CANADA—DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
MINING, METALLURGICAL AND CHEMICAL BRANCH

MANUFACTURES OF THE NON-METALLIC MINERALS IN CANADA

1924

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STATISTICS OF PRODUCTION

In the collection of production data, the Dominion Bureau of Statistics makes a division between primary and secondary production. In the first-named class, there are separate sections for the collection of statistics on (a) **Agricultural Products,** (b) **Furs,** (c) **Fish,** (d) **Forest Products,** (e) **Mineral Products.**

In the second are included (a) **Manufacturing** and (b) **Construction.**

Manufacturing is subdivided into nine groups of industries, producing concerns being classified according to the principal component material of their major products. For example, makers of leather goods are classified under "Animal Products"; the pulp and paper industry, under "Wood and Paper," etc. An outline of the scheme of classification in use for manufacturing industries is given below:

Manufactures of:

(1) **Vegetable Products,** including—Coffee and Spices; Cocoa and Chocolate; Preserved and Canned Products; Pickles, Vinegar and Cider; Flour and Cereals; Bread and other Bakery Products; Macaroni and Vermicelli; Distilled and Brewed Liquors and Wines; Rubber Products; Starch and Glucose; Sugar; Tobacco Products; Linseed Oil and Oil Cake.

(2) **Animal Products,** including—Fish and Fish Products; Dairy Factory Products; Meat and Meat Products; Leather and Leather Products; Furs and Fur Products.

(3) **Textiles and Textile Products,** including—Cotton Textiles (Cloth, Yarn, Thread and Waste); Woollen Textiles (Cloth, Yarn, Blankets, Felt and Waste); Silk Products; Factory-Made Clothing; Carpets, Rugs and Mats; Cordage, Rope and Twine.

(4) **Wood and Paper,** including—Pulp and Paper Mill Products; Paper Goods; Printing, Publishing and Lithographing; Saw and Planing Mill Products; Furniture; Carriages, Wagons and Sleighs; Wooden Containers; Woodenware; Turned Wood Products; and the Output of Similar Wood-Using Industries.

(5) **Iron and Steel and their Products,** including—Pig Iron and Ferro-Alloys; Steel and Rolled Products; Castings and Forgings; Boilers and Engines; Agricultural Implements; Machinery; Automobiles; Auto Accessories; Bicycles; Railway Rolling Stock; Wire and Wire Goods; Sheet Metal Products; Hardware and Tools; Miscellaneous Iron and Steel Products.

(6) **Manufactures of Non-Ferrous Metal Products,** including—Aluminium and Aluminium Ware; Brass and Copper Products; Lead, Tin and Zinc Products; Precious Metals Products; Electrical Apparatus and Supplies; Miscellaneous Non-Ferrous Metal Products.

(7) **Manufactures of Non-Metallic Mineral Products,** including—Aerated Waters; Asbestos and Allied Products; Cement Products and Sand-Lime Brick; Coke and By-Products; Glass (blown, cut, ornamental, etc.); Illuminating and Fuel Gas; Products Made from Imported Clay; Monumental and Ornamental Stone; Petroleum Products; Miscellaneous Manufactured Non-Metallic Mineral Products, including (a) Artificial Abrasives; (b) Abrasive Products; (c) Artificial Graphite and Electrodes; (d) Gypsum Products; (e) Mica Products.

(8) **Chemicals and Allied Products,** including—Coal Tar and its Products, Acids, Alkalies, Salts and Compressed Gases; Explosives, Ammunition, Fireworks and Matches; Fertilizers; Medicinal and Pharmaceutical Preparations; Paints, Pigments and Varnishes; Soaps, Washing Compounds and Toilet Preparations; Inks, Dyes, and Colours; Wood Distillates and Extracts; Miscellaneous Chemical Products including (a) Adhesives, (b) Baking Powder, (c) Boiler Compounds, (d) Celluloid Products, (e) Flavouring Extracts, (f) Insecticides, (g) Polishes and Dressings, (h) Sweeping Compounds, (i) Chemical Products n.e.s.

(9) **Miscellaneous Products,** including—Brooms and Brushes; Electric Light and Power; Musical Instruments, etc.

The statistics of manufactures are also classified according to the **use** or **purpose** of the end product as follows:—

(1) **Food,** including—Breadstuffs; Fish; Nuts; Fruits and Vegetables; Meats; Milk Products; Oils and Fats; Sugar; Infusions; Miscellaneous.

(2) **Drink and Tobacco,** including—Beverages, alcoholic; Beverages non-alcoholic; Tobacco.

(3) **Clothing,** including—Boots and Shoes; Fur Goods; Garments and Personal Furnishings; Gloves and Mitts; Hats and Caps; Knitted Goods; Waterproofs; Miscellaneous.

(4) **Personal Utilities**, including—Jewelry and Time-Pieces; Recreational Supplies; Personal Utilities, n.e.s.

(5) **House Furnishings.**

(6) **Books and Stationery.**

(7) **Vehicles and Vessels.**

(8) **Producers' Materials,** including—Farm Materials; Manufacturers' Materials; Building Materials; General Materials.

(9) **Industrial Equipment,** including—Farming Equipment; Manufacturing Equipment; Trading Equipment; Service Equipment; Light, Heat and Power Equipment; General Equipment.

(10) **Miscellaneous.**

PREFACE

Supplementing the reports issued by the Bureau on the primary production of metals and minerals, there are several other reports each of which contains detailed statistics relative to a particular group of industries using mineral products as their raw materials.

The present report deals with the manufactures based on the non-metallic minerals. Last year the report on this subject covered the five-year period 1919-1923; the present report provides corresponding data for the year 1924, but also contains comparative figures for preceding years.

The report covers such leading industries as coke-making, the production of illuminating and fuel gas, the refining of petroleum, the manufacture of glass, as well as several others of less commercial importance such as the manufacture of aerated waters, the production of sand-lime brick, concrete tile and blocks, the fabrication of brake linings and other commodities from asbestos and magnesia, and the manufacture of artificial abrasives and graphite electrodes by means of the electric furnace. Certain other industries such as the clay products industry in all its phases, (brick and tile, clay sewer pipe, firebrick, fireclay products, stoneware, and pottery); the portland cement industry; the manufacture of lime; and the production of salt are also included though often regarded as primary mineral industries as in most cases their raw materials are not recognized as articles of trade. For example, brick-making plants are usually located in close proximity to deposits of suitable clay, the raw material being obtained on the property at no further cost than that of the labour required in digging operations; thus it may be said that a brick is the first commercial product obtained from the clay or it may also be said that a brick is a manufactured product. It is thought that the inclusion of these industries in the present report as well as in the report on primary mineral production will be of value as giving a comprehensive purview of the subject of "Manufactures of the Non-Metallic Minerals of Canada." The duplication is of course eliminated from all general production totals.

On the next preceding page there is a brief note on the Bureau's classification of industries for the collection of production statistics, which shows the place of the present report in the general scheme.

As in the previous issue there has been included a list of the names and addresses of the reporting firms arranged by industries and by provinces.

The present report was prepared by Mr. H. McLeod, B.Sc., under the direction of Mr. S. J. Cook, B.A., A.I.C., F.C.I.C., Chief of the Mining, Metallurgical and Chemical Branch.

R. H. COATS,
Dominion Statistician.

DOMINION BUREAU OF STATISTICS,
OTTAWA, June 4, 1926.

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S. J. COOK, B.A., A.I.C., F.C.I.C., Chief of the Mining, Metallurgical and Chemical Branch.

MANUFACTURE OF THE NON-METALLIC MINERALS IN CANADA, 1924

CHAPTER ONE

GENERAL REVIEW

(a) Summary

Products manufactured from non-metallic minerals in Canada during 1924 were valued at $111,151,828 as compared with $113,453,012 in the preceding year; this figure includes clay products worth $1,879,769 from plants using imported clay as raw material. Previous to 1924 these data were not included in the non-metallic products. Raw materials costing 61·7 million dollars were converted into commodities having a selling value of 111·2 million dollars creating a value of 49·5 million dollars added by manufacturing. The aerated waters industry, the manufacture of asbestos and allied products, the glass industry, and the monumental and ornamental stone industry maintained the production values of 1923; illuminating and fuel gas, and the miscellaneous non-metallic mineral products industries declined slightly, the manufacture of cement products and sand-lime brick, and the coke and its by-product industry showed a considerable falling-away in the value of outputs; petroleum refining improved considerably with a production worth $49,411,067, an increase of 3·1 million dollars over 1923. The entire industrial group with a total capitalization of $161,390,016 employed 16,938 men and paid 21·6 million dollars in wages and salaries.

Of the 814 plants in Canada reporting a production of non-metallic mineral products in 1924, the number located in Ontario was 436; production from these plants had a sales value of $54,455,407. Quebec came next with 183 plants and production valued at $22,864,604; Nova Scotia ranked third with 34 plants having a total output worth $9,104,294; British Columbia had 37 concerns producing $8,068,762 worth of commodities; 32 establishments in Alberta made $7,346,582 worth of non-metallic products; Manitoba's 33 plants had an output valued at $2,351,632; Saskatchewan had 25 plants and a production worth $6,315,382; New Brunswick had 31 plants with an output valued at $563,917, and Prince Edward Island's 3 plants had an output valued at $81,148.

In 1923 there were 794 plants in operation in this industrial group. Returns for 1924 showed a gain of 1 plant in New Brunswick, 8 in Quebec, 2 in Ontario, 2 in Manitoba, 3 in Saskatchewan, 7 in Alberta, and a loss of 2 in Nova Scotia and 1 in British Columbia.

By industries, petroleum products led the list with a total production value of $49,411,067, followed by the illuminating and fuel gas industry at $18,101,724; glass, $10,776,816; coke and by-products, $10,438,462; miscellaneous non-metallic mineral products, $6,991,904; aerated waters, $6,354,358; monumental and ornamental stone, $4,730,572; products from imported clay, $1,879,769; cement products and sand-lime brick, $1,877,817; asbestos and allied products, $589,339.

The total capital employed in the non-metallic mineral products industry was slightly less than in the previous year and amounted in all to $161,390,016 of which $117,406,001 represented the value of lands, buildings, tools, etc.; $31,190,192 the value of materials on hand and in process, and working capital amounted to $12,793,823. Ontario plants reported a total investment of $71,813,426; Quebec plants accounted for $28,246,887; and Nova Scotia for $22,381,211. Alberta and British Columbia were each credited with about 12 million dollars' investment; Manitoba and Saskatchewan with about 6 million dollars each; New Brunswick with about one-half million dollars and Prince Edward Island with $84,966.

Including both salaried employees and wage-earners, 16,938 persons found employment in the manufacture of non-metallic mineral products in 1924 as against 17,936 in the preceding year. Salaries and wages amounted to $21,586,516, an increase of a million dollars over 1923. The trend of employment as reflected by the monthly records of the number of wage-earners on the rolls on the fifteenth of each month showed 13,362 wage-earners (exclusive of salaried employees) on the rolls in January, and a slightly lower number of 13,248 in March from which point the number employed rose gradually to a maximum of 14,829 in June. Employment then gradually fell away until in October there were 14,329 persons enrolled and in December only 12,739.

