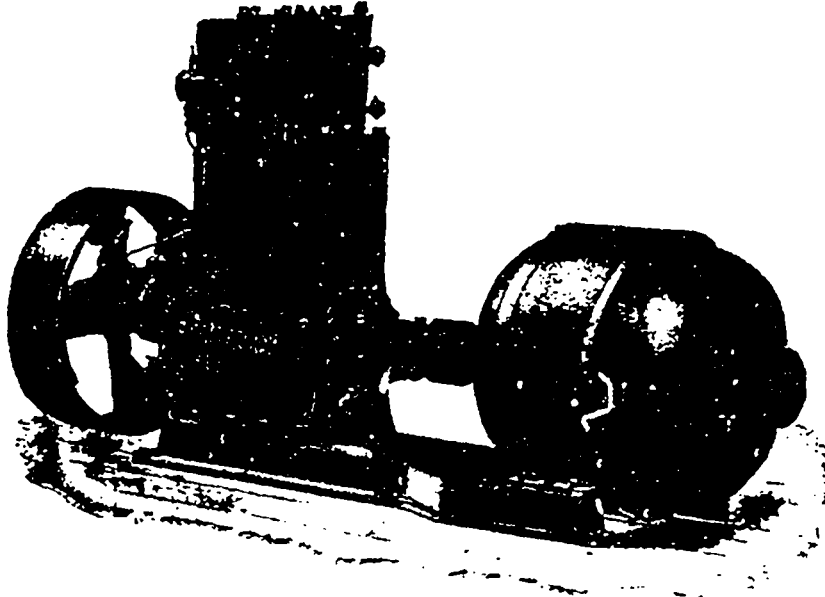
The armature is of the barrel wound type, and designed for minimum losses and consequent low temperature.

The reaction type of brush-holder is employed, so that nothing but primary adjustment is required and sparklessness is attained.

The generator is designed so as to keep within proper limits the temperature rise under continuous operation.

It is evident from the preceding description that this type must be of great utility wherever the atmosphere is laden with dust which would be detrimental to the operation of the machine. It is likewise useful in an atmosphere in which moisture is present in excess.

This set is one of a series designed and built by the B. F. Sturtevant Co. of Boston, Mass. The smallest size set of this series has an engine with two 3½ x 2½ cylinders. The output is 3,750 watts, and the weight of the entire set is 1,550 lbs. The largest size at present manufactured is equipped with a 5 x 4 engine, the output being 11,000 watts and the weight 3,800 lbs.



The Sturtevant Automatic Double Upright Engine and Direct Connected 4-Pole Enclosed Generator.

valve, has its moving parts entirely enclosed within a substantial case, access to which can be had through the door as shown.

The oil tank is supported outside of the cylinders, and provided with individual

in either end of the nearly spherical case which forms a part of, and otherwise contains the generator.

The central portion of this casing is formed by the cast steel field ring, to the

CUSTOMS SEIZURE OF ROLLING STOCK.

The biggest seizure ever made by the customs department, involving eighteen locomotives and 1,000 box cars, was recently made public. The rolling stock belongs to the Canada Atlantic and O. A. and P. S. railways. The seizures were made on two different occasions. The first was on December 14, 1897, when five engines and 500 freight cars were seized for alleged non-payment of duty. The freight cars were marked V. & P. L., and the whole are valued in the customs books at \$250,000.

The New "BELL" AUTOMATIC ENGINE

FOR

Electric Lighting, Electric Railways
MANUFACTORIES, MILLS.

Unsurpassed for

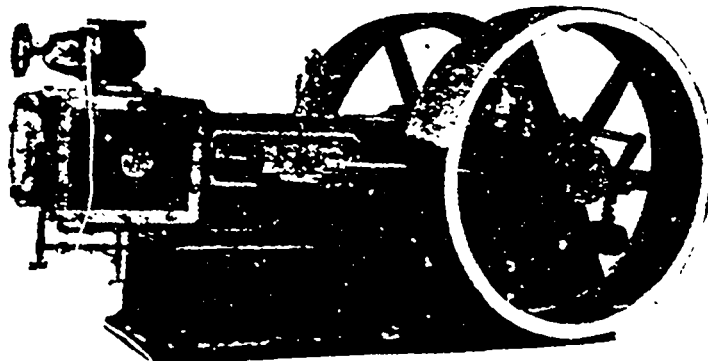
ECONOMY, PERFECT BALANCE, ABSOLUTE REGULATION, SMOOTH RUNNING
SEND FOR CATALOGUE.

Manufactured only by

ROBERT BELL, Jr.

Hensall Engine and Machine Works,

HENSALL, ONT., CANADA.



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

Wire Screens for Every Class of Material

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

Special Attention given to Miner's Requirements.

The other seizure was made in July, 1897, of thirteen engines and 500 freight cars, marked Canada Atlantic railway via Central Vermont railway. The last seizure is entered as worth \$400,000, thus making the enormous total of \$750,000. The seizure was made for alleged non-entry of the engines and cars upon their arrival in Canada. The customs department requires that all new cars entering the country must be reported to the customs department. The officials of the railways mentioned have had several interviews with the Commissioner of Customs regarding the disposition of the cars, but so far, it is said, a decision has not been given. It was asserted by the railway officials that the cars were for international traffic. The customs department, is, however, in possession of a copy of the following order, issued by General Superintendent Donaldson of the Booth lines, August 4, 1898:

"Order No. 619. Circular to all agents. —V. & P. L. cars from now on must not be loaded off the C. A. They must be used entirely between the elevators at Depot Harbor and Coteau. Agents will, for the present, be guided by this order."

Most of the cars have been released and are now in use, but the seizures are still in effect. It is said the railway companies claim that they have acted within their rights, there being a clause in their charters authorizing them to borrow or rent cars. This they claim to have done, the clause not

specifying that the railway from whom they rent shall be a Canadian railway.

LOWERING LAKE MANITOBA.

The Dominion Government has decided to lower the level of Lake Manitoba by cutting a short ditch at the northern end of the lake with the object of increasing the outflow of water via Lake St. Martin into Lake Winnipeg. The question of lowering or controlling the water level of Lake Manitoba has been agitated for a number of years. The volume of water running into Lake Manitoba is considerably greater than the outlet capacity. A number of rivers and creeks flow into the lake, while its only outlet is the Fairford river to Lake St. Martin and thence via the Dauphin river to Lake Winnipeg. This outlet has not the capacity of carrying off as much water as flows into the lake from other streams, hence considerable areas of land around the lake have been flooded. An important matter to be taken into consideration in connection with the lowering of the lake is its value as a navigable body of water. Some, who have made a study of the question, claim that the lake is of greater value for purposes of navigation than the flooded land in its vicinity. Lake Manitoba is quite shallow and if the water is materially lowered it will destroy navigation on it. The Winnipeg Commercial urges that if it is definitely decided to lower Lake Manitoba,

it should be done by a short canal from the southern end of the lake to the Assiniboine river, which would render the Assiniboine navigable between Winnipeg and Portage la Prairie, improve navigation on the Red River between Winnipeg and Selkirk, and give a sufficient flow of water to render it possible to develop a minimum of 15,000 horse power on the Assiniboine at Winnipeg.

The warning not to introduce an open flame into a boiler, heater, tank or other vessel in which explosive gas can accumulate before it has been thoroughly ventilated, cannot be too often repeated. Wm. Chadwick, who is employed at the pumping station of the Standard Oil Co., near Warren, Ohio, tried it a short time since. An explosion broke his arm and burned him so severely that his recovery was doubtful. Petroleum or some of its products had probably been used in the boiler for scale reducing purposes.

A United States company, which is going to develop the water power of the Jacques Cartier River, in the Province of Quebec, for electric lighting and power purposes for Quebec city, in opposition to the Montmorency Company, has acquired the chartered rights, as regards the city of Quebec, of the Standard Light & Power Company, of Montreal. The American company has a capital of \$500,000, and its president is Mr. Emerson McMillan, of New York.

To MANUFACTURERS

Do not be misled on the Wood Pulley question! The construction of the Dodge Split Pulley is unique. The complete and extensive plant of Dodge Manufacturing Company, of Toronto, makes it possible for them to make an all-wood pulley nearer perfection than any of its competitors. No other wood pulley is made just like the Dodge Pulley, because a lot of special and expensive machinery was necessary before the Dodge Pulley could be produced in its present state of perfection.

Our output exceeds that of all other wood pulleys combined. There are no drawbacks with us, we have the best wood split pulley made, and we want to send you our new 200-page Catalogue, also our revised Discount Sheet and to tell you all about all kind of pulleys.

We carry a complete stock of pulleys in sizes from 4 in. diam. to 60 in. diam. any face, and can ship most any order on day received. A post card or a phone will bring us to you at any time.

DODGE MANUFACTURING CO. of Toronto, Limited,
Office, 74 York St., Toronto, Ontario. Works, Toronto Junction. Phone 2080

To MANUFACTURERS...

Bar Iron, Steel, Boiler Plate,
Rivets, Tube Expanders,
Hammers, Metallic Letters
and
Figures for Patterns.

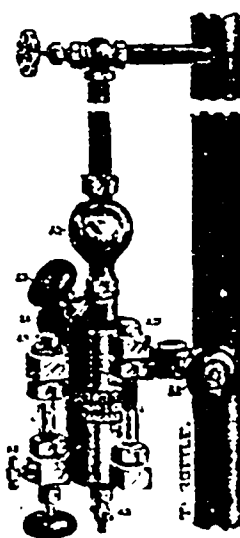
RICE LEWIS & SON
(LIMITED)

COR. KING AND VICTORIA STREETS, TORONTO.