Imports into Canada of non-metallic minerals declined in value from $165,093,416 in the calendar year of 1923 to $134,842,648 in 1924; United States supplied $116,345,580 worth or 80·6 per cent of the total while only $9,564,163 worth or 7 per cent, came from United Kingdom. Exports were valued at $20,949,776, the lowest in several years; 63 per cent went to the United States, 5 per cent to United Kingdom and the remaining 32 per cent to other countries.

In studying the production of non-metallic mineral products in Canada it has been found convenient to arrange the industries under the following groups: aerated waters; asbestos and allied products; cement products; sand-lime brick; coke and by-products; glass; illuminating and fuel gas; products from imported clay; monumental and ornamental stone; petroleum products; miscellaneous non-metallic mineral products.

(b) By Industries

Aerated Waters.—The aerated waters industry is distributed fairly well over the whole Dominion; almost every town has a small soda water and soft drinks plant while in the larger cities, where consumption is greatest, the establishments have so increased in size as to make the enterprise of considerable industrial importance.

In the peak year of 1920, aerated waters valued at more than 9 million dollars were produced. Sales in recent years have not been so large, but during the last three years the annual production value has been maintained at about 6·5 million dollars. In 1924, returns were received from 296 plants in Canada distributed as follows: Prince Edward Island, 2; Nova Scotia, 16; New Brunswick, 15; Quebec, 80; Ontario, 131; Manitoba, 8; Saskatchewan, 12; Alberta, 16; British Columbia, 16. These firms employed 1,543 persons and produced $6,354,358 worth of aerated waters from materials costing $1,982,340. In 1923, the 295 plants then in operation employed 1,724 persons and had a production valued at $6,408,832.

Asbestos and Allied Products.—Under this heading have been included the data reported by manufacturers who use asbestos as a major constituent of their products which included sheets and boards, roofing and flooring, asbestos and magnesia packing and pipe covering, cement, and such plastic products as boiler lining. Most of the plants making these materials are located in Ontario and Quebec. In 1924 there were 2 plants in Quebec, 5 in Ontario and 1 in each of the provinces of Nova Scotia and British Columbia; the number of plants in operation was unchanged from the total in 1923. Production was valued at $589,339 as compared with $583,013 from the same plants in 1923.

Cement Products.—This group includes those firms who produce concrete blocks, tile, sewer pipe, sills, piles, posts and other manufactures of concrete and artificial stone with cement as a binding medium. In 1924 the 116 plants reporting in this industry had a combined output valued at $1,257,871. Ontario's 92 plants had a production valued at slightly over a million dollars; there were also 18 plants in Quebec, 3 in New Brunswick, 2 in Saskatchewan and 1 in Nova Scotia. These plants represented a capital investment of 1·7 million dollars and afforded employment to 455 persons during the year. Records of the many small concerns operating on part time only are not included in this report.

Sand-Lime Brick.—Practically all of the sand-lime brick produced in Canada is manufactured by large brick companies, whose plants are located near the industrial centres. In 1924 there were 10 plants in Ontario and 1 in each of the provinces of Manitoba and Saskatchewan making 12 plants in all with a production valued at $619,946 as against $897,960 by the 8 plants in operation in 1923.

Coke and By-Products.—The coke industry in Canada is dependent more or less upon the demand of the iron and steel industries and of the smelters treating the non-ferrous metal ores although in recent years, the use of coke for domestic heating has opened a new market. Coke plants are located in the provinces of Nova Scotia, Ontario, Alberta and British Columbia. This industry, as here reviewed, includes only those plants producing metallurgical coke. There is also a production of gas-house and petroleum coke, but these are dealt with in other sections of this report.

The Dominion Iron and Steel Company, Limited at Sydney, N.S., make by-product coke from their own coal; the Steel Company of Canada, Limited and the Hamilton By-Products Coke Ovens Limited at Hamilton, Ont., and the Algoma Steel Corporation, Limited at Sault Ste. Marie, Ont., make by-product coke from United States coal. In the Crow's Nest Pass coal area in Alberta and British Columbia, beehive coke is made from domestic coal by the Crow's Nest Pass Coal Company; much of this coke is sold for use at the smelter of the Consolidated Mining and Smelting Company at Trail, B.C. Coal from Vancouver Island is shipped to Anyox, B.C., and there made into by-product coke by the Granby Consolidated Mining, Smelting and Power Company for their own use.

The total value of coke made in Canada during 1924 by the plants in this group amounted to $7,268,713; that imported during the calendar year cost $3,131,485 while the value of coke exported was $393,979. In 1923 the production of coke was valued at $10,236,524, imports were worth $5,790,771, and exports, $433,497.

Glass.—In the glass industry are included those plants making pressed and blown glass, window glass, cut glass, plain or bevelled mirrors, and also those plants engaged principally in the bending of plate and sheet glass, and assembling leaded and other art glass.

In 1924 pressed and blown glass was made by 10 plants in Canada while 38 different establishments were engaged in the bevelling, bending and cutting of glass. Production of pressed and blown glass was valued at $8,799,420 and other glass products at $1,977,396. There is no plate glass made in Canada and the entire supply, therefore, is imported and cut and bevelled as required.

Illuminating and Fuel Gas.—The illuminating and fuel gas industry in Canada is centred chiefly in the larger cities where domestic and industrial demand is greatest. In 1924 there were 44 gas plants in Canada with a production of gas and by-products valued at $18,101,724 as compared with $19,605,340 in the previous year. Capital employed amounted to 42.8 million dollars, of which 36.2 million dollars was the value of fixed assets such as buildings, lands and plant equipment. Employment was afforded to 3,648 persons, and salaries and wages paid during the year totalled $4,835,351.

Since more use is made of coal gas and carburetted water gas than any other kind, these are the most important products. Pintsch gas is made at many divisional points along the railroads and is supplied in cylinders for railway-car lighting purposes. Acetylene gas is used in several prairie towns where the size of the municipality is not large enough to warrant a coal-gas plant or where the cost of coal for gas-making is prohibitive.

By-products of this important industry, including coke, tars, light oils, etc., made available by large-scale production, provide an incentive to increase plant size where an increase in population and the number of industries to be served, warrant the additional outlay, and where the by-products are readily marketable.

Products from Imported Clay.—Under this classification are listed those firms that produce clay products such as pottery, sanitary ware, refractories, porcelain insulators, etc., from special clays imported for the purpose. In 1924, there were 12 plants in Canada using imported clay as a raw material. These plants, representing a capital investment of $1,677,533, employed 489 persons during the year and produced commodities valued at $1,879,769 from raw materials costing $535,793. Previous to this year, the data regarding products made from imported clay were shown in the Bureau's *Annual Report on the Mineral Production of Canada.*

Monumental and Ornamental Stone.—This group includes all firms engaged in the cutting of monumental and building stone. In 1924 there were 210 plants in this group and production was valued at $4,730,572. Many of the establishments are small and employ only

2 or 3 persons. Much of the stone used as raw materials in this industry is imported from other countries. Because of the known value of Italian marbles, Scotch granites and Vermont marbles and granites, it has been difficult to educate the Canadian people to the fact that Canadian granites and marbles and building stone, worthy of an edifice, exist in abundance.

Petroleum Products.—This is by far the largest industry of the group under review and includes the refining of petroleum, both domestic and imported, and also the compounding of lubricating oils and greases consisting wholly or in part of mineral oils. In 1924 there were 25 plants operating in this industry of which 17 refined petroleum and 8 made oils and greases. Production reached a value of $49,411,067 as compared with $46,280,534 by the 20 plants operating in 1923. This was the only industry in the non-metallic group to record a substantial increase in production value in 1924.

Miscellaneous Non-Metallic Mineral Products.—Many firms in Canada produce non-metallic mineral products that do not naturally fall in any of the groups previously considered. A miscellaneous group has accordingly been made and divided into the following classes: artificial abrasives and abrasive products; graphite products, including artificial graphite and electrodes; gypsum products; mica trimming, and miscellaneous non-metallic mineral products.

The principal products of the 36 firms thus grouped were carborundum, alundum, grinding wheels, graphite electrodes, gypsum wall board, plaster of paris models, trimmed and split mica and sundry foundry supplies as facings, sand, etc.

The abrasive products industry was the most important of this group with a production valued at 5.6 million dollars.

Primary Products.—As a matter of general interest, a summary of the principal statistics relating to the manufacture of structural materials and clay products during the years 1920 to 1924 has been abstracted from the *Annual Report on the Mineral Production of Canada* issued by the Bureau. Data in the report on the mineral production of Canada, show the production of primary raw materials but there are many products described therein which are produced by a manufacturing process though the cost of the raw materials used apart from the labour involved, is generally considered as negligible. These industries, on the border-line between mining and manufacturing, may be classified under either heading, so that, while the Bureau reports show them under "primary mineral production" for convenience, the inclusion herein of the principal data in regard thereto may interest the general reader.

Under the heading "Clay Products" are the brick and tile industry, the clay sewer pipe industry, the fire brick and fire clay products industry and the stoneware and pottery industry.

Brick and tile manufacturing represented a capital investment of 24.4 million dollars in 1924 when 192 plants were operating. These plants furnished employment to 3,332 people who received salaries and wages to the value of over 3 million dollars. Fuel used cost about 1.5 million dollars, and the net value of the products made exceeded 7 million dollars. In 1923, there were 204 plants operating; the capital employed in operating plants was about one-half million dollars more than in 1924, and the products manufactured were greater in value by about one million dollars. In 1922, returns were received from 216 plants and the products were valued at about 8.9 million dollars.

The clay sewer pipe industry showed no great change in 1924. Five plants were in operation with a capital of about 3 million dollars. They employed an average of 467 people who received in the neighbourhood of a half million dollars in wages and salaries. Fuel cost about $28,000 and the value of the products was almost 1.4 million dollars.

In the firebrick and fireclay products industry, 7 plants were in operation in 1924, as against 6 in 1923. About 1.85 million dollars was invested in the industry and, on the average, 208 hands were employed, to whom over a quarter of a million dollars was paid in salaries and wages. The cost of fuel amounted to nearly $75,000 and the value of the products was slightly under $600,000.

Six plants were engaged in the manufacture of stoneware and pottery, with a capitalization of almost $400,000. This industry employed slightly more than 100 people, and wages and

salaries paid totalled about $115,000. The amount of fuel used does not vary much from year to year, $14,642 worth being used in 1924. The value of the products amounted to about one-quarter of a million dollars.

Under the general heading of "Structural Materials," the commodities cement and lime are also included. The cement industry is naturally dependent on the amount of construction undertaken each year. There were 10 plants making cement in 1924 and 1923. Capital employed amounted to 36.7 million dollars in 1924 as against 38 million dollars in 1923. In 1924, there were 1837 people employed, and payments for salaries and wages amounted to 2.5 million dollars. Miscellaneous expenses amounted to 1.5 million dollars and fuel to about 2.8 million dollars. The value of the products was 13·4 million dollars. In 1923, the value of products was given as 15 million dollars.

In the manufacture of lime in 1924, reports were received from 49 plants; the total capital employed was $5,165,964, and there were on the rolls 927 persons who received nearly one million dollars in salaries and wages. Miscellaneous expenses amounted to over $750,000, and the cost of fuel was $740,878. Lime to the value of $3,178,541 was made in 1924.

In the chapters pertaining to the several different industries under review will be found further excerpts from the *Annual Report on the Mineral Production of Canada* for 1923, and 1924, which it seemed advisable to add to this report as relative information. Throughout this report the data given, refer to the group of industries mentioned above as being included in the Bureau's classification of "Manufacturers of the Non-Metallic Minerals"; only in the Summary Tables are figures given for those "manufacturing" industries which are reviewed in detail in the "*Annual Report on the Mineral Production of Canada*," and which may as readily be classed either as "primary" or as "secondary" industries. References to these industries are mostly in the form of abstracts from other reports.

(c) By Provinces

Prince Edward Island.—Only 3 establishments in Prince Edward Island made non-metallic mineral products in 1924. Of these 2 made aerated waters and 1 produced monumental stone.

Nova Scotia.—In 1924, Nova Scotia had 16 plants producing aerated waters; 13 in the monumental and ornamental stone industry, and 1 plant in each of the asbestos and allied products, cement products, coke, gas, and petroleum refining industries. These plants represented a capital investment of over 22 million dollars, afforded employment to 773 persons and had a combined production in the neighbourhood of 9 million dollars.

New Brunswick.—New Brunswick was represented in the non-metallic mineral products industry by 31 different firms which produced only half-a-million dollars' worth of commodities altogether. There were 15 concerns manufacturing aerated waters; 3 making cement products; 2 in the gas industry; 9 in the monumental and ornamental stone group; 1 in the glass industry and 1 making products from imported clays.

Quebec.—Quebec ranked next to Ontario as a producer of manufactures from non-metallic mineral products. In 1924, there were 183 plants operating in the following industries: aerated waters, 80 plants; monumental and ornamental stone, 42 concerns; cement products, 18 establishments; miscellaneous non-metallic mineral products, 17 plants; glass, 11 plants; imported clay products, 5 plants; gas, 4 plants; petroleum products, 4 establishments; and the asbestos products industry, 2 concerns. The combined production of these plants amounted in value to $22,864,604 of which the petroleum industry contributed $7,044,019; the gas industry, $6,512,962; the glass industry, $3,817,455; and the aerated water industry, $2,204,763.

Ontario.—Of the 814 plants in Canada engaged in the manufacture of non-metallic mineral products during 1924 over half or 436, were located in Ontario; and of a total production valued at $111,151,828 for the industry, Ontario accounted for $54,455,407.

By industries, petroleum products held first place with 8 operating plants, a capital investment of 15 million dollars and a production valued at 18·7 million dollars; the illuminating and fuel gas industry was second with 21 establishments and an output worth 8·8 million dollars;

the coke industry held third place when the 3 plants produced nearly 7 million dollars' worth of commodities. Glass products and the miscellaneous non-metallic products each had an output worth nearly 6 million dollars; aerated waters and monumental and ornamental stone each approached the 2·5 million dollar mark; and imported clay products, cement products and sand-lime brick, and asbestos followed in the order named.

Including 1276 salaried employees, the non-metallic industry in Ontario gave employment to 8,655 persons throughout the year, while expenditures in salaries and wages amounted in all to $11,506,180.

Manitoba.—Manitoba had 12 plants in the monumental and ornamental stone industry; 8 in the aerated waters industry; 8 in the gas industry; 3 in the glass group and 1 in each of the sand-lime brick and petroleum industries. These 33 establishments used 1·1 million dollars' worth of raw materials in the production of 2·3 million dollars' worth of non-metallic mineral products and afforded employement to 434 persons throughout the year.

Saskatchewan.—Production of non-metallic mineral products in Saskatchewan was valued at $6,315,382. There were 25 plants in operation during the year; 12 made aerated waters; 7 produced finished stone products; 2 produced illuminating and fuel gas; 2 made cement products; 1 plant refined petroleum and 1 made sand-lime brick.

Alberta.—With 32 plants in this group Alberta contributed over 7 million dollars to the total value of non-metallic mineral products made in Canada. Alberta was represented by 16 firms manufacturing aerated waters; 8 plants producing petroleum products; 6 concerns producing monumental and building stone; 1 plant making gas; and 1 making glass products.

British Columbia.—British Columbia's output of manufactured non-metallic mineral products totalled slightly over 8 million dollars in value. The petroleum industry was the most important with the gas industry and the coke industry next in line. There were 2 plants in the petroleum industry; 2 in the coke industry and 5 in the gas industry. There were also 16 plants making aerated waters, 7 producing finished stone products, 4 making glass products and 1 plant in the asbestos group.

Table 1A.—Summary Statistics Relating to the Manufacture of Non-Metallic Mineral Products Industries in Canada, 1920-1924

AERATED WATERS

Year	Number of plants	Capital employed	Average number of employees	Salaries and wages	Cost of materials	Value of products	Value added by manufacturing
		$		$	$	$	$
1920	330	8,259,814	1,913	2,079,421	4,343,849	9,354,693	5,010,844
1921	320	8,236,046	1,932	1,811,983	3,607,147	9,176,868	5,569,721
1922	283	8,205,457	1,537	1,803,364	2,705,957	6,594,509	3,888,552
1923	295	8,315,389	1,724	1,843,531	2,672,332	6,408,832	3,736,500
1924	296	9,385,802	1,543	1,807,572	1,982,340	6,354,358	4,372,018

ASBESTOS AND ALLIED PRODUCTS

1920	11	1,180,101	201	248,211	432,359	940,072	507,722
1921	11	1,351,278	132	273,522	385,810	804,603	418,793
1922	11	1,610,700	156	189,059	271,749	615,160	343,411
1923	9	1,486,589	145	176,986	260,281	583,013	322,732
1924	9	1,468,728	120	169,979	267,201	589,339	322,138

CEMENT PRODUCTS AND SAND-LIME BRICK

1920	104	2,654,198	580	741,385	720,717	2,221,231	1,500,514
1921	118	2,780,066	664	639,658	694,923	2,095,997	1,401,074
1922	135	2,777,968	614	659,973	825,238	2,139,811	1,314,573
1923	126	2,707,199	646	743,993	814,772	2,403,488	1,588,716
1924	128	3,019,997	691	673,123	674,530	1,877,817	1,203,287

COKE AND BY-PRODUCTS

1920	6	19,278,539	875	1,696,088	13,409,921	15,580,615	2,170,694
1921	5	19,866,300	647	1,222,789	12,295,797	14,214,728	1,918,931
1922	6	20,363,785	533	716,893	6,130,628	7,336,627	1,205,999
1923	5	20,494,442	598	842,376	11,437,863	13,901,445	2,463,582
1924	6	24,315,744	530	900,992	6,879,516	10,438,462	3,558,946

GLASS

1920	52	13,057,183	4,039	4,867,520	4,604,534	13,795,690	9,191,156
1921	48	13,725,482	3,097	3,621,768	3,974,358	11,461,932	7,487,574
1922	45	15,053,327	2,984	3,369,854	3,287,091	8,842,588	5,555,497
1923	46	14,802,372	3,350	3,778,802	3,714,515	11,098,026	7,383,511
1924	48	13,304,814	3,137	3,606,213	3,667,660	10,776,816	7,109,156

ILLUMINATING AND FUEL GAS

1920	52	35,386,691	3,114	3,679,235	9,851,981	17,758,401	7,906,420
1921	50	37,097,280	2,818	3,984,976	9,279,697	18,772,285	9,492,588
1922	48	39,615,765	3,107	3,974,705	8,580,208	19,089,170	10,508,962
1923	45	45,526,495	3,021	3,801,832	9,024,094	19,605,340	10,581,256
1924	44	42,818,276	3,648	4,835,351	6,772,576	18,101,724	11,329,148

PRODUCTS FROM IMPORTED CLAY

1924	12	1,677,533	489	567,143	535,793	1,879,769	1,343,976

MONUMENTAL AND ORNAMENTAL STONE

1920	176	4,181,670	1,166	1,088,242	1,781,031	5,205,886	3,424,855
1921	173	3,971,172	1,207	1,052,837	1,478,097	4,540,028	3,061,931
1922	208	5,027,935	1,273	1,809,444	1,844,518	4,968,487	3,123,939
1923	210	5,073,618	1,278	1,842,963	1,683,126	5,025,003	3,341,877
1924	210	4,944,269	1,344	1,887,462	1,441,753	4,730,572	3,288,819

PETROLEUM PRODUCTS

1920	19	52,709,887	4,153	6,551,826	39,168,692	59,573,448	20,404,756
1921	16	57,564,588	4,014	6,182,514	36,629,576	52,932,415	16,302,839
1922	19	62,051,029	3,555	5,402,683	38,413,191	57,035,563	18,622,372
1923	20	61,027,704	4,257	5,048,320	36,816,696	46,280,534	9,463,838
1924	25	53,795,794	3,869	5,749,705	37,092,711	49,411,067	12,318,356

*MISCELLANEOUS NON-METALLIC MINERAL PRODUCTS

1920	44	5,464,978	3,302	1,633,179	1,533,065	4,579,216	3,046,151
1921	23	2,253,322	902	441,044	553,517	1,256,938	703,421
1922	26	6,354,115	1,371	722,080	1,318,652	3,015,539	1,696,887
1923	38	7,262,403	2,917	1,492,846	2,879,015	8,147,331	5,268,316
1924	36	6,659,059	1,767	1,328,976	2,427,145	6,991,904	4,564,759

Total for All Industries Listed Above

1920	**791**	**142,173,061**	**19,343**	**23,185,110**	**75,846,140**	**129,009,252**	**53,163,112**
1921	**764**	**146,855,431**	**15,413**	**19,801,091**	**68,898,922**	**115,255,791**	**46,356,872**
1922	**781**	**161,063,081**	**15,130**	**18,738,055**	**63,377,262**	**109,637,454**	**46,260,192**
1923	**791**	**166,786,211**	**17,936**	**20,171,649**	**69,302,884**	**113,453,012**	**44,150,328**
1924	**814**	**161,390,016**	**16,938**	**21,586,516**	**61,741,225**	**111,151,828**	**49,410,603**

*The Miscellaneous Non-Metallic Mineral Products group includes: The Abrasive Products Industry, the Artificial Graphite and Electrodes Industry, Gypsum Products Industry, Mica Trimming Industry, and, in 1922 to 1924, the Artificial Abrasives Industry.

Table 1B.—Summary of Principal Statistics Relative to Certain Mineral Industries, in Canada, 1920-1924

NOTE—The foregoing list of industries includes all those shown in the Bureau classification under the heading "Manufactures of Non-Metallic Mineral Products." But there are several other groups classified by the Bureau as primary mineral industries which are ordinarily regarded as manufacturing enterprises. These industries have been described in the *Annual Report on the Mineral Production of Canada* to which the reader is referred for detailed information, but for convenience of reference and for the making of a grand total the principal statistics relating to them have been repeated below.