ADVERTISE IN THE CANADIAN MANUFACTURER.

SEND FOR RATES.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



THE BEST JUDGES OF ENGINES

THOSE WHO BUILD HIGH-GRADE ONES—
ALL USE

The **Detroit**
Sight-Feed
Lubricators

This is equally true of Canadian as of American engine builders. They know that the valve friction must be overcome if their engines are to work at their best. They know from experience that the Detroit Lubricators do this, and where so much heat is taken they want only the best. It should be the same with all engine owners. The saving our Lubricators effect will pay for themselves very soon.

Send for Catalogue and Prices.

Detroit Lubricator Co.,
DETROIT, MICH.

A NEW INDUSTRY

As the pine tree was "passing" no industry turned up of great magnitude to create a value for the standing hard woods remaining on the stump. The pine vanishing left a weird-looking crop of hard woods untouched by the lumberman's axe, and despoiled of much of its commercial worth by King Coal, it also too often fell a prey to the destructive bush fire. A new industry is now being opened up to bring it into prominence and value. It has been found that, especially beech, birch and maple, cut into thin veneers, and cemented together three ply, the thickness of the whole about 5-16th of an inch, make very superior packing cases for carrying all kinds of heavy and light merchandise. To show that this is a very large field, it is stated that about 40 per cent. of the pine now cut finds its way into packing cases. This veneer box is waterproof for all practical

purposes, it is less bulky, more durable and much lighter than the one-inch pine packing case now in use. By this reduction of weight the saving in freight and express charges over long distances, it is claimed, will give the shipper his packing case free of cost, which is a consideration in the expense account not to be overlooked. A veneer factory, solely for this purpose, worked by an English company, under the management of Mr. I. E. Davidson, who is a pioneer in the box trade, has already made its appearance in Toronto. Another mill, by a different English company, is being built in the easterly section of New Brunswick, where hard woods abound close to the seaboard, from whence shipments to England, the great user of packing cases, can be economically made the year round. Here the veneer is manufactured, cut into sizes and shipped to the London factory, where the cases are put together and distributed. Mr. G. D. Prescott of New Brun-

wick owns the standing woods, and the English connection was made for it by Mr. G. W. Yarker of Toronto.

EXPORT OF CANADIAN LOGS TO MICHIGAN.

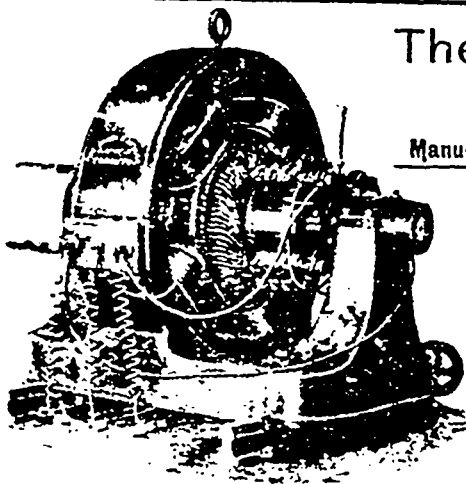
A press telegram from Detroit states that the rafting of logs from Canada to Michigan sawmills was but a little less during 1898 than in previous years. The rafting season opens in May and closes in October, and the quantities carried over last season were in round numbers as follows:—

To Saginaw River.....	155,000,000 feet.
" Detroit.....	10,000,000 "
" East Tawas.....	9,800,000 "
" Alpena.....	17,500,000 "
" Cheboygan.....	46,700,000 "

Total..... 239,000,000 "

The export of saw logs from Canada to Michigan in recent years was as follows:

1893.....	184,500,000 feet.
1894.....	301,000,000 "
1895.....	279,230,000 "
1896.....	279,388,000 "
1897.....	252,344,000 "
1898.....	239,000,000 "



The Jones & Moore Electric Co.,

Manufacturers and Contractors

All Work Fully Guaranteed

ELECTRIC LIGHT and POWER PLANTS a Specialty

A Few Second-Hand A 1 Machines For Sale Cheap

20 and 22 ADELAIDE STREET WEST TORONTO

Engine Packing,

Magnesia Pipe Covering

Lubricating Oils

and Grease.

The

William C. Wilson Co. Limited

24 FRONT STREET EAST TORONTO, ONT.

ACETYLENE...

THE FUTURE LIGHT

The Perfect Light for Public Buildings, Offices, Stores and Dwellings.

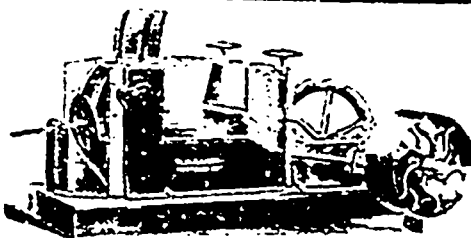
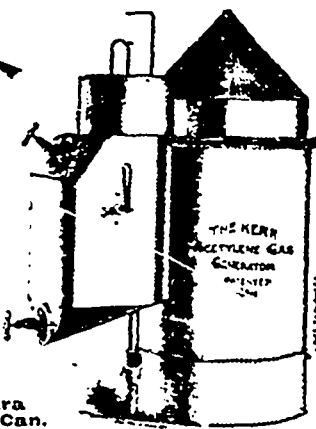
The Kerr Acetylene Generator

Patented in Canada, Great Britain, United States, France and Germany. Other Canadian and foreign patents pending. The only perfect apparatus for the generation of Acetylene Gas from Calcium Carbide. No dust, compact and Durable.

SIMPLE, SAFE AND RELIABLE

No Valves or complicated Mechanism to mystify and confuse. No Copper, Brass, or other dangerous element used in its entire construction. Write us your requirements and obtain prices.

KERR ACETYLENE GAS GENERATOR CO., Box Niagara Falls, Can.



H. W. KARCH

HESPELER, ONT.

IRON FOUNDER and MACHINIST

Manufacturer of

WOOLEN MACHINERY,

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

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER



DIRECT FROM THE GREAT MINES

of British Columbia and Northwestern States. Handsome cabinet of specimens with catalogue describing each specimen and the different mines from which they were obtained. A HEAVY DUCAL PRESENT. A CHOICE OF MINES IN IT. \$1.00. Price, Express paid, \$1.25.

JNO. R. CASSIN CO., Mine Promoters & Assayers, Spokane, Washington, U.S.A.

WIND POWER AS A SOURCE OF ELECTRICAL ENERGY.

Of all the natural sources of energy which might be harnessed for the generation of electricity there is perhaps none more unsteady and unreliable than wind power. To be sure, wind power is cheap and simple, but even these virtues do not compensate altogether for the above-mentioned disadvantages, which have hitherto prevented its extensive introduction for electrical generating purposes. To solve the question how best to neutralize the inconveniences caused by the irregularity of the wind has been the most important practical point in connection with windmills, and for this purpose storage batteries and complicated automatic devices have been employed. Another method proposed has been to have the windmill pump water up to a tank, by which supply a water motor could be operated. In this way a constant head of water and speed of dynamo could be maintained. It has also been suggested that the windmill could be used to compress air in suitable reservoirs for operating air engines. Both of these methods were ably discussed by Mr. Rankin Kennedy, in *The London Electrical Review* of Dec. 21, 1894, and shown to be impractical in most cases. The latest device for neutralizing the irregularity of the wind is the one devised by the well-known Danish scientist, Prof. La Cour, and called by him the Kratostrate, by means of which, it is claimed, a windmill can very well be used for supplying power to a dynamo.

Prof. La Cour has for several years carried on a number of thorough, State-aided experiments, the results of which he communicated lately to a Copenhagen scientific society. He pointed out among other things the fallacy of the opinion that the greatest effort was obtained by horizontally moving wings, and he emphasized the importance of the suction on the lee side. With respect to the number of wings, he found that a mill with sixteen wings had only one and one-third times as much power as one with four. In measuring the percentage of the power of the wind striking the wings which was

absorbed or utilized by the latter, he arrived at the somewhat startling figure of 143.7 per cent. This unlooked-for result was due to the above-mentioned suction on the lee side of the wind passing between the wings. This as well as the shape of the wings were then taken into account in measuring the percentage of the wind power utilized, and it was then found to be twenty-one per cent. The absolutely best shape for wings has, however, not yet been ascertained.

This question of the utilization of the power of the wind is certainly an interesting and fascinating one, especially if we see it attacked by such a celebrated man as Prof. La Cour, and after Brush, Blyth and others have given us actual working examples of the successful installation of windmills. However, the field of usefulness will probably lie in the application in small installations, where mechanical or even electrical storing devices, sufficiently large to bridge over long periods of calm weather can be installed. In the words of Dr. Louis Bell, "It (wind power) must rather be regarded as a local competitor of distributed power, and even so in a small and limited field."—*Electrical Engineer.*

FARM TELEPHONY.

Michigan farmers are taking kindly to the telephone and it is probably but a matter of a few years when the telephone will be as common in the country as it is in the cities now. In Allegan County the farmers have an exchange of their own and they maintain it by annual assessments. The line runs from Holland, through Saugatuck, Ganges, Douglass and Fennville to South Haven, and it is used chiefly during the fruit season to facilitate the handling of berries and peaches. About 130 farmers and fruit growers built the line and maintain it, and the annual assessment upon each is about \$10.

Every township in Oceana County has telephone connections with Hart, the county seat, and this system is essentially a farmer's exchange, and is owned and maintained chiefly by the farmers and fruit growers. The Oceana County system, as also the Alle-

gan County fruit growers' line, is being connected with a State exchange, and before the peach season fairly opens the farmers in both sections will be in easy talking range of the commission and railroad men here and the steambot men at the lake ports.

Gratiot County has another farmers' exchange which, with Ithaca as the centre, has connections with every township and many farmers. The system gives free service throughout the county to its subscribers and will soon be connected with the outer world. It is a great advantage to the farmers in marketing its products.

Farmers living near the cities are having the telephone wires extended out to them, though the movement is still in its infancy. The Citizens' Exchange in this city has about a dozen farmers on its list, and that it has not a hundred or more is due to the rush of construction work in the city since the exchange was established. The first country telephone was to a farmer about a mile west of town. With direct connection with town he could sell his stuff in advance, arrange for his deliveries, and easily keep his finger on market conditions. It gave him a big bulge on the other farmers, and it did not take his neighbors long to find it out. The line now runs out about five miles and all the substantial farmers along the line have hitched on. The farmers north and northeast of the city are clamoring for connection, and in another year they will probably be accommodated. The lettuce growers just south of the city all have connections, but they are so close to the city they are hardly called farmers.

THE CATARACT POWER COMPANY.

Probably the greatest industrial enterprise that has yet come to Hamilton, Ont., says *The Globe*, is that of the Cataract Power Company, Limited, whose formal opening took place on November 12th. The opening was an event that marked an era in the industrial progress of Hamilton, and there is good reason to believe that the coming of the DeCew Falls electrical energy has given this city great advantage over other

BELTING

**Leather Belting,
Lancashire Hair,
English
Card Clothing,**

D. K. McLAREN

Head Office and Factory—
VICTORIA SQUARE, - MONTREAL
Stock Depots—Ottawa, Galt.

OAK

ENGINE

WESTERN TRADE:—

Our Mr. R. M. W. McLaren, in charge of Galt Branch, will be pleased to give quotations as well as receive orders.

STORAGE BATTERIES

THE LIGHTEST. THE STRONGEST. THE BEST.

If you use Electricity we Batteries Repaired and Recharged
can save you Money. at Reasonable Rates.

The Croftan Storage Battery Co.

W. M. H. NELLES. CANADIAN BRANCH. REIN WADSWORTH.
22 Sheppard Street, Toronto, Ont.

SHUTTLES



BOBBINS
SPOOLS
PICKER
STICKS
CLOTH
ROLLS, Etc.

JOHN HOPE & CO., - - LACHUTE, QUE.

THOMPSON & CO., *Manufacturers of*

BOBBINS and SPOOLS

FROM SELECTED STOCK.

Correspondence Solicited
Orders Promptly Filled..... ● SHERBROOKE, P. Q.

Canadian cities as a manufacturing centre. The Cataract Power Company is in the field to supply cheap power, and although the enterprise is exceedingly young yet, there are four manufactories running by the company's electrical power—the Gurney-Tilden stove foundry, Lake & Bailey's flour mill, the Eagle Knitting Company's factory and the Greening Wire Company's works. Other manufacturers are arranging to utilize the power from the DeCow Falls as soon as the motors can be put in. Already the incandescent lighting of the city is being done by power supplied by the Cataract Power Company, and in a short time the arc lighting of the city will be done by the same company. The gentlemen who form the company are residents of Hamilton. The officers and directors are as follows.—Hon. J. M. Gibson, president; Mr. James Dixon, vice-president; Mr. John Moodie, treasurer; Mr. John Patterson, secretary; Mr. H. R. Leyden, general manager; Messrs. John Dickenson, M.P.P., J. W. Sutherland, John Knox, J. J. Wright, of Toronto, and J. A. Kammerer, of Toronto.

Few companies have spent so much money in this city as the Cataract Power Company has. More than \$500,000 has already been expended on the enterprise, and as the business has begun to grow right from the start, more capital will have to be put into it to provide for the anticipated expansion. The company's capital is \$250,000, the excess in expenditure having been supplied by the Bank of Hamilton in advance of a bond issue to be floated shortly. Although DeCow Falls, the source of the power, is thirty-four miles from the city, the loss in transmission is only eight per cent. The company expects to be able in the near future not only

to operate all the electric lights and electric railways in the city and vicinity, but also to supply power at rates so much below those allowable by the use of steam that all the manufacturers will discard their steam plants and use electrical power instead. The new enterprise is calculated to bring manufactories to this city, as well as make power cheaper for those already established here, and even thus early in the Cataract Power Company's career numerous requests have been received by it from outside manufacturers for figures as to the probable cost of power for their concerns in case they should decide to remove to Hamilton.

BEHAVIOR WITH ELECTRIC MACHINERY.

The following advice regarding one's behavior in the presence of electric machinery or conductors, will be useful in many respects to amateurs as well as to electricians. It is from *The Engineer and Iron Trades Advertiser*, Glasgow, Scotland: "Never touch an electric wire that has fallen down across your path while standing on the ground, as your body will become a conductor for the electric fluid to the earth unless you have rubber boots on. Linemen are sometimes seen pulling live wires about, but they have insulating boots on their feet or rubber gloves on their hands. Some people, supposing these coverings to be only used for the protection against wet weather, have foolishly grasped wires and received severe shocks in consequence. Electric wires should be handled one at a time. If it is necessary to take hold of two wires at the same time do not do it. In

handling or drawing any wire lying over any of the ordinary street wires, especially such as convey currents for electric lighting, use a dry hand-line for the purpose or grasp the wire with insulated pincers. An ordinary wire clothes line may become the conductor of a deadly current. In a dynamo room touch not, taste not, handle not. The most inoffensive looking dishpan may strike you like a mailed hand. Nothing is safe to you here unless you know everything. Let working-men remember that when a company has strung wires on the crossbars of poles so closely together that a man can not move easily between them, it is better for him to come down and resign. What profiteth a man if he has a situation if his wife be a widow? Never close a circuit without giving notice to all concerned. A telegraph notice received in the back of the neck generally arrives too late to do any good. On no condition let two wires touch your body at the same time. Don't think that any wire is not dangerous. There is a difference between a gun with a cap on it and one without that can be detected with the naked eye, but a loaded wire—who knoweth it? Trimmers employed to attend to lights in public crowded thoroughfares should be sure that the current is turned off before they touch the lamp, as the stopladders are often very high and the public object to being hit on the head by a gyrating galvanized lamp-trimmer."

Messrs. Calvin & Co., marine architects, shipbuilders, engine builders, etc., Kingston, Ont., completed and launched a few days ago, the passenger steamer India. This steamer is 212 feet long, thirty-seven feet beam, and fifteen feet depth of hold.

WE MAKE IT. *The Reeves*

A High Grade Wood Split Pulley.

Made of the Best Materials and so Constructed, by Expert Workmen, that it stands the most severe and heavy work.

Stronger than Iron.

Lighter than Steel.

ASK YOUR MACHINERY OR HARDWARE DEALER FOR IT.

REEVES PULLEY CO., Toronto, Ont., Also Columbus, Ind.

ONTARIO GOLD MINING DISTRICT :

Sultana Mine.
Foley Mine.
Mikado Mine.
Olive Gold Mine.
Cameron Island Mine.
Hammond Reef Mine.

A Few Mines



WHO USE

BRITISH COLUMBIA :

Le Roi Mine.
War Eagle Mine.
Old Ironsides Mine.
Centre Star Mine.
Crown Point Mine.
Knob Hill Mine,

CANADIAN RAND DRILL COMPANY, Montreal

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

THE GROWING TIME IN HAMILTON, ONT.

The Toronto Globe, in its "Growing Time" department, speaks of certain manufacturing industries in Hamilton as follows:

THE SAWYER MASSEY CO.

One of the busiest places in the city is the Sawyer Massey Co's works near the foot of Wellington street, where threshing machines and engines are turned out in great numbers every year. Between 250 and 300 hands are employed there, and the works are going constantly night and day, except Sundays. So great is the increase in the business that the company cannot keep up to the orders, and there is talk of doubling the capacity of the works in a short time. With a big, up-to-date addition to the old factory there

would be a large increase in the number of employes, and Manager H. P. Coburn hopes to see the improved conditions soon. The Sawyer-Massey Co. built a handsome office close to the works a short time ago, and there are plenty of evidences of prosperity in that vicinity.

There is a possibility that Hamilton may have an auto car manufactory in the near future, in which case Mr. John Moodie, jr., will be specially deserving of the gratitude of the city. Mr. Moodie has been negotiating for some time past, and is still negotiating, with the Winton Motor Carriage Company, of Cleveland, Ohio, with a view to the establishment in this city of a branch of the company's factory. The Winton Motor Carriage Company turns out neat-looking horseless carriages, two of which have been in use in this city for some time by Mr. John Moodie, jr., and Mr. J. R. Moodie. If the company is organized for the making of motor carriages, or auto-cars, it will go extensively into the business of making delivery wagons, which are destined shortly to take the place of horse wagons. It would be a big time for this city if the manufacture of auto cars were begun here, and there is no reason why this should not be the case.

(The tariff duty on threshing machines and engines is twenty-five per cent. The Sawyer-Massey Company are members of the Canadian Manufacturers' Association).

AIR BRAKES.