(From The *Annual Report on the Mineral Production of Canada.*)

CLAY PRODUCTS

BRICK AND TILE

Years	Number of plants	Capital employed	Average number of employees	Salaries and wages paid	⊙ Miscellaneous expenses	⊙ Cost of fuel	Net value of products
		$		$	$	$	$
1921	202	21,138,115	3,597	2,780,204	1,206,828	1,393,297	6,526,440
1922	216	23,821,180	3,904	3,782,311	2,112,790	1,644,463	8,911,539
1923	204	24,866,834	3,954	4,045,487	1,410,051	2,251,445	8,220,269
1924	192	24,423,104	3,332	3,071,379	.....	1,508,573	7,046,355

CLAY SEWER PIPE

1921	5	3,177,036	465	566,838	226,974	329,486	1,503,715
1922	5	3,057,149	448	547,411	282,705	217,228	1,571,464
1923	5	3,022,522	459	561,515	307,870	307,681	1,421,002
1924	5	3,149,838	467	596,598	.....	281,448	1,343,197

FIREBRICK AND FIRE CLAY PRODUCTS

1921	7	1,643,122	233	308,040	88,873	74,318	604,921
1922	5	1,705,753	182	264,518	53,015	82,228	683,266
1923	6	1,786,353	192	286,377	61,277	90,286	605,968
1924	7	1,850,385	208	258,416	.....	74,431	584,838

STONEWARE AND POTTERY

1921	4	275,265	104	112,800	127,396	15,085	216,284
1922	4	280,467	112	124,575	22,010	12,652	252,889
1923	4	314,862	119	117,221	88,233	14,607	230,024
1924	6	387,667	113	114,925	.....	14,642	240,687

CEMENT

1920	13	44,941,686	2,301	3,757,641	1,738,152	3,457,796	14,798,070
1921	14	49,160,180	2,751	3,443,884	2,602,029	2,788,820	14,195,143
1922	11	41,573,737	1,753	2,315,240	2,976,152	2,457,456	15,438,481
1923	10	38,284,494	1,842	2,551,784	2,947,242	2,809,414	15,004,661
1924	10	36,766 574	1,837	2,531,622	1,524,158	2,872,711	13,398,411

LIME

1920	57	4,760,007	1,028	1,291,801	551,709	912,309	3,818,553
1921	66	4,990,969	931	949,966	407,820	698,992	2,781,197
1922	62	4,984,910	1,110	1,013,486	522,222	725,168	3,165,005
1923	56	6,059,954	1,197	1,191,416	806,916	953,709	3,266,608
1924	49	5,165,964	927	970,672	757,898	740,878	3,178,541

SALT

1920	9	2,221,606	327	459,381	411,408	533,880	1,544,724
1921	13	2,267,708	330	411,832	381,126	527,013	1,673,685
1922	11	2,205,184	371	432,261	407,105	369,000	1,628,323
1923	12	2,406,992	368	412,597	404,040	350,794	1,713,516
1924	12	2,479,563	364	431,618	424,578	342,118	1,374,780

Total of Mineral Industries Listed Above

1920*	389	79,859,925	8,591	10,722,731	4,466,662	7,547,310	30,811,254
1921	311	82,652,395	8,411	8,573,564	5,049,846	5,826,991	27,501,385
1922	314	77,628,380	7,880	8,479,862	6,375,999	5,508,195	31,650,967
1923	297	76,733,011	8,131	9,166,397	6,025,635	6,786,936	30,522,948
1924	281	74,223,095	7,248	7,975,230	.....	5,834,801	27,166,809

GRAND TOTAL

1920*	1,103	222,632,986	27,934	33,997,841	.....	.....	159,820,506
1921	1,075	229,507,829	23,821	28,374,655	.....	.....	142,757,179
1922	1,095	238,691,161	23,010	27,247,917	.....	.....	141,288,421
1923	1,091	243,519,222	26,067	29,338,046	.....	.....	143,975,960
1924	1,095	235,613,111	24,186	29,561,746	.....	.....	138,318,637

* Includes totals for Clay Products.

⊙ Cost of electricity used was included with miscellaneous expenses from 1920 to 1922; but in 1923 and 1924 this item was grouped with cost of fuel.

Table 2.—Principal Statistics Relative to the Manufacture of Non-Metallic Mineral Products in Canada, by Industries and by Provinces, 1923

Industry	Prince Edward Island and Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	*Canada
Aerated Waters Industry									
Number of plants	20	15	78	133	7	12	14	16	295
Capital employed $	316,327	219,353	2,285,123	3,393,828	780,673	520,747	549,994	249,344	8,315,389
Salaried employees—									
Male	16	12	146	103	29	21	26	12	365
Female	6	3	18	21	2	2	3	1	56
Wage-earners—									
Male	59	34	396	447	139	47	49	47	1,218
Female	13	5	23	31	5	3	4	1	85
Total employees	94	54	583	602	175	73	82	61	1,724
Salaries and wages—									
Salaries $	29,892	24,885	309,160	197,113	47,103	34,751	39,392	21,751	701,047
Wages $	51,992	26,942	352,653	460,036	95,567	50,987	54,641	46,666	1,139,484
Total $	81,884	51,827	661,813	657,149	142,670	85,738	94,033	68,417	1,841,531
Cost of fuel $	2,806	3,926	32,611	34,113	13,050	5,244	4,563	2,494	98,807
Cost of material $	163,812	77,513	842,998	984,627	234,330	159,094	103,025	106,933	2,672,332
Value of products $	244,129	217,658	2,219,767	2,504,055	392,449	344,481	275,626	210,667	6,108,832
Asbestos and Allied Products Industry—									
Number of plants	1		2	5				1	9
Capital employed $				540,293					1,486,589
Salaried employees—									
Male				12					34
Female				7					13
Wage-earners—									
Male				35					89
Female				5					9
Total employees				59					145
Salaries and wages—									
Salaries $				36,667					83,518
Wages $				41,989					93,468
Total $				78,656					176,986
Cost of fuel $				5,711					12,292
Cost of materials $				165,191					260,281
Value of products $				312,728					583,014
Cement Products Industry—									
Number of plants	2	3	14	99					118
Capital employed $			230,447	1,347,116					1,664,589
Salaried employees—									
Male			15	42					61
Female			2	8					10
Wage earners—									
Male			64	269					350
Female									
Total employees			81	319					421
Salaries and wages—									
Salaries $			16,016	78,932					97,987
Wages $			65,944	283,405					360,758
Total $			81,990	362,337					458,745
Cost of fuel $			2,587	21,401					25,242
Cost of materials $			113,768	468,760					596,654
Value of products $			275,663	1,193,015					1,505,528
Sand-Lime Brick Industry—									
Number of plants				7	1				8
Capital employed $									1,042,619
Salaried employees—									
Male									19
Female									1
Wage-earners—									
Male									305
Female									
Total employees									325
Salaries and wages—									
Salaries $									49,257
Wages $									235,991
Total $									285,248
Cost of fuel $									50,810
Cost of materials $									218,118
Value of products $									897,960

* Where fewer than three firms in one province were engaged in the same industry, the data for these companies are not shown by provinces, but they are included in the Canada totals for each industry.

Table 2.—Principal Statistics Relative to the Manufacture of Non-Metallic Mineral Products in Canada, by Industries and by Provinces, 1923—Continued

Industry	Prince Edward Island and Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	*Canada
COKE AND BY-PRODUCTS INDUSTRY—									
Number of plants	1			2				2	5
Capital employed $									20,494,442
Salaried employees—									
Male									33
Female									
Wage-earners									
Male									565
Female									
Total employees									598
Salaries and wages—									
Salaries $									86,979
Wages $									755,397
Total $									842,376
Cost of fuel $									211,515
Cost of Materials—									
Firms' own make $									2,027,289
Purchased materials $									9,410,574
Total cost $									11,437,863
Value of products—									
Made for use in coke plant $									847,576
Made for use in metallurgical works $									9,307,393
Made for sale $									3,745,566
Total $									13,901,445
GLASS INDUSTRY—									
Number of plants			12	26	3		1	4	46
Capital employed $			5,293,425	8,706,811	26,077				14,892,372
Salaried employees—									
Male			74	125	6				219
Female			15	42	2				60
Wage-earners—									
Male			1,115	1,556	14				2,830
Female			108	120					241
Total employees			1,312	1,843	22				3,350
Salaries and wages—									
Salaries $			173,920	342,407	8,696				559,403
Wages $			1,120,486	1,968,465	16,055				3,219,389
Total $			1,294,406	2,250,872	24,751				3,778,802
Cost of fuel $			430,462	934,983	180				1,365,903
Cost of materials $			1,125,089	2,231,236	29,588				3,711,515
Value of products $			3,558,481	6,497,905	68,498				11,098,026
ILLUMINATING AND FUEL GAS INDUSTRY—									
Number of plants	1	2	4	22	8	2	1	5	45
Capital employed $			7,028,138	27,302,359	4,813,040			4,990,183	45,526,495
Salaried employees—									
Male			154	286	40			38	554
Female			76	192	17			6	306
Wage-earners—									
Male			217	1,571	120			169	2,161
Female									
Total employees			447	2,049	177			213	3,021
Salaries and wages—									
Salaries $			256,386	644,093	78,307			72,622	1,094,241
Wages $			248,102	1,988,871	181,024			193,116	2,707,591
Total $			504,488	2,632,964	259,331			265,738	3,801,832
Cost of materials—									
Firms' own make $			331,512	808,495	130,015			71,510	1,372,916
Purchased materials $			2,760,710	3,934,693	521,580			276,373	7,651,168
Total cost $			3,092,222	4,743,188	651,595			347,883	9,024,084
Value of products—									
By-products made for use $			333,564	793,724	129,061			31,052	1,323,545
By-products made for sale $			1,422,347	1,046,557	274,960			185,183	3,021,112
Income from gas sold $			4,969,270	8,323,534	872,991			805,092	15,260,683
Total $			6,725,181	10,163,815	1,277,012			1,021,327	19,605,340
MONUMENTAL AND ORNAMENTAL STONE INDUSTRY—									
Number of plants	13	10	42	114	11	7	5	8	210
Capital employed $	79,146	134,349	1,159,783	2,699,302	500,915	216,083	204,168	79,872	5,073,618

* Where fewer than three firms in one province were engaged in the same industry, the data for these companies are not shown by provinces, but they are included in the Canada totals for each industry.

Table 2.—Principal Statistics Relative to the Manufacture of Non-Metallic Mineral Products in Canada, by Industries and by Provinces, 1923—Concluded

Industry	Prince Edward Island and Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	*Canada
MONUMENTAL AND ORNAMENTAL STONE INDUSTRY—*Concluded*									
Salaried employees—									
Male	.....	11	30	105	22	12	11	7	198
Female	.....	.....	2	17	3	2	2	.....	26
Wage-earners—									
Male	34	61	268	553	61	28	18	31	1,054
Female	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total employees	34	72	300	675	86	42	31	38	1,278
Salaries and wages—									
Salaries $	.....	13,430	84,169	264,978	57,453	20,045	16,007	8,741	464,823
Wages $	36,080	50,775	348,250	756,877	71,974	38,095	24,733	51,356	1,378,140
Total $	36,080	64,205	432,419	1,023,855	129,427	58,140	40,740	60,097	1,842,963
Cost of fuel $	247	1,058	5,800	11,020	1,153	362	473	57	20,170
Cost of materials $	55,461	27,996	302,299	1,121,940	67,783	39,148	31,291	37,208	1,683,126
Value of products $	127,676	141,224	959,141	3,088,871	312,340	147,692	111,563	136,496	5,025,003
PETROLEUM PRODUCTS INDUSTRY—									
Number of plants	1	.....	3	8	1	1	4	2	20
Capital employed $	.....	.....	10,242,599	18,042,684	.....	.....	8,734,558	.....	61,627,704
Salaried employees—									
Male	.....	.....	45	167	.....	.....	29	.....	363
Female	.....	.....	8	3	.....	.....	7	.....	69
Wage-earners—									
Male	.....	.....	460	1,346	.....	.....	1,053	.....	3,801
Female	.....	.....	3	19	.....	.....	.....	.....	24
Total employees	.....	.....	516	1,563	.....	.....	1,089	.....	4,257
Salaries and wages—									
Salaries $	.....	.....	121,126	395,042	.....	.....	79,871	.....	910,379
Wages $	.....	.....	643,805	1,954,981	.....	.....	1,092,999	.....	4,737,941
Total $	.....	.....	764,931	2,350,623	.....	.....	1,172,870	.....	5,648,320
Cost of fuel $	.....	.....	731,498	1,595,469	.....	.....	43,116	.....	3,897,272
Cost of materials $	.....	.....	6,076,240	13,873,937	.....	.....	353,489	.....	36,816,696
Value of products—									
Made for use $	.....	.....	687,270	608,794	.....	.....	22,094	.....	2,821,790
Made for sale $	.....	.....	7,621,331	18,432,018	.....	.....	279,147	.....	43,458,744
Total $	.....	.....	8,308,601	19,040,812	.....	.....	301,241	.....	46,280,534
MISCELLANEOUS NON-METALLIC MINERAL PRODUCTS INDUSTRY—									
Number of plants	.....	.....	20	18	.....	.....	.....	.....	38
Capital employed $	.....	.....	2,044,692	5,217,711	.....	.....	.....	.....	7,262,403
Salaried employees—									
Male	.....	.....	24	94	.....	.....	.....	.....	118
Female	.....	.....	10	34	.....	.....	.....	.....	44
Wage-earners—									
Male	.....	.....	188	686	.....	.....	.....	.....	874
Female	.....	.....	1,755	126	.....	.....	.....	.....	1,881
Total employees	.....	.....	1,977	940	.....	.....	.....	.....	2,917
Salaries and wages—									
Salaries $	.....	.....	55,030	195,188	.....	.....	.....	.....	250,218
Wages $	.....	.....	342,121	900,507	.....	.....	.....	.....	1,242,628
Total $	.....	.....	397,151	1,095,695	.....	.....	.....	.....	1,492,846
Cost of fuel $	.....	.....	9,469	81,127	.....	.....	.....	.....	90,596
Cost of materials $	.....	.....	601,507	2,277,508	.....	.....	.....	.....	2,879,015
Value of products $	.....	.....	1,435,247	6,712,084	.....	.....	.....	.....	8,147,331
ALL INDUSTRIES									
Number of plants	39	30	175	434	31	22	25	38	794
Capital employed $	24,956,656	438,603	29,209,688	75,344,439	6,360,255	6,684,781	10,355,623	13,436,166	166,786,211
Salaried employees—									
Male	78	46	509	967	99	68	76	121	1,964
Female	20	15	137	353	24	8	13	15	585
Wage-earners—									
Male	779	134	2,758	6,889	340	372	1,263	612	13,147
Female	17	5	1,891	301	5	3	17	1	2,240
Total employees	894	200	5,295	8,510	468	451	1,369	749	17,936
Salaries and wages—									
Salaries $	173,140	49,884	1,060,688	2,251,956	194,559	145,223	168,399	257,003	4,380,852
Wages $	847,084	118,232	3,169,606	8,941,115	372,362	552,487	1,344,205	525,706	15,870,797
Total $	1,020,224	168,116	4,230,294	11,193,071	566,921	697,710	1,512,604	782,709	20,171,649
Cost of fuel $	771,427	6,238	1,218,740	2,761,838	30,957	631,358	48,152	303,897	5,772,607
Cost of materials—									
Firms' own make $	305,892	17,112	331,512	2,335,876	130,015	.....	.....	279,798	3,400,305
Purchased material $	7,255,569	176,352	11,907,468	31,267,866	1,357,347	4,932,684	797,550	8,207,043	65,902,479
Total $	7,561,461	193,464	12,238,980	33,603,742	1,487,362	4,932,684	797,550	8,487,441	69,302,684
Value of products—									
Made for own use $	4,205,848	17,112	1,020,834	7,811,217	129,061	616,438	22,094	477,610	14,300,214
Made for sale $	6,253,793	506,620	22,714,087	50,368,308	2,471,200	7,553,559	1,629,890	7,655,341	99,152,798
Total $	10,459,641	523,732	23,734,921	58,179,525	2,600,261	8,169,997	1,651,984	8,132,951	113,453,012

*Where fewer than three firms in one province were engaged in the same industry, the data for these companies are not shown by provinces, but they are included in the Canada totals for each industry.

Table 3.—Principal Statistics Relative to the Manufacture of Non-Metallic Mineral Products in Canada, by Industries and by Provinces, 1924

Industry	Prince Edward Island and Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	*Canada
AERATED WATERS INDUSTRY									
Number of plants	18	15	80	131	8	12	16	16	296
Capital employed $	203,202	245,723	2,213,585	4,294,015	916,529	462,867	693,766	356,115	9,385,802
Salaried employees—									
Male	12	10	111	102	20	14	35	19	323
Female	2	5	16	20	6	.....	4	.....	53
Wage-earners—									
Male	38	46	417	412	66	31	42	45	1,097
Female	6	.....	21	32	2	2	4	3	70
Total employees	58	61	565	566	94	47	85	67	1,543
Salaries and wages—									
Salaries $	15,873	24,007	242,287	231,795	42,104	25,177	59,659	32,192	673,094
Wages $	34,407	34,679	393,443	428,763	93,648	44,055	50,499	54,984	1,134,478
Total $	50,280	58,686	635,730	660,558	135,752	69,232	110,158	87,176	1,807,572
Cost of fuel and electricity $	3,614	4,341	45,965	46,413	9,806	7,163	5,003	9,304	131,609
Cost of materials $	99,570	91,287	600,313	756,852	78,027	101,717	110,985	143,589	1,982,340
Value of products $	192,711	249,377	2,204,763	2,363,346	382,630	206,902	326,592	338,037	6,354,358
ASBESTOS AND ALLIED PRODUCTS INDUSTRY—									
Number of plants	1	.....	2	5	.....	.....	.....	1	9
Capital employed $	.....	.....	.....	519,650	.....	.....	.....	.....	1,468,728
Salaried employees—									
Male	.....	.....	.....	16	.....	.....	.....	.....	33
Female	.....	.....	.....	6	.....	.....	.....	.....	10
Wage-earners—									
Male	.....	.....	.....	22	.....	.....	.....	.....	71
Female	.....	.....	.....	4	.....	.....	.....	.....	6
Total employees	.....	.....	.....	48	.....	.....	.....	.....	120
Salaries and wages—									
Salaries $	.....	.....	.....	44,438	.....	.....	.....	.....	92,511
Wages $	.....	.....	.....	30,279	.....	.....	.....	.....	77,165
Total $	.....	.....	.....	74,717	.....	.....	.....	.....	169,979
Cost of fuel and electricity $	.....	.....	.....	7,890	.....	.....	.....	.....	19,949
Cost of materials $	.....	.....	.....	184,019	.....	.....	.....	.....	267,201
Value of products $	.....	.....	.....	370,362	.....	.....	.....	.....	589,339
CEMENT PRODUCTS INDUSTRY—									
Number of plants	1	3	18	92	.....	2	.....	.....	116
Capital employed $	.....	43,211	273,350	1,348,246	.....	.....	.....	.....	1,673,758
Salaried employees—									
Male	.....	2	12	32	.....	.....	.....	.....	48
Female	.....	.....	.....	7	.....	.....	.....	.....	7
Wage-earners—									
Male	.....	9	78	305	.....	.....	.....	.....	399
Female	.....	.....	.....	1	.....	.....	.....	.....	1
Total employees	.....	11	90	345	.....	.....	.....	.....	455
Salaries and wages—									
Salaries $	.....	1,700	13,600	71,408	.....	.....	.....	.....	87,308
Wages $	.....	6,540	62,310	268,385	.....	.....	.....	.....	337,770
Total $	.....	8,240	75,910	339,793	.....	.....	.....	.....	425,078
Cost of fuel and electricity $	.....	714	3,965	21,710	.....	.....	.....	.....	26,419
Cost of materials $	.....	7,848	106,300	377,667	.....	.....	.....	.....	493,270
Value of products $	.....	18,855	235,617	1,001,036	.....	.....	.....	.....	1,257,871
SAND-LIME BRICK INDUSTRY—									
Number of plants	.....	.....	.....	10	1	1	.....	.....	12
Capital employed $	.....	.....	.....	961,435	.....	.....	.....	.....	1,346,239
Salaried employees—									
Male	.....	.....	.....	17	.....	.....	.....	.....	22
Female	.....	.....	.....	5	.....	.....	.....	.....	5
Wage-earners—									
Male	.....	.....	.....	186	.....	.....	.....	.....	209
Female	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total employees	.....	.....	.....	208	.....	.....	.....	.....	236
Salaries and wages—									
Salaries $	.....	.....	.....	42,981	.....	.....	.....	.....	48,785
Wages $	.....	.....	.....	195,116	.....	.....	.....	.....	199,260
Total $	.....	.....	.....	238,101	.....	.....	.....	.....	248,045
Cost of fuel and electricity $	.....	.....	.....	59,470	.....	.....	.....	.....	61,237
Cost of materials $	.....	.....	.....	174,077	.....	.....	.....	.....	181,260
Value of products $	.....	.....	.....	604,275	.....	.....	.....	.....	619,846

*Where fewer than three firms in one province were engaged in the same industry, the data for these companies are not shown by provinces but they are included in the Canada totals for each industry.