The making of air brakes by the Westinghouse Manufacturing Company (Limited), previously referred to as one of Hamilton's new industries, may not depend on the times being good, yet the extent of the manufacture reflects to some degree the condition of trade throughout the country. In any case it is a good thing for this city that it has such an enterprise, the only one of the kind in Canada, and an important addition to the city's manufacturing interests. The company was organized on January 27, 1897, under a Dominion charter, with a capital stock of \$500,000, and the works were placed in operation on February 8th, 1897, the first shipment of air brakes being made on April 1st following. The works, which are situated in the east end of the city, in close proximity to the various railway tracks, are models of cleanliness and convenience, and well adapted to the requirements of the company. Mr. George Westinghouse, of Pittsburg, is president of the company, Mr. H. H. Westinghouse, vice-president; Mr. John Caldwell,

The
Canadian Gazette
LONDON, ENGLAND

A Weekly Journal

Of information and comment upon matters of use and interest to those concerned in Canada, Canadian Emigration and Canadian investments.

EDITED BY THOMAS SKINNER,
Compiler and Editor of

"The Stock Exchange Year Book,"
"The Directory of Directories," etc.

Every Thursday. Subscription, \$4.38 per annum

OFFICES:
1 ROYAL EXCHANGE BUILDINGS
LONDON, E.C., ENG.

Advertisements - The charge for ordinary advertisements is \$1. per line of twelve words; and for Leader page advertisements, 1s. per line. The scale of charges for Displayed Advertisements, Special Positions, and for a Series may be had upon application to the publisher.

THE SOUTH AFRICAN Trade Journal
AND
Shipping Gazette

THE RECOGNIZED ORGAN OF
COMMERCE
FOR SOUTH AFRICA.


PUBLISHED MONTHLY AT CAPE TOWN,
SOUTH AFRICA.

It circulates throughout the Mercantile Centres of South and East Africa, including Cape Colony, Orange Free State, Transvaal, Natal, British Protectorate of Bechuanaland, Zambesia, etc.

Advertising Rates on Application.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

... ORDER ...

"Capitol" 

THIS IS THE STANDARD GRADE **CYLINDER**

'Renown' 'Atlantic'
ENGINE RED OIL

NO BETTER OILS MADE

THE QUEEN CITY OIL CO., LIMITED

SAMUEL ROGERS, PRESIDENT TORONTO, Canada

CHEMICAL COMPOUND COMPANY **C**ORRECTLY COMPILED CHEMICAL COMPOUNDS **C**IVILITY CAREFULNESS COMPLETENESS CONTINUITY

DO YOU KNOW

That you are paying for Boiler Compound all the time whether you use it or not?
IF YOU DO NOT BUY

You will pay your coal dealer more than its cost in the extra Coal you burn.

Zinkolene Saves Money

THE CHEMICAL COMPOUND CO., 311 Temple Building, Toronto.

CHARLES F. CLARK, Pres. WALTER HENDERSON, Cash.
ESTABLISHED 1849.

THE BRADSTREET MERCANTILE AGENCY

THE BRADSTREET COMPANY, Proprietors

346 & 348 Broadway, NEW YORK.

Offices in the principal cities of the United States, Canada, the European Continent, Australia, and in London, England.

The Bradstreet Company is the oldest, and, financially, the strongest organization of its kind—working in one interest and under one management with wider ramifications, with more capital invested in the business, and it expends more money every year for the collection and dissemination of information than any similar institution in the world.

TORONTO OFFICES:

McKinnon Bldg., Cor. Jordan & Melinda Sts.

THOS. C. IRVING, Superintendent.

treasurer; and Mr. Paul J. Myler, of this city, secretary and manager. The company employs about 150 men. It has already equipped about 400 Canadian Pacific Railway locomotives with air brakes, and the same number of Grand Trunk locomotives. About 400 passenger coaches of the Grand Trunk Railway have been provided with the brakes, also a similar number of Canadian Pacific Railway coaches. Besides this, the Canadian Pacific Railway and the Grand Trunk Railway have each nearly 10,000 freight cars manipulated by the Westinghouse brake, manufactured in Hamilton. All the railway cars in Canada are being equipped with these brakes as fast as possible, and when the big rush of wheat from the west is over and the freight cars can be spared from active duty for a while there will probably be a good many more thousand cars thus supplied with up-to-date appliances for the stopping of them.

(A National Policy industry. The duty on air brakes is thirty per cent. It is

cheaper to build air brakes in Hamilton than to import them from the United States and pay duty thereon. If there was no duty on air brakes the Hamilton factory would be closed).

THE STOVE INDUSTRY.

The impetus in the stove industry is probably more marked than in any other line of manufacture in Hamilton, the improved times having caught the stove-makers with a rush two years ago, and kept it up ever since. What is more, it looks as though the improvement in the trade has come to stay for a long time, and any of the stove founders in Hamilton will subscribe to this statement. All the foundries are as busy as they can be, and, although this has been the case for a good many months, the foundrymen are still unable to keep up with the demand. They are working overtime, and they are turning out an immense number of stoves, yet the orders continue to pour in. It certainly looks like good times to see the way in which the stove foundries of Hamilton are rushed.

The Gurney-Tilden Company's business, like that of the other stove founders, has increased within two years beyond the company's most sanguine expectations. Mr. John H. Tilden, president of the company (limited), says they are behind with their orders, and can scarcely get room in their buildings for the increased business. The number of employes has been increased from 287 to 303, and the wages have increased about twenty-five per cent. in the past year.



WATER WHEELS

For Heads of 3 Feet to 2000 Feet.

ADAPTED TO MILLING AND ALL POWER PURPOSES

Recent tests at Holyoke enable us to guarantee that the Largest Power wheel made to date is of this design. The highest speed ever obtained for the same power. The highest efficiency ever obtained when running from half to full load. We guarantee about 1/3 more of the greatest possible strength. A safe investment in a machine that will last for years. Write for pamphlet, stating your Head.

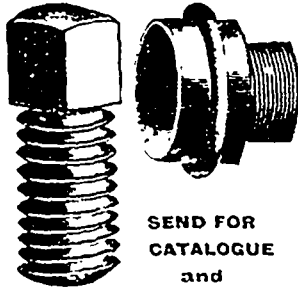
JAMES LEFFEL & CO., Springfield, Ohio, U.S.A.

Felts for Pulp Mills

20 years in the business—the first to make Felts in Canada: capacity 1,000 lbs. per day. All our

Felts are woven endless, without a splice. Our Felts will last longer and make dryer Pulp. All up-to-date mills use our Felts. New mills, when in need, write for samples and prices.

HAMELIN & AYERS, Lachute Mills, P.Q.



SEND FOR CATALOGUE and PRICE LIST.



The Diamond Machine & Tool Co.

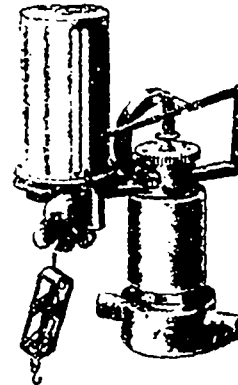
TORONTO, ONT.

Manufacturers of

Machine Screws

OF EVERY DESCRIPTION.

The McInnes Indicator...



(Patented).

With Vulcanite Sheathing for all Speeds and Pressures. Adopted by the British Admiralty.

SPECIAL INDICATORS

For Gas and Explosive Engines, Ammonia Compression Machines, Torpedo Boats, Launches and Locomotives.

Patent Flexible Unstretchable Wire

Cord for Indicator Leads.

Catalogue on application. SOLE MAKERS:

T. S. McINNES & Co., Limited
42 CLYDE PLACE,
GLASGOW, - Scotland.

Reduce Your Fuel Bills
Increase Your Output...

BY USING

The IMPROVED JONES UNDERFEED STOKER

Guaranteed Increased Economy, from 15% to 25%

Guaranteed Increased Boiler Capacity from 10 to 100

NO ASHES. NO SMOKE. NO TROUBLE. NO MONEY REQUIRED IF GUARANTEES ARE NOT FULFILLED.

The First and Only Successful Underfeed Stoker.

No Underfeed Stoker is successful without infringing our Patents, and the public are warned against importing or using infringing devices.

N.B. Have you seen our Underfeed as applied to Houses, Schools, Churches, etc.? Send for Circulars.

For Estimates and other Information write

The General Engineering Co. Limited

SOLE MANUFACTURERS FOR CANADA.

Head Office 80 CANADA LIFE BUILDING, - TORONTO.

Montreal—A. TREVETHICK, - Box 1123.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.



or so. The company has produced more goods this past year than ever before, and, of course, the sales have been considerably greater. A year or two ago the company made more stoves than could be disposed of, and outside storage had to be hired. This year the stoves have been rushed off as fast as made, and the Gurney-Tilden Company has storage to let on the premises now. Not only in Ontario is the business good, but it is lively in Manitoba and the Northwest, where the company was the pioneer in the stove business.

(Duty on stoves, twenty-five per cent. The Gurney-Tilden Company are members of the Canadian Manufacturers' Association).

PORK-PACKING.

The pork-packing industry has flourished, and Mr. F. W. Fearman has added a cold

storage warehouse to his factory. Messrs. Lawry & Son, with Mr. Anderson Fowler, of New York, largely interested, are arranging to double their present capacity, and to establish stock yards in Hamilton in a short time. For this enterprise the city has agreed to grant them partial exemption from taxation for ten years, and it is anticipated that

in a year or so the stock yards will be an established fact. The pork-packing business of this city then will be of great importance. (Duty on salted meats, pork, bacon, etc., two cents per pound; on fresh meats, three per pound. Both Mr. F. W. Fearman and Messrs. Lawry & Son are members of the Canadian Manufacturers' Association).

**THE AMERICAN
CARPET and
.. UPHOLSTERY ..
JOURNAL**

Each number contains valuable statistics as to the imports and exports of the United States, and all the news relating to the allied industries.

It carries the advertisements of the leading firms in the business, and is regarded as a most valuable medium for reaching the entire trade of the country.

Subscription Price, - \$2.00 a year
For Canada and the United States.

PUBLISHED BY

THE TRADES PUBLISHING COMPANY,
102 South Twelfth Street,
PHILADELPHIA, PENN.

**THE CANADIAN
COLORED COTTON
MILLS COMPANY.**

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

Only Wholesale Trade Supplied.

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



**The "SAFETY"
ACETYLENE GAS MACHINE**

THE MOST SIMPLE AND THE SAFEST MACHINE MADE.
It does what other machines cannot do. It generates Gas Cool. It washes and purifies the Gas twice. Automatically removes the Ash from the Carbide. Leaves the Ash perfectly dry and thoroughly exhausted.

Manufactured by..... **EVERY MACHINE GUARANTEED.**

THE SAFETY LIGHT & HEAT CO., Dundas, Ont.

Proprietors and Sole Manufacturers for the Dominion of the celebrated **CLIFF-WARDLAW GENERATORS.**

The London Machine Tool Co., LONDON, ONT.
MANUFACTURERS *GENERAL MACHINERY...*

Having recently sold our patterns and plant to the A. R. Williams Co., of Toronto, retaining only such machines as are useful in our business, we beg to say that we are rapidly putting in New Machinery, from new and improved designs, and are now in a position to receive orders for all Standard Tools for Metal Working in all branches. It will be our aim, by personal supervision of the product of work, with expert men of large experience at the head of each department, to turn out nothing but first-class work at moderate prices. And as we intend to deal directly with the manufacturers, they will be enabled to get their machinery at first cost.

As we shall not be able to personally visit each manufacturer, it is for this purpose that we publish this advertisement. This is our agent who is going about to solicit a share of your patronage. We are thankful for the patronage extended to us in the past, and hope that we may secure an extension of the favors for the future.

All correspondence relating to the following Tools will be promptly answered, viz:

- LATHES—Engino, Gap, Break, Turret, Fox, Spinning, Etc.
- PLANERS—Standard, Crank, Plato, Etc.
- DRILLS—Standard, Sensitive, Multiple, Radial, Etc.
- MILLING MACHINES—Lincoln, Plain, Universal, Etc.
- SHAPING MACHINES—Whitworth, G. & E., Rack-Driven, Etc.
- HAMMERS—Steam, Sandago Drop, Stiles Drop.
- BULL-DOZERS for all purposes.
- PUNCHES AND SHEARS for Plato, Angles, Channels, Gauges, Etc.

And we would call special attention to our **PRESSES for Cutting, Stamping, Drawing Wiring, Riveting, Etc.** We shall also esteem it a pleasure to give quotations on Special and General Machinery in our line.

LONDON MACHINE TOOL CO.

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

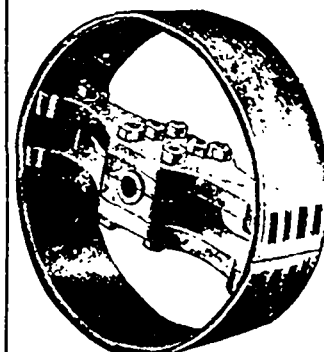
THE GARTSHORE-THOMSON PIPE & FOUNDRY CO.
Limited



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.



**BENT WOOD SPLIT PULLEYS,
RIM... (REID'S PATENT).**

The Strongest, Lightest and Best Belt Surface in the World

No Glue, no Nails in Rim like Segment Rim Pulleys, to be affected by Steam, Dampness or Moist Temperature.

EVERY PULLEY GUARANTEED.

The Reid Bros. Manufacturing Co., of Toronto,
257 King St. West, Toronto.

THE IRON INDUSTRY.

After having said some pleasant things about the Hamilton Blast Furnace Company, The Globe continues:—

The Ontario Rolling Mills are running day and night, and have been for two years or so, except during the time of rebuilding after the fire last spring. The company intend to shortly install a horseshoe plant, and to employ fifty more men than at present, the City Council having recently fixed its assessment at \$1,200 for ten years, in view of this new industry. The company paid \$1,054 taxes last year, but is willing to pay the \$1,200 for the decade, including the new plant, etc.

(Duty on rolled iron, such as made by this company, \$7 per ton; horseshoes, thirty per cent. The Ontario Rolling Mills Company

are members of the Canadian Manufacturers Association).

FURNITURE

Messrs J Hoodless & Son's furniture manufactory is an old established business, but in the past year Mr. John Hoodless has branched out into an entirely new line that promises to develop into a big thing. This is the manufacture of artistic interior hard-wood work for mantels, stairways, quartered oak partitions, floorings, etc. Samples of the firm's artistic work may be seen in the Royal College of Dental Surgeons, Toronto; Stock Exchange, Montreal, Sun Life Insurance Co's new building, this city, and in the New Royal Hotel. The Hoodless factory is running till ten o'clock every night, and even at that it is almost impossible to keep up to the orders.

(Duty on furniture, thirty per cent.)

TOBACCO AND CIGARS.

The Geo. E. Tuckett, Son & Company, tobacco and cigar manufacturers, appear to have confidence in the continuance of the present revival of trade. The factory on Queen street north, where all grades of smoking tobacco, also chewing tobacco, are manufactured, is a busy place, running full time now, and the cigar factory on King street west is likewise a scene of great industry. In addition to the present big enterprise of the Messrs. Tuckett, they are branching out into the manufacture of Canadian leaf tobacco, and for this purpose are constructing a fine five-floor brick building adjoining the Queen street factory, at a cost of about \$25,000. It is their intention to open up the new factory next spring, when they will make chewing and smoking tobacco from the Ontario leaf, new machinery being

JOHN J. KELLER & CO.

104 and 106 MURRAY ST.
NEW YORK

220 Church St., Philadelphia.

135 Pearl Street, Boston.

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

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

MANUFACTURED BY

JOHN R. GEIGY & CO.
BASLE, SWITZERLAND

**LIGHT YOUR
FACTORY WITH**

LUXFER PRISMS

The latest device for

LIGHTING

dark rooms and
offices

By Daylight

For catalogue
and estimate-
write to

**Luxfer Prism
Co'y, Limited.**

58 Yonge Street, - **TORONTO.**



**Hamilton
Acetylene
Gas
Machine.**

*SIMPLE, ECONOMICAL, DURABLE
AND SAFE.*

Adapted for Private Houses, Offices, Stores,
Churches, or any building where a clear,
bright and steady light is required.

300 in Use in the Dominion of Canada.
Address Communications to

**Hamilton Acetylene Gas
Machine Co., Limited,**
71 York Street, HAMILTON.

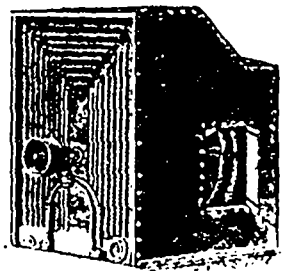
HEATING . . .

The Fan System of Steam Heating for Heating
of Factories and all Classes of Buildings.

DRYING . . .

Appliances for Drying

**Lumber, Brick, Wool, Cloth,
Hair, Soap, Glue, etc.**



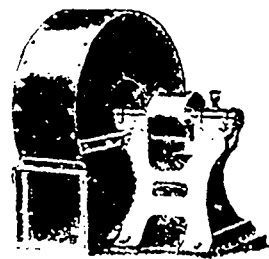
Heater and Housing.

VENTILATING . . .

Ventilating Fans for removal of Dust, Foul Air, etc.

WRITE FOR CATALOGUE AND PRICES.

**McEachren Heating and
Ventilating Co., GALT, ONT.**



Fan.

F. E. ATTEAUX & CO.

53 Colborne Street
Toronto,

15 Lemoine Street, Montreal.

Boston, New York,
Philadelphia, Chicago, and
Gloversville, N.Y.

**Dyewood Extracts,
One Dip Alizarines,
Aniline Colors,
Dyestuffs and
Chemicals.**

provided for the purpose. In view of the fact that this year Essex county produced about 7,000,000 pounds of tobacco, besides what was grown in the Niagara district, it looks as though the Tuckett factory was needed to make use of the leaf. There is a decided demand for Canadian tobacco, however, the duty being the cause. While the duty on foreign leaf is thirty-nine cents, it is only six cents on the Canadian tobacco, and there is a call for the cheaper weed. The Tuckett company at present employs 350 hands, and when the new factory opens up in the spring probably fifty more hands will be taken on.

(Duty on cigars, \$3 per pound and twenty-five per cent.; cut tobacco, fifty-five cents per pound; manufactured tobacco, fifty cents per pound).

KNIT GOODS.