Table 3.—Principal Statistics Relative to the Manufacture of Non-Metallic Mineral Products in Canada, by Industries, and by Provinces 1924—Continued

Industry	Prince Edward Island and Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	*Canada
COKE AND BY-PRODUCTS INDUSTRY—									
Number of plants	1			3				2	6
Capital employed $				10,925,764					21,315,744
Salaried employees—									
Male				14					28
Female									
Wage-earners—									
Male				251					501
Female				1					1
Total employees				266					530
Salaries and wages—									
Salaries $				45,078					84,851
Wages $				461,009					816,138
Total $				506,087					900,992
Cost of fuel and electricity $				665,613					1,125,067
Cost of materials—									
Firms' own make $				76,203					90,188
Purchased materials $				4,565,443					6,789,328
Total $				4,641,646					6,879,516
Value of products—									
Made for use in coke plant $				708,341					1,101,481
Made for use in metallurgical works $				4,183,679					6,322,069
Made for sale $				1,931,289					3,014,912
Total $				6,823,309					10,438,462
GLASS INDUSTRY—									
Number of plants		1	11	28	3		1	4	48
Capital employed $			5,443,807	6,829,634	106,041			44,546	13,394,814
Salaried employees—									
Male			61	115	7			5	194
Female			12	34	3				50
Wage-earners—									
Male			1,031	1,465	15			7	2,650
Female			93	139				1	243
Total employees			1,197	1,753	25			13	3,137
Salaries and wages—									
Salaries $			133,506	337,068	12,581			3,605	511,660
Wages $			1,195,240	1,756,480	17,173			8,276	3,154,553
Total $			1,328,746	2,093,548	29,754			11,881	3,666,213
Cost of fuel and electricity $			503,731	742,629	792			568	1,255,190
Cost of materials $			1,127,624	2,147,988	50,947			10,509	3,667,660
Value of products $			3,817,455	5,895,499	88,781			25,966	10,776,816
ILLUMINATING AND FUEL GAS INDUSTRY—									
Number of plants	1	2	4	21	8	2	1	5	44
Capital employed $			6,978,091	23,504,144	5,466,931			5,466,224	42,818,276
Salaried employees—									
Male			49	275	35			43	423
Female			153	185	22			6	369
Wage-earners—									
Male			841	1,548	140			235	2,853
Female				1	2				3
Total employees			1,043	2,009	199			284	3,648
Salaries and wages—									
Salaries $			397,023	641,789	78,045			87,561	1,231,512
Wages $			962,031	2,034,913	195,947			303,881	3,603,839
Total $			1,359,054	2,676,702	273,992			391,442	4,835,351
Cost of fuel and electricity $			841,666	1,325,738	219,611			250,138	2,706,182
Cost of materials—									
Firms' own make $			98,967	336,272	24,702			8,723	468,724
Purchased materials $			2,385,158	3,042,410	441,067			301,110	6,303,852
Total $			2,484,125	3,378,682	465,829			309,833	6,772,576
Value of products—									
By-products made for use $				724,831	126,133			139,131	1,005,291
By-products made for sale $			1,359,008	969,461	257,338			160,973	2,828,118
Income from gas sold $			5,153,954	7,188,245	792,854			856,268	14,268,315
Total $			6,512,962	8,882,537	1,176,325			1,156,372	18,101,724

*Where fewer than three firms in one province were engaged in the same industry, the data for these companies are not shown by provinces but they are included in the Canada totals for each industry.

Table 3.—Principal Statistics Relative to the Manufacture of Non-Metallic Mineral Products in Canada, by Industries and by Provinces, 1924—Continued

Industry	Prince Edward Island and Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	*Canada
PRODUCTS FROM IMPORTED CLAY INDUSTRY—									
Number of plants	.....	1	5	6	.....	.....	.....	.....	12
Capital employed.....$	.....	.....	.....	994,662	.....	.....	.....	.....	1,677,523
Salaried employees—									
Male	.....	.....	.....	19	.....	.....	.....	.....	36
Female	.....	.....	.....	8	.....	.....	.....	.....	9
Wage-earners—									
Male	.....	.....	.....	293	.....	.....	.....	.....	424
Female	.....	.....	.....	16	.....	.....	.....	.....	20
Total employees	.....	.....	.....	336	.....	.....	.....	.....	489
Salaries and wages—									
Salaries.....$	.....	.....	.....	63,157	.....	.....	.....	.....	104,277
Wages.....$	.....	.....	.....	332,011	.....	.....	.....	.....	462,866
Total.....$	.....	.....	.....	395,168	.....	.....	.....	.....	567,143
Cost of fuel and electricity.....$	.....	.....	.....	73,962	.....	.....	.....	.....	141,491
Cost of materials.....$	.....	.....	.....	382,250	.....	.....	.....	.....	535,783
Value of products.....$	.....	.....	.....	1,472,713	.....	.....	.....	.....	1,879,769
MONUMENTAL AND ORNAMENTAL STONE INDUSTRY—									
Number of plants	14	9	42	113	12	7	6	7	210
Capital employed.....$	76,719	132,078	1,080,515	2,674,090	449,284	216,945	225,812	88,826	4,944,269
Salaried employees—									
Male	1	7	31	95	21	14	8	7	184
Female	.....	1	2	12	4	3	3	.....	25
Wage-earners—									
Male	36	58	314	558	76	26	21	43	1,132
Female	.....	1	.....	2	.....	.....	.....	.....	3
Total employees	37	67	347	667	101	43	32	50	1,344
Salaries and wages—									
Salaries.....$	1,200	10,730	81,143	207,333	52,871	25,208	16,277	14,322	409,084
Wages.....$	29,846	56,801	404,752	771,227	82,992	34,677	33,528	64,555	1,478,378
Total.....$	31,046	67,531	485,895	978,560	135,863	59,885	49,805	78,877	1,887,462
Cost of fuel and electricity.....$	2,451	2,012	36,008	41,996	6,807	1,203	1,734	3,580	95,791
Cost of materials.....$	55,113	33,041	271,790	899,300	91,029	34,019	31,088	26,373	1,441,753
Value of products.....$	126,243	137,494	1,137,660	2,639,443	277,669	128,844	136,110	147,109	4,730,572
PETROLEUM PRODUCTS INDUSTRY—									
Number of plants	1	.....	4	8	1	1	8	2	25
Capital employed.....$	.....	.....	8,712,950	15,044,260	.....	.....	9,908,910	.....	53,795,794
Salaried employees—									
Male	.....	.....	59	160	.....	.....	41	.....	384
Female	.....	.....	11	33	.....	.....	6	.....	64
Wage-earners—									
Male	.....	.....	512	1,439	.....	.....	368	.....	3,195
Female	.....	.....	5	18	.....	.....	1	.....	26
Total employees	.....	.....	587	1,650	.....	.....	416	.....	3,669
Salaries and wages—									
Salaries.....$	.....	.....	136,845	409,380	.....	.....	92,673	.....	961,281
Wages.....$	.....	.....	728,284	2,137,767	.....	.....	577,810	.....	4,788,424
Total.....$	.....	.....	865,129	2,547,147	.....	.....	670,483	.....	5,749,705
Cost of fuel and electricity.....$	.....	.....	636,420	1,444,713	.....	.....	298,068	.....	3,586,532
Cost of materials.....$	.....	.....	5,011,900	14,560,930	.....	.....	4,118,846	.....	37,092,711
Value of products—									
Made for use.....$	.....	.....	575,896	554,676	.....	.....	143,277	.....	2,419,016
Made for sale.....$	.....	.....	6,468,123	18,162,840	.....	.....	5,800,996	.....	46,992,051
Total.....$	.....	.....	7,044,019	18,717,516	.....	.....	5,944,273	.....	49,411,067
MISCELLANEOUS NON-METALLIC MINERAL PRODUCTS INDUSTRY—									
Number of plants	.....	.....	17	19	.....	.....	.....	.....	36
Capital employed.....$	.....	.....	1,941,533	4,717,526	.....	.....	.....	.....	6,659,059
Salaried employees—									
Males	.....	.....	21	89	.....	.....	.....	.....	110
Female	.....	.....	11	32	.....	.....	.....	.....	43
Wage-earners—									
Male	.....	.....	161	587	.....	.....	.....	.....	748
Female	.....	.....	767	99	.....	.....	.....	.....	866
Total employees	.....	.....	960	807	.....	.....	.....	.....	1,767

*Where fewer than three firms in one province were engaged in the same industry, the data for these companies are not shown by provinces but they are included in the Canada totals for each industry.

Table 3.—Principal Statistics Relative to the Manufacture of Non-Metallic Mineral Production in Canada, by Industries and by Provinces, 1924—Concluded

Industry	Prince Edward Island and Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	*Canada
MISCELLANEOUS NON-METALLIC MINERAL PRODUCTS INDUSTRY—*Con.*									
Salaries and wages—									
Salaries...$	.....	.....	53,795	208,778	.....	.....	.....	.....	262,573
Wages...$	.....	.....	279,382	787,021	.....	.....	.....	.....	1,066,403
Total...$	.....	.....	333,177	995,799	.....	.....	.....	.....	1,328,976
Cost of fuel and electricity...$	.....	.....	130,483	433,737	.....	.....	.....	.....	564,220
Cost of materials...$	.....	.....	476,083	1,951,062	.....	.....	.....	.....	2,427,145
Value of products...$	.....	.....	1,306,433	5,685,471	.....	.....	.....	.....	6,991,904
ALL INDUSTRIES—									
Number of plants	37	31	183	436	33	25	32	37	814
Capital employed...$	22,466,177	460,483	28,246,887	71,813,426	7,411,954	5,811,964	11,731,574	13,447,551	161,390,016
Salaried employees—									
Male	71	31	377	934	88	60	91	133	1,785
Female	12	7	210	342	35	6	13	10	635
Wage-earners—									
Male	681	151	3,532	7,066	307	377	502	603	13,279
Female	9	1	891	313	4	2	15	4	1,239
Total employees	773	190	5,010	8,655	434	445	681	750	16,938
Salaries and wages—									
Salaries...$	168,442	43,435	1,145,395	2,303,209	192,501	136,834	193,866	283,260	4,466,942
Wages...$	872,837	144,134	4,200,755	9,202,971	397,934	545,775	839,065	916,103	17,119,574
Total...$	1,041,279	187,569	5,346,150	11,506,180	590,435	682,609	1,032,931	1,199,363	21,586,516
Cost of fuel and electricity...$	926,885	23,426	2,277,432	4,863,871	251,077	470,019	316,168	584,809	9,713,687
Cost of materials—									
Firms' own make...$	.....	.....	98,967	412,475	24,762	.....	.....	22,708	558,912
Purchased materials...$	6,067,375	199,038	10,205,878	29,041,908	1,028,164	4,467,124	4,576,518	5,596,218	61,182,313
Total...$	6,067,375	199,038	10,304,845	29,454,473	1,052,926	4,467,124	4,576,518	5,618,926	61,741,225
Value of products—									
Made for own use...$	2,256,403	14,949	575,896	6,171,527	138,343	432,143	143,277	1,115,319	10,817,857
Made for sale...$	6,929,039	548,968	22,288,708	48,283,980	2,213,289	5,883,239	7,203,305	6,953,443	100,303,971
Total...$	9,185,442	563,917	22,864,604	54,455,507	2,351,632	6,315,382	7,346,582	8,068,762	111,151,828

* Where fewer than three firms in one province were engaged in the same industry, the data for these companies are not shown by provinces but they are included in the Canada totals for each industry.