One of Hamilton's important manufacturing concerns is that of the Eagle Knitting Company. The business, which is conducted by Messrs. J. R. Moodie and John Moodie, jr., is probably the biggest of the kind in Canada, and for a year the factory has been running steadily day and night, except Saturday and Sunday nights. The Eagle Knitting Company has for a long time made a specialty of ladies' underclothing, and to-day its goods are among the best on the market. It was the first company to manufacture men's hibernian and fleeced underwear in Canada, and it is up-to-date in every particular. The tariff of the present Government has benefitted the Messrs. Moodie on the wool material, which comes from France, England, Belgium and other European countries. The Canadian yarn is little used by them, it being inferior in quality. So great

has been the growth in their business that they are cramped for space in their present quarters on Main and McNab streets, and they contemplate doubling their plant soon. At present they employ 400 hands, having two shifts, whose hours of labor are so arranged that no employe is compelled to work more than sixty hours a week. If the proposed extension to the factory is carried out, it will mean the employment of 200 additional hands, or 600 all told. The idea is to put in 100 more ribbed machines for the making of ribbed underwear, and to go into this particular branch of the industry more extensively than ever.

(Duty on knit goods such as is made by the above mentioned concern, thirty five per cent. Cotton yarns used by them in the manufacture of undershirts, drawers, hosiery, etc., No. 40 and finer, free. Duty on yarns coarser than No. 40, twenty-five per cent. No wonder the tariff that gives free yarns to this concern suits them. The reason why they do not use Canadian yarns is that no yarn is made in Canada as fine as No. 40, their trade requiring finer yarns. It is not true, however, that Canadian yarn is of inferior quality. It is, considering the fineness of it, equal to any made anywhere else).

It is reported that the Canada Steamship Company, of which Sir Robert G. Head, of London, England, is president, and which is now organizing a trans-Atlantic line between Milford Haven, Wales, and Pasphebiac, has just prepared designs for the construction of an elevator at the latter place. It is intended to build it of corrugated iron. Its capacity will be one million bushels of grain. The construction will begin shortly.

The Pulsometer
STEAM PUMP

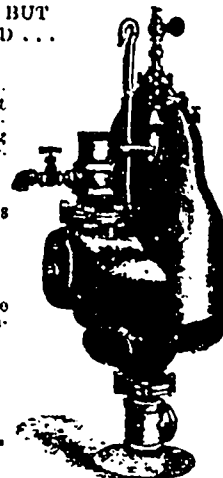
OFTEN IMITATED BUT NEVER EQUALLED . . .

The handiest simplest and most efficient steam pump for general Mining, Quarrying and Contractors' purposes.

Muddy or Crilly Liquids Handled without wear.

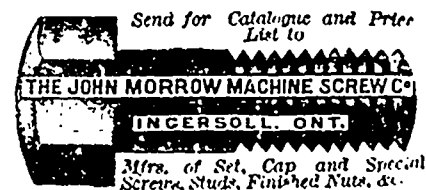
Descriptive Catalogue with prices furnished on application.

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



A. R. Williams Machinery Co.

Toronto and Montreal,
Selling Agent for Canada.

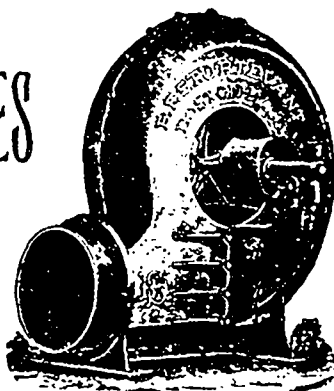


The Sturtevant
IMPROVED PORTABLE FORGES

TWENTY-FIVE SIZES AND STYLES

HAND POWER AND BELT POWER **Hand Blowers**

FOR FORGE:



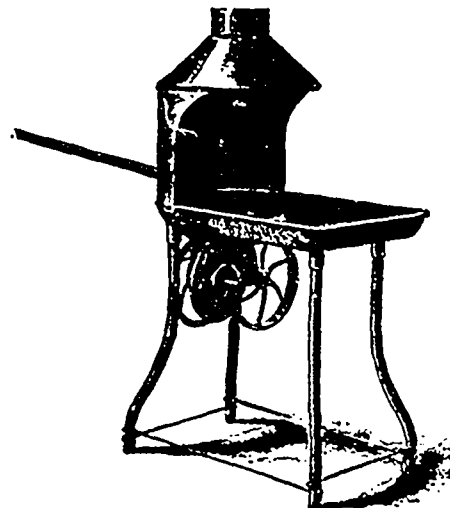
The Sturtevant
STEAM : FANS

For BOILER FIRES

FORCED OR INDUCED DRAUGHT

MANUFACTURED BY

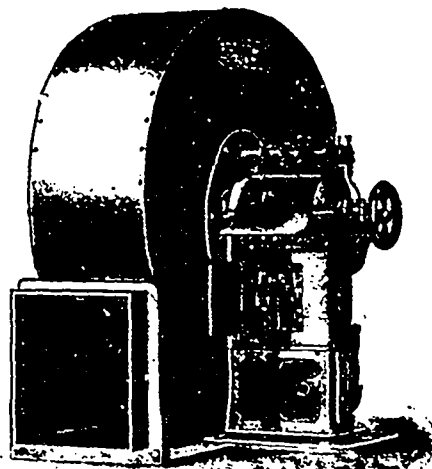
B. F. STURTEVANT CO.
Boston, Mass., U.S.A.



The STURTEVANT
Blowers
and Exhausting
FANS

Known as the Monogram Pattern,
For Blowing Boilers and Fires, Exhausting Dust and Gases.

SEND FOR CATALOGUES



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

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

MERCHANTS AND CAN MANUFACTURERS AND SHOULD

ADVERTISE EFFECTIVELY

At Lowest Cost.
ESTIMATES FREE

SPECIALIZE.
Correspondence Invited

C.A.C. Browne,
Advertising Agent.

145, Fleet Street LONDON, ENGLAND.
Solo Agent for Advertisements
in Great Britain for this journal.

Dominion Oil Cloth Co.

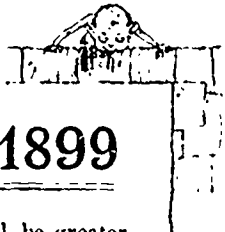
Manufacturers of....

OIL-CLOTHS of Every Description

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

Office and Works

Cor. St. Catharino and Parthonsals Sts.,
MONTREAL, Que.



For **1899**

Our efforts will be greater than ever to improve that reputation obtained for the high quality of our goods....

Engineers' and Plumbers' Brass Work.

GENERAL SUPPLIES and SPECIALTIES.

TRADE MARK
J. M. T.

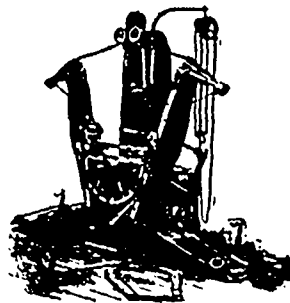
The James Morrison Brass Mfg. Co., LIMITED.

Toronto

AUTOMATIC BENDING MACHINE.

The accompanying illustration is of a 12-inch Automatic Rim and Felloe Bending Machine, manufactured by the Defiance Machine Works, Defiance, Ohio.

Regarding this machine the makers say that it has been designed to meet all the requirements for the successful and economical bending of felloes for carriage and wagon wheels wagon hounds, reaches and other similar classes of bent wood stock.



Twelve inch Patent Automatic Rim and Felloe Bending Machine.

It is capable of bending the lightest felloes used for carriage wheels, up to the heaviest work required for farm wagon, truck and artillery wheels, bending hard wood as large as five inches in thickness, twelve inches in width, with adjustments sufficient to accommodate changes from twenty-four inches to seventy-two inch circles.

The frame is a massive casting, and is substantial in all its parts. Its total height is nine feet nine inches, and the floor space necessary to accommodate it is, length, fourteen feet; greatest width, six feet; lesser width, four feet. A foundation of masonry is not required under the machine, as an average floor well supported is sufficient.

It embodies an entirely new feature in the application of power, the object being a drastic longitudinal stress upon the timber to be bent. This is secured by means of an elastic cable railway held taut by four powerful springs which are capable of exerting an aggregate energy of six thousand pounds. Upon this railway roll the trucks by which are carried the inner or lower, ends of the levers, or bending arms, long experi-

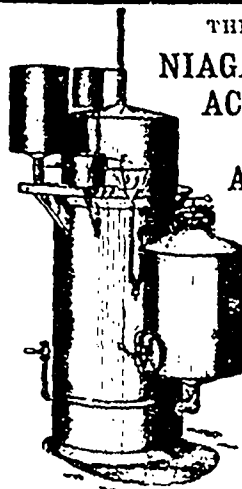
once in the art of bending timber proving this action to be necessary to secure a shape in satisfactory agreement with the form upon which the timber is bent.

The levers or bending arms form a level table when down, and are covered with a master strap to receive the straight material. They are of cast iron, made hollow and strongly reinforced. They are planed true on the upper surfaces and otherwise fitted up with extreme care. The head blocks mounted upon their upper surfaces are furnished with an automatic eccentric releasing device to release the augmenting end thrust which occurs during the process of bending. This is an office that cannot be properly performed by any other than automatic means; the cable chain which operates the bending arms or levers being fastened to their outer ends, passing over the sheaves at the top of the frame downward to a drum on which the chain is wound.

The chain drum is driven by a powerful worm screw and gear. To the outer end of the screw shaft two frictional clutch pulleys are fitted, one used for running the bending levers up, and it is driven with a six inch bolt, the other with a four inch bolt for backing the arms down, and they should revolve in opposite directions. The vertical lever shown is used to control the frictions and start, stop or back down the bender arms.

The forms for the bending of felloes are of cast iron, turned true, and with a collapsible section at each end of the arc to secure the easy removal of the stock after bending, and enabling the use of stock about nine inches shorter than can be bent with an ordinary form, which effects a large saving in material. A wooden cap is used on top of the form, which is of the same length as the diameter of the form, and is always taken off with the bent wood, requiring one cap for each batch of timber bent, and it must be left in until the batch of timber is cold and thoroughly set, so as not to spring when the shackles is taken off. The forms are held on a sliding head stock, having a vertical movement, by means of which the timber can be firmly held at the initial point of bending, thus securing it

THE NIAGARA FALLS ACETYLENE GAS APPARATUS



Patented in Canada, United States and Great Britain.

This is the only machine perfectly automatic in its action, requiring little or no attention. Machines made in 10 sizes costing \$15 and upwards.

Acetylene Gas the Coming Light.
CHEAPER THAN ELECTRIC LIGHT
COAL GAS OR COAL OIL

For Private Dwellings, Business Houses Churches, Public Halls and Offices.

For particulars write to the
NIAGARA FALLS ACETYLENE GAS MACHINE CO.
NIAGARA FALLS, ONT. LIMITED.

Sun Lighting Machine.

ACETYLENE GAS.



The Acme of Perfection in Lighting

At the Minimum of Cost.

Suitable for any place where Artificial Light is required. Dwellings, Stores, Churches, Factories, Hotels, Street Lighting, etc.

Write for Catalogue.

THE Acetylene Lighting Co.

(LIMITED).

LONDON, ONTARIO.

The Canadian Manufacturer

Toronto, Canada,

Is the OFFICIAL ORGAN of the

Canadian Manufacturers' Association,
which represents all the Important Manu-
facturing Industries of the Dominion of Canada.

Published Twice a Month.

SUBSCRIPTIONS:

Canada and United States, \$1.00 per year.
All other Countries in Postal Union, Eight
Shillings Sterling per year, postage paid.

Importers in any country of the world desiring
accurate information regarding any Canadian
manufacturing industries and their products
should correspond with

THE CANADIAN MANUFACTURER,
TORONTO, CANADA.

No Charge Made for Giving Information.

WREYFORD & CO.
McKinnon Building, Toronto.
Agents for

ENGLISH, COLONIAL AND GERMAN
MANUFACTURERS OF

WOOLENS, HOSIERY, SHIRTS, ETC.
Reg. Cable Address "STRUKO," Toronto.
Correspondence Invited.

TORONTO MACHINE SCREW CO.

Manufacturers
of



**Hexagon
AND
Square
Head Cap
Screws.**

Steel and Iron
Set Screws,
Hanger and
Plumber Bolts,
Studs, etc.

Send for Price List
and Discounts.



109; Adelaide St. W. - TORONTO.

**PATENTS
PROMPTLY SECURED**

Write today for a free copy of our interesting books
"Inventors Help" and "How you are swindled"
We have extensive experience in the intricate patent
laws of 60 foreign countries. Send sketch, model or
photo for free advice. **MARION & MARION,**
Experts, New York Life Building, Montreal, and
Atlantic Building, Washington, D. C.

**WOOD ENGRAVING
PHOTO ENGRAVING
HALF TONES**

OR ANY CLASS OF ENGRAVING FOR ADVERTISING
PURPOSES, CATALOGUES, MAGAZINES, &c.

J. L. JONES ENG. CO.
6-8-10
Adelaide St. W. TORONTO.

against fracture on the outer arc, and pre-
venting it from retreating from the form at
that point. After the operation of bending
is completed the machine can be set to run
down to the position for the succeeding
operation and automatically arrested.

A swinging crane with hoist attached is
furnished with each machine, which enables
the operator to easily place the forms in or
out of the machine, and when not in use is
swung out of the way.

The capacity of this machine is sufficient
to bend about 2,500 felloes 1 1/2 inch, or about
1,200 wagon hounds in ten hours, and other
classes of work in proportion. Timber to
the amount of twelve inches in width, either
in one piece or pieces aggregating that
amount, can be bent at one operation.

The friction pulleys are as follows. One
for running the arms up twenty four inch
by six inch face; pulley for running down
eighteen inch by five inch face. Speed of
pulleys 180 to 200 turns a minute. Where
heavy timber predominates the lower rate of
speed is used.

For further information enquire as above.

NEW COLORS.

Messrs. W. J. Matheson & Co., New
York and Montreal, have sent us the follow-
ing memoranda regarding some of their new
colors:

Diaminogene CF, patented. This new
color resembles our well-known Diaminogene
B in its properties, producing dyeings pos-
sessing the valuable fastness and beauty of
the older product. It is slightly redder in
shade, and hence has greater covering power,
and the cost of dyeing is considerably re-
duced. It is dyed by the diazotizing and
developing process in the same manner as
Diaminogene B.

Naphtindone BR, patented. This new
dyestuff is a member of the Naphtindone
series, being much brighter and bluer than
Naphtindone BB, which has found such
extended use in the dyeing of cotton pieces
and yarn. Its solubility is excellent, and it
dyes with great evenness. It is not adapted
for the red-discharge effects that can be
produced with the Naphtindone BB. Its
method of application is the same as is em-
ployed for the other members of the Naph-
tindone series.

Diamino Black RMW, patented.—This
new color is particularly adaptable for the
dyeing of cotton burrs in cotton and wool
mixed goods. It can be used successfully
in the dyeing of mixed goods of the lowest
quality, covering the burrs completely, and
producing results of perfect uniformity. Its
cheapness, valuable properties and ease of
application make it the most interesting dye-
stuff in the market for this class of work.

Alizarino Black WA, patented.—This new
color resembles our Alizarino Black 4B in
its properties and method of application.

Alizarino Black 73038, patented.—This
product also resembles our Alizarino Black
4B, but gives somewhat redder shades.

Alizarino Black 67221, patented.—This
new color differs but slightly from our
Alizarino Black 4B.

Acid Yellow Crystals.—This dyestuff is
considerably stronger and purer than our
Tropalino 00 118, which it otherwise re-
sembles in properties and dyeing methods.

Messrs. Ogilvie & Copeland will probably
build a new flour mill at Midland, Ont.

Canadian Advertising is best
done by **The E. DESBARATS
ADVERTISING AGENCY, Montreal.**

A. C. NEFF
CHARTERED ACCOUNTANT
Room 600 McKinnon Bldg.,
Tel. 1330. TORONTO.
Audits and Investigations a Specialty.

GEORGE WHITE-FRASER.
Member Can. Soc. C.E.
Member Am. Inst. Elec. Eng.
CONSULTING and Electrical Engineer.
CONSTRUCTING Railways, Lighting, Power Trans-mis-sions,
Factory Plants, Reports, Specifications, Tests,
18 Imperial Loan Building,
TORONTO.

H. F. STRICKLAND,
Electrical Contractor,
35 ADELAIDE ST. E., TORONTO.
Telephono 1838.
SPECIALTY: Electric Wiring, by skilled men.
All work done according to latest methods, at
lowest possible prices. Complete Isolated Plants.

JOHN J. GARTSHORE,
19 Front St. West, Toronto.
RAILWAY, TRAMWAY, and
...Contractors' Supplies
METALS and SCRAP IRON
Bought and Sold.

MALCOLM MILLS CO.
Manufacturers of
Fancy Twist Yarns, in Worsted, Silk,
Cotton, etc. Polished Threads.
Silk Nolls Yarns.
Metal Threads and Tinsols.
MILLS: Frankford, Pa.
OFFICE: 229 Chestnut Street, Philadelphia.

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

BOILERS.
YOU WANT THEM. WE MAKE THEM
WRITE FOR PRICES
BANNERMAN & FINDLATER,
Boiler Makers, OTTAWA, ONT.

WANTED.
INVENTORS having PATENTS to sell, either
United States, Canadian, or English, ad-
dress for particulars to
H. F. LOWE,
MECHANICAL ENGINEER,
care of British-American Patent Investment
Co., McKinnon Building, Toronto, Can.

J. ALEX. CULVERWELL,
Electrical and Mechanical
BROKER,
Special Agent Royal Victoria Life,
5 King Street West. - - TORONTO.

CANADA IN NEW ZEALAND.
We are Importers of Canadian Goods
and Manufacturers' Agents.
The YEREX & JONES CO.,
WELLINGTON, - NEW ZEALAND.
REFERENCES—The Union Bank of Australia
Limited, Wellington.

A. KLIPSTEIN & Co.,

122 Pearl Street, New York.

**Anilines,
Dyestuffs
—and—
Chemicals**

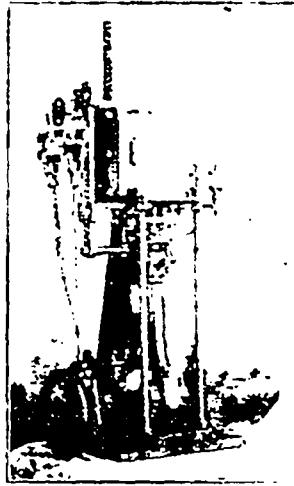
DELIVERY MADE AT NEW YORK,
MONTREAL OR HAMILTON.

WRIGHT & DALLYN

AGENTS,
Hamilton, Ont.