Table 4.—Capital Employed in the Manufacture of Non-Metallic Mineral Products in Canada, by Provinces, 1923-1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, machinery and tools	Materials on hand and stocks in process	Cash, trading and operating accounts	Total	Lands, buildings, machinery and tools	Materials on hand and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
Pr. Edward Island	27,150	53,700	9,950	90,800	25,300	59,116	550	84,966
Nova Scotia	21,546,377	3,028,674	290,805	24,865,856	17,901,931	4,421,330	57,950	22,381,211
New Brunswick	243,035	99,218	96,347	438,603	226,378	131,555	102,550	460,483
Quebec	20,733,589	5,081,951	3,391,148	29,209,688	18,219,817	6,521,937	3,505,133	28,246,887
Ontario	56,501,682	11,318,404	7,523,353	75,344,439	51,554,907	12,575,377	7,683,142	71,813,426
Manitoba	5,527,200	493,834	339,221	6,360,255	6,500,837	584,838	326,279	7,411,954
Saskatchewan	5,405,052	1,131,816	147,913	6,684,781	3,450,476	2,197,025	164,463	5,811,964
Alberta	8,839,198	1,181,310	335,115	10,355,623	8,932,689	2,302,819	496,066	11,731,574
British Columbia	11,755,328	1,525,632	155,206	13,436,166	10,593,666	2,396,195	457,690	13,447,551
Canada	**130,578,614**	**23,915,539**	**12,292,858**	**166,786,211**	**117,406,001**	**31,190,192**	**12,793,823**	**161,390,016**

Table 5.—Capital Employed in the Manufacture of Non-Metallic Mineral Products in Canada, by Industries, 1923-1924

Industry	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, machinery and tools	Materials on hand and stocks in process	Cash, trading and operating accounts	Total	Lands, buildings, machinery and tools	Materials on hand and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
Aerated waters	5,526,075	1,878,761	910,553	8,315,389	5,379,841	1,899,193	2,106,768	9,385,802
Asbestos and allied products	956,742	353,468	176,379	1,486,589	959,740	333,977	175,011	1,468,728
Cement products	970,454	327,644	366,482	1,664,580	982,982	334,199	356,577	1,673,758
Sand-lime brick	799,420	37,296	205,903	1,042,619	1,182,579	39,224	124,436	1,346,239
Coke and by-products	19,639,208	855,234		20,494,442	22,446,224	1,579,203	290,317	24,315,744
Glass	9,945,874	2,760,170	2,186,328	14,892,372	8,414,045	2,991,799	1,898,970	13,304,814
Illuminating and fuel gas	38,294,289	2,516,210	4,715,996	45,526,495	36,150,594	2,476,032	4,191,650	42,818,276
Products from imported clay					961,927	415,535	300,071	1,677,533
Monumental and ornamental stone	2,299,552	1,227,392	1,546,674	5,073,618	2,214,307	1,215,417	1,514,545	4,944,269
Petroleum products	47,955,301	12,328,670	743,733	61,027,704	34,613,268	18,264,767	917,759	53,795,794
Miscellaneous non-metallic mineral products	4,191,699	1,630,694	1,440,010	7,262,403	4,100,494	1,640,846	917,719	6,659,059
Total	**130,578,614**	**23,915,539**	**12,292,058**	**166,786,211**	**117,406,001**	**31,190,192**	**12,793,823**	**161,390,016**

Table 6.—Number of Wage Earners Employed in the Manufacture of Non-Metallic Mineral Products in Canada, by Months and by Industries, 1923

Month	Aerated waters	Asbestos and allied products	Cement products	Sand-lime brick	Coke and by-products	Glass	Illuminating and fuel gas	Monumental and ornamental stone	Petroleum products	Miscellaneous non-metallic mineral products	Total
January	931	65	169	187	542	2,955	1,893	771	3,420	2,233	13,166
February	937	95	175	154	556	3,060	1,846	779	3,410	2,452	13,464
March	968	102	202	182	568	3,038	1,899	917	2,801	2,580	13,257
April	1,042	114	277	242	575	3,073	2,128	1,005	3,585	2,604	14,645
May	1,287	107	437	234	598	3,168	2,293	1,077	4,346	2,739	16,286
June	1,513	102	520	235	629	3,228	2,314	1,070	4,456	2,847	16,914
July	1,606	104	468	219	493	2,648	2,311	1,135	4,853	2,971	16,808
August	1,517	108	462	222	607	2,766	2,297	1,154	4,460	2,987	16,580
September	1,275	107	408	212	585	3,034	2,269	1,138	4,084	2,793	15,905
October	1,074	100	346	210	545	3,154	2,245	1,136	3,628	2,706	15,144
November	940	97	258	182	541	3,365	2,249	1,060	3,524	2,865	15,081
December	929	61	263	178	539	3,302	2,225	986	3,326	2,865	14,674
Average	**1,303**	**98**	**350**	**205**	**565**	**3,071**	**2,161**	**1,054**	**3,825**	**2,755**	**15,387**

Table 7.—Number of Wage-Earners Employed in the Manufacture of Non-Metallic Mineral Products in Canada, by Months and by Industries, 1924

Month	Aerated waters	Asbestos and allied products	Cement products	Sand-lime brick	Coke and by-products	Glass	Illuminating and fuel gas	Products from imported clay	Monumental and ornamental stone	Petroleum products	Miscellaneous non-metallic mineral products	Total
January	855	74	214	164	575	2,998	2,263	520	819	3,116	1,764	13,362
February	804	82	194	120	531	3,051	2,203	513	854	2,976	1,920	13,338
March	944	82	293	153	735	2,925	2,249	479	945	3,001	1,442	13,248
April	1,034	83	392	192	628	2,987	2,550	471	1,007	3,186	1,378	13,908
May	1,266	84	466	228	446	3,044	3,065	444	1,089	3,316	1,280	14,728
June	1,372	110	452	190	477	2,924	3,180	411	1,170	3,284	1,259	14,829
July	1,512	109	414	212	456	2,743	3,220	410	1,238	3,302	1,194	14,810
August	1,405	105	400	178	349	2,433	3,236	415	1,252	3,395	1,183	14,351
September	1,175	65	385	177	349	2,614	3,329	422	1,234	3,348	1,131	14,229
October	1,013	45	357	192	459	3,032	3,223	420	1,196	3,247	1,145	14,329
November	948	44	270	219	393	3,065	3,039	440	1,079	3,142	1,095	13,734
December	915	43	191	229	361	2,866	2,745	364	978	3,023	1,024	12,739
Average	**1,167**	**77**	**400**	**209**	**502**	**2,893**	**2,856**	**444**	**1,135**	**3,221**	**1,614**	**14,518**

Table 8.—Fuel Used in the Manufacture of Non-Metallic Mineral Products, by Kinds and by Industries, 1923

Industry		Anthracite coal	Bituminous coal	Coke	Fuel oil and gasoline	Gas	Wood	Other	Total
		Ton	Ton	Ton	Gal	M cu. ft.	Cord	$	$
AERATED WATERS—	Quantity	1,031	5,897	71	107,279	8,825	1,076	.....	.....
	$	17,042	52,884	960	18,301	3,762	5,644	214	98,807
ASBESTOS AND ALLIED PRODUCTS—	Quantity	28	1,013	.....	41,564	.....	.....	.....	.....
	$	486	7,650	.....	4,156	.....	.....	.....	12,292
CEMENT PRODUCTS—	Quantity	60	2,220	63	21,276	539	115	.....	.....
	$	901	16,040	871	6,482	312	636	.....	25,242
SAND-LIME BRICK—	Quantity	.....	7,579	.....	.....	.....	.....	.....	.....
	$	.....	50,810	.....	.....	.....	.....	.....	50,810
COKE AND BY-PRODUCTS—	Quantity	.....	1,707	780	113,064	1,559,383	.....	.....	.....
	$	.....	7,672	4,680	3,972	167,524	.....	27,667	211,515
GLASS—	Quantity	477	106,048	175	2,137,981	431,027	12	.....	.....
	$	7,578	859,973	674	203,238	275,112	148	19,180	1,365,903
MONUMENTAL AND ORNAMENTAL STONE—	Quantity	259	1,388	68	7,472	280	487	.....	.....
	$	4,211	8,138	999	2,841	861	3,120	.....	20,170
PETROLEUM PRODUCTS—	Quantity	9	172,905	16,361	46,369,951	1,780,039	4	.....	.....
	$	148	1,021,495	101,774	2,423,883	318,196	28	31,748	3,897,272
MISCELLANEOUS NON-METALLIC PRODUCTS—	Quantity	385	10,497	176	41,540	723	182	.....	.....
	$	5,170	78,967	1,551	3,941	582	385	.....	90,596
Total—	**Quantity**	**2,249**	**309,254**	**17,694**	**48,840,127**	**3,780,816**	**1,876**	.....	.....
	$	**35,536**	**2,103,629**	**111,509**	**2,666,814**	**766,349**	**9,961**	**78,809**	**5,772,607**

Table 9.—Fuel and Electricity Used in the Manufacture of Non-Metallic Mineral Products in Canada, by Kinds and by Industries, 1924

Industry	Anthracite coal	Bituminous coal	Coke	Fuel oil and gasoline	Gas	Wood	Other	Electricity	Total
	Ton	Ton	Ton	Gal	M. cu. ft.	Cord	$	K.W.H.	$
AERATED WATERS—									
Quantity	1,406	4,244	77	83,967	13,568	1,472	.....	1,442,336	.....
$	19,139	36,055	911	24,422	6,012	6,632	3,197	35,241	**131,609**
ASBESTOS AND ALLIED PRODUCTS—									
Quantity	.....	893	.....	38,791	.....	3	.....	405,143	.....
$	.....	5,232	.....	3,654	.....	25	.....	11,038	**19,949**
CEMENT PRODUCTS—									
Quantity	487	1,651	57	16,049	566	95	.....	87,362	.....
$	3,656	10,048	532	4,208	341	481	68	7,085	**26,419**
SAND-LIME BRICK—									
Quantity	.....	7,331	.....	592	.....	20	.....	955,494	.....
$	.....	44,901	.....	121	.....	105	20	16,090	**61,237**
COKE AND BY-PRODUCTS									
Quantity	.....	11,589	13,123	.....	5,913,099	.....	.....	8,578,445	.....
$	.....	37,793	66,879	.....	942,656	.....	1,758	75,981	**1,125,067**
GLASS—									
Quantity	689	72,297	272	3,639,800	280,114	12	.....	14,915,018	.....
$	7,922	526,546	2,639	334,018	199,973	156	.....	183,936	**1,255,190**
ILLUMINATING AND FUEL GAS—									
Quantity	759	37,183	141,826	.....	1,339,350	.....	.....	2,945,329	.....
$	3,643	261,436	841,224	.....	1,509,327	.....	42,384	48,168	**2,706,182**
PRODUCTS FROM IMPORTED CLAY—									
Quantity	3,167	11,294	201	48,191	699	262	.....	847,732	.....
$	40,296	84,552	2,156	3,353	489	1,499	130	9,016	**141,491**
MONUMENTAL AND ORNAMENTAL STONE—									
Quantity	291	795	119	19,133	638	372	.....	4,202,106	.....
$	4,168	6,077	1,406	5,294	895	2,725	480	74,746	**95,791**
PETROLEUM PRODUCTS—									
Quantity	18,692	189,571	18,760	42,824,417	1,372,675	35	.....	15,506,873	.....
$	100,225	877,851	90,862	1,931,130	326,502	92	86,677	173,133	**3,586,532**
MISCELLANEOUS NON-METALLIC MINERAL PRODUCTS—									
Quantity	295	6,587	3	4,197	1,896	158	.....	86,112,355	.....
$	4,122	44,231	31	365	1,527	578	.....	513,366	**564,220**
Total—									
Quantity	**25,786**	**343,435**	**174,438**	**46,675,137**	**8,922,605**	**2,429**	.....	**135,998,193**	.....
$	183,171	1,934,722	1,006,640	2,306,565	2,987,782	12,293	134,714	1,147,800	**9,713,687**

Table 10.—Fuel Used in the Manufacture of Non-Metallic Mineral Products in Canada by Kinds and by Provinces, 1923