ALBERT BELL ENGINE WORKS

DUNNVILLE, ONT. Maker of
YACHT ENGINES, 1 H.P. to 50 H.P.
Safety Water Tube BOILERS
PROPELLER WHEELS
Stationary Engines and Boilers



WRITE FOR CIRCULARS



**Mills,
Factories,
Warehouses**

Are best protected
against fire by being
equipped with

**Eddy's Indurated Fibreware
FIRE PAILS**


We are the only manufacturer in Canada
of this celebrated ware.

The E. B. EDDY CO., Limited.
Hull, Montreal, Toronto



Canoes for Alaska and Gold Regions

This cut is one of our 19 foot, No. 6888
Canoes, and shows carrying capacity.
Write for our catalogue and discounts.
Peterborough Canoe Co., Limited, Peterborough



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

Address
Toronto Fence & Ornamental Iron Works
23 Adelaide St. West, Toronto.

BROWN & CO.
MANUFACTURERS
Square and Hexagon
HOT PRESSED NUTS.

PARIS, - ONT.

Paris Electro Plating Co.
PARIS STATION, ONT.
Manufacturers of
Stove and Piano Trimmings and Novelties
Fine Grey Iron Castings, a Specialty.
Nickel, Copper and Brass Electro Plating.
WRITE FOR PRICES.

FIRSTBROOK BROS.
Dovetail and Packing Boxes
Top Pins, Side Blocks and Cross Arms. Wood
Printers, Etc.
Cigar Boxes. Shipping Cases.
TORONTO, ONTARIO
Write for Prices.

PROGRESSIVE MANUFACTURERS
OF THE
BLACKWELL UP-TO-DATE VARNISHES
For Finishing Planes, Carriages, and
Railway Coaches.
BLACKWELL & CO., TORONTO



Often in the morning there comes a feeling of weariness, indescribable; not exactly ill, nor fit to work, but too near well to remain idle. A Ripans Tabule taken at night, before retiring, or just after dinner, has been known to drive away that weariness for months.

WANTED—A case of bad health that RIPPAN'S will cure. Send free copy to Ripans Chemical Co., No. 100 Prince Street, New York. For 13 many years, Ripans' Tablets have been sold in 250 packages for 48 cents, may be had of all druggists who are selling it. Each a standard one to be at a moderate price. They banish pain and prolong life. One gives relief. Note the word RIPPAN'S on the packet. Arrest no substitute.

Smith Wool-Stock Co.

219 FRONT ST. E., TORONTO.

Makers of

**WOOL STOCK,
SHODDIES, Etc.**

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

GEO. PATTINSON & CO.

PRESTON, - ONTARIO.

Manufacturers of

FINE AND **TWEEDS**
MEDIUM

Guelph Woolen Mill Co.,

QUELPH, ONT. LIMITED.

Manufacturers of

**Underwear, Hosiery, Wheeling,
Fingering and Worsted Yarns,
Eiderdown Flannel, Etc.**

Selling Agents—Donald Fraser, Montreal.
E. H. Walsh & Co., Toronto.

PENMAN MANUFACTURING CO.

PARIS, ONT. LIMITED.

Manufacturers of

**Hosiery, Shirts, Drawers,
Glove Linings and Yarns.**

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

**ROSAMOND
WOOLEN CO.**

ALMONTE, ONT.

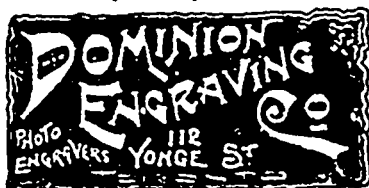
**Fine Tweeds, Cassimeres,
and Fancy Worsted
Suits and Trouserings.**

**JOHN HALLAM
TORONTO.**

WHOLESALE DEALER IN

DOMESTIC and FOREIGN WOOLS
Sumac, Japonica, etc.

Reproductions Made for Eight
Cents per Square Inch.



Half Tones Made Direct from
Photos.

It Leads Them All.

THE OLDEST,
THE LARGEST,
THE SAFEST,
THE CHEAPEST,

CANADIAN LIFE INSURANCE COMPANY IS

THE CANADA LIFE ASSURANCE COMPANY.

CAPITAL AND FUNDS OVER \$13,000,000.

Write for
Prospectus.

A. G. RAMSAY,
PRESIDENT.

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

WOOL.

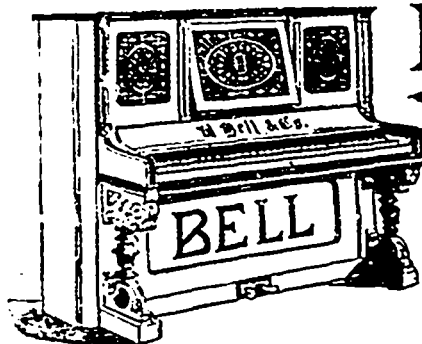
A. T. PATERSON & CO.,

...Merchants...

35 FRANCOIS XAVIER STREET,

Represented by
MR. DAVID GUTHRIE.

MONTREAL.



BELL

HIGH-CLASS

INSTRUMENTS

USED AND RECOMMENDED
BY

LEADING MUSICIANS.

Send for Catalogue.

THE BELL ORGAN AND PIANO CO.

(LIMITED)

QUELPH, - ONTARIO.



**CROSBY STEAM GAGE
AND VALVE CO.**

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

BRANDEN PATENT PUMP VALVES

CLARK'S LINEN FIRE HOSE AND ADJUSTABLE COUPLINGS

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

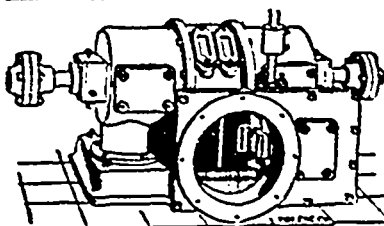
Gold Medal Paris Exposition, 1889

Ten Highest Awards Columbian Exposition, 1893

Main Office and Works..... **BOSTON, MASS, U.S.A.**

Underwriter

Branch Offices at New York, Chicago, and London, Eng.



Horizontal Type.

"LITTLE GIANT"

TURBINE

....FOR ALL PURPOSES....

HORIZONTAL AND VERTICAL.

BUILT IN 44 SIZES.

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

Water Wheel Governors, Machine Dressel Gearing, Pulleys, Shafting and Bearings.
Catalogue and Gear List mailed on application. Correspondence Solicited.

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

COAL and COKE

Steam Coals
Blacksmith Coals
Foundry Coke
Crushed Coke

SHIPMENTS
MADE
DIRECT
From Mines

Write for
Quotations.

JAMES H. MILNES & CO.

78 Queen St. East, - Toronto.

BELLHOUSE, DILLON & CO.

SOLE AGENTS FOR THE
UNITED STATES AND CANADA.

The West Indies Chemical Works
LIMITED, JAMAICA.

MAKERS OF THE FINEST QUALITY OF
EXTRACTS OF
LOGWOOD.

28 Colborne St. - - TORONTO.
30 St. Francois Xavier St., MONTREAL.
20 Cedar St., - - NEW YORK.



The Ontario . . . Malleable Iron Co.

(Limited)

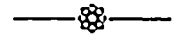
Manufacturers of . . .

MALLEABLE IRON Castings to Order for all kinds of

AGRICULTURAL IMPLEMENTS .

....AND....

Miscellaneous
Purposes



OSHAWA, - - ONT.

W. A. JOHNSON ELECTRIC CO.

134 King Street West, Toronto, Canada.

**ELECTRIC ENGINEERS,
MANUFACTURERS,
CONTRACTORS**

We Contract for Complete
Installation of all apparatus
for Long or Short Distances

**ELECTRIC POWER
TRANSMISSION.....**

FOR POWER AND LIGHT.

For Municipalities, Mills, Factories, Railroads and Mines, including
*Polyphase or Direct Current Generators,
Tesla Induction Motors,* if necessary Hydraulic or Steam Plant.

23 Years' Experience in Electrical and Mechanical Work enables us
to guarantee results.

THE CANADA SWITCH & SPRING CO., LIMITED.

Manufacturers of
..... SPECIALTIES FOR

*Steam and
Electric Railways,*

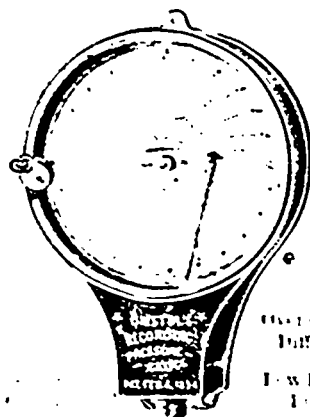
SPRINGS, STEEL CASTINGS,
FROGS, FORGINGS,
TRUCKS FOR ELECTRIC RAILWAYS, ETC.

*INTERLOCKING SWITCH
and SIGNAL PLANTS.*

SOLE AGENTS OF Montreal, Canada, for
L. & C. L. L. Co., Ltd.

CANAL BANK, POINT ST. CHARLES,
MONTREAL.

BRISTOL'S Recording Instruments



For
Pressure,
Tempera-
ture and
Electricity.

Over One Hundred
Different Varieties.
Low Price and
Fully Guaranteed.

THE BRISTOL CO.
WATERBURY, CONN., U.S.A.

SMITH'S FALLS

**Malleable
Iron
Works . .**

00000

CAPACITY 2,000 TONS.

00000

WILLIAM H. FROST

PROPRIETOR

SMITH'S FALLS,

ONTARIO, CANADA.

CARRIER, LAINE & CO. | Dredges,

SAW MILL
MACHINERY,

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