Province	Anthracite coal	Bituminous coal	Coke	Fuel oil and gasoline	Gas	Wood	Other	Total
	Ton	Ton	Ton	Gal	M cu. ft.	Cord	$	$
PRINCE EDWARD ISLAND—								
Quantity	.....	30	.....	75	.....	.....	.....	.....
$	.....	330	.....	30	.....	.....	.....	**360**
NOVA SCOTIA—								
Quantity	34	1,668	.....	12,925,240	1,511,350	14	.....	.....
$	642	7,856	.....	601,929	160,582	58	.....	**771,067**
NEW BRUNSWICK—								
Quantity	28	681	.....	1,528	160	32	.....	.....
$	442	4,721	.....	429	346	300	.....	**6,238**
QUEBEC—								
Quantity	1,281	46,805	755	13,189,998	877,061	804	.....	.....
$	20,951	402,833	7,949	721,575	61,624	3,765	43	**1,218,740**
ONTARIO—								
Quantity	900	252,135	14,358	7,686,556	795,697	754	.....	.....
$	13,373	1,643,599	91,500	537,278	392,950	4,463	78,675	**2,761,838**
MANITOBA—								
Quantity	4	1,256	3	179,172	.....	160	.....	.....
$	89	13,972	34	16,130	.....	732	.....	**30,957**
SASKATCHEWAN—								
Quantity	2	2,259	383	8,755,478	161,800	48	.....	.....
$	39	14,554	3,217	551,795	61,385	368	.....	**631,358**
ALBERTA—								
Quantity	.....	3,557	.....	206,301	185,070	2	.....	.....
$	.....	9,716	.....	13,242	25,104	12	78	**48,153**
BRITISH COLUMBIA—								
Quantity	.....	863	2,195	5,895,770	249,678	62	.....	.....
$	.....	6,048	8,809	224,406	64,358	263	13	**303,897**
CANADA—								
Quantity	**2,249**	**309,254**	**17,694**	**48,840,127**	**3,780,816**	**1,876**	.....	.....
$	35,536	2,103,629	111,509	2,666,814	766,349	9,961	78,809	**5,772,607**

Table 11.—Fuel and Electricity Used in the Manufacture of Non-Metallic Mineral Products in Canada, by Kinds and by Provinces, 1924

Province	Anthracite coal	Bituminous coal	Coke	Fuel oil and gasoline	Gas	Wood	Other	Electricity	Total
	Ton	Ton	Ton	Gal	M cu. ft.	Cord	$	K.W.H.	$
PRINCE ED. ISLAND—									
Quantity	.....	27	12	2,159	.....	.....	.....	4,143	.....
$	.....	285	115	560	.....	.....	.....	290	1,250
NOVA SCOTIA—									
Quantity	21	11,146	1,748	12,069,441	3,320,916	6	.....	6,667,532	.....
$	240	34,973	183	469,529	338,697	51	.....	81,962	925,635
NEW BRUNSWICK—									
Quantity	27	590	1,463	918	420	102	.....	23,072	.....
$	380	4,559	15,169	270	434	773	.....	1,841	23,426
QUEBEC—									
Quantity	5,010	43,035	40,425	12,150,739	691,166	1,225	.....	82,673,000	.....
$	58,776	346,802	225,996	715,640	639,252	5,381	2,510	283,075	2,277,432
ONTARIO—									
Quantity	20,696	250,753	100,978	6,464,190	3,426,202	720	.....	40,715,329	.....
$	123,283	1,387,750	508,312	442,070	1,583,647	4,726	73,626	680,451	4,863,871
MANITOBA—									
Quantity	26	1,602	11,061	122,146	68,625	148	.....	1,150,236	.....
$	396	15,421	101,105	12,227	108,347	322	20	13,239	251,077
SASKATCHEWAN—									
Quantity	.....	1,318	266	7,286,062	289,856	63	.....	967,950	.....
$	.....	8,958	1,671	375,355	49,841	443	8,417	25,334	470,019
ALBERTA—									
Quantity	.....	32,863	1,766	3,411,234	289,419	44	.....	1,403,697	.....
$	.....	122,659	10,260	102,970	51,783	90	4,413	23,993	316,168
BRITISH COLUMBIA—									
Quantity	6	2,101	16,719	5,168,248	836,001	121	.....	2,393,144	.....
$	96	13,309	83,829	187,944	215,781	507	45,728	37,615	584,809
CANADA—									
Quantity	**25,786**	**343,435**	**174,438**	**46,675,137**	**8,922,685**	**2,429**	.....	**135,998,193**	.....
$	**183,171**	**1,934,722**	**1,006,640**	**2,306,565**	**2,987,782**	**13,293**	**134,714**	**1,147,800**	**9,713,687**

Table 12.—Power Equipment in Use in the Manufacture of Non-Metallic Mineral Products in Canada, by Classes and by Industries, 1923

Industry	Boilers	Steam engines and turbines	Gas engines	Oil and gasoline engines	Hydraulic turbines or water wheels	Electric motors	
						Operated by power owned	Operated by power purchased
	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.
Aerated waters	919	242	16	110	11	.....	1,426
Asbestos and allied products	100	.....	.....	.....	.....	.....	548
Cement products and sand-lime brick	1,240	604	40	293	.....	.....	1,343
Coke and by-products	4,473	3,224	.....	.....	.....	4,660	3,860
Glass	1,140	235	127	300	.....	175	6,221
Illuminating and fuel gas	9,705	1,244	218	8	.....	52	1,871
Monumental and ornamental stone	185	162	109	64	32	.....	4,899
Petroleum products	19,909	9,619	967	1,050	.....	2,925	4,620
Miscellaneous non-metallic products	70	.....	.....	.....	.....	.....	4,937
Total	**37,741**	**15,330**	**1,477**	**1,825**	**43**	**7,813**	**29,725**

Table 13.—Power Equipment in Use in the Manufacture of Non-Metallic Mineral Products in Canada, by Classes and by Industries, 1924

Industry	Boilers	Steam engines and turbines	Gas engines	Oil and gasoline engines	Hydraulic turbines or water wheels	Electric motors	
						Operated by power owned	Operated by power purchased
	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.
Aerated waters	1,092	194	16	67	14	45	1,620
Asbestos and allied products	273	.....	.....	.....	.....	97	536
Cement products	580	253	148	203	.....	.....	542
Sand-lime brick	1,115	700	.....	.....	.....	.....	891
Coke and by-products	6,137	2,993	.....	.....	.....	5,043	4,080
Glass	2,043	.....	427	.....	.....	523	6,243
Illuminating and fuel gas	8,875	808	813	150	.....	196	2,153
Products from imported clay	360	35	.....	.....	.....	.....	402
Monumental and ornamental stone	130	46	68	96	.....	122	4,998
Petroleum products	18,961	9,072	970	1,040	.....	2,542	5,859
Miscellaneous non-metallic products	820	50	.....	.....	.....	401	159,166
Total	**40,386**	**14,151**	**2,442**	**1,556**	**14**	**8,969**	**186,490**

Table 14.—Power Equipment in Use in the Manufacture of Non-Metallic Mineral Products in Canada, by Classes and by Provinces, 1923

Province	Boilers	Steam engines and turbines	Gas engines	Oil and gasoline engines	Hydraulic turbines or water wheels	Electric motors	
						Operated by power owned	Operated by power purchased
	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.
Prince Edward Island	.....	.....	.....	2	.....	.....	10
Nova Scotia	7,000	3,134	3	1,027	30	6,287	258
New Brunswick	220	162	98	1	.....	5	203
Quebec	5,552	4,146	130	128	8	688	5,156
Ontario	17,237	4,824	264	353	3	222	17,843
Manitoba	1,260	303	.....	2	.....	.....	1,615
Saskatchewan	2,066	984	3	.....	.....	606	243
Alberta	1,866	1,108	967	312	.....	4	2,017
British Columbia	2,540	669	12	.....	2	.....	2,380
Canada	**37,741**	**15,330**	**1,477**	**1,825**	**43**	**7,812**	**29,725**

Table 15.—Power Equipment in Use in the Manufacture of Non-Metallic Mineral Products in Canada, by Classes and by Provinces, 1924

Province	Boilers	Steam engines and turbines	Gas engines	Oil and gasoline engines	Hydraulic turbines or water wheels	Electric motors	
						Operated by power owned	Operated by power purchased
	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.	Rated h.p.
Prince Edward Island	.....	.....	.....	.....	.....	.....	10
Nova Scotia	7,034	3,138	3	1,029	.....	6,292	208
New Brunswick	285	147	83	18	2	5	247
Quebec	6,764	4,296	137	119	4	1,521	4,399
Ontario	19,822	4,193	612	223	6	1,132	173,906
Manitoba	242	136	.....	127	.....	10	1,247
Saskatchewan	2,216	1,124	100	3	.....	.....	1,801
Alberta	1,859	411	1,395	12	.....	4	2,189
British Columbia	2,164	706	112	25	2	5	2,483
Canada	**40,386**	**14,151**	**2,442**	**1,556**	**14**	**8,969**	**186,490**

Table 16.—Imports into Canada of Non-Metallic Minerals and Their Products, 1923 and 1924

Commodity	1923		1924	
	Quantity	Value	Quantity	Value
		$		$
Asbestos		697,319		441,300
Asbestos packing	lb. 167,678	78,009	221,266	98,418
Magnesia pipe covering		141,926		121,046
Total		917,254		660,764
CLAY AND ITS PRODUCTS				
Bath brick		1,938		1,799
Building brick	M 5,381	140,441	5,425	124,983
Building blocks		77,972		63,559
Clays—				
China	ton 17,120	242,860	19,531	250,113
Fire	ton 53,506	223,628	44,305	186,696
Pipe		1,161		847
Other clays		99,515		56,590
Drain tile, unglazed		2,041		3,014
Drain and sewerpipe		61,868		68,449
Earthen and china ware		5,067,489		4,124,607
Firebrick[1]		970,324		835,452
Firebrick, chrome (May 12, 1923)		4,000		
Firebrick, n.o.p.		610,243		284,388
Magnesite brick		120,453		91,553
Silica brick		216,642		154,251
Paving brick	M 3,243	90,767	2,559	69,493
Other clay manufactures		241,320		842,577
Total clay and its products		8,172,662		7,158,371
COAL AND ITS PRODUCTS				
Coal				
Anthracite coal and anthracite dust[2]	ton 5,165,382	46,457,962	4,152,558	37,280,910
Bituminous round and run-of-mine[3]	ton 11,933,610	39,511,911	9,222,019	23,120,128
Bituminous slack such as will pass through ¾-in. screen[4]	ton 3,888,630	10,387,188	3,324,195	6,508,515
Lignite and lignite dust (May 12, 1923)	ton 2,331	12,846	26,007	117,955
Total coal		96,369,907		67,027,508
Coal Products				
Coal tar, crude, in packages of not less than 16 gallons, and coal pitch	gal 5,774,256	324,732	2,880,499	186,178
Carbolic or heavy oil	gal 2,813,551	529,558	3,734,722	681,063
Coke	ton 733,604	5,790,771	521,725	3,131,485
Coke, ground, when imported by manufacturers of electric batteries for use in their own factories in the manufacture of such batteries	cwt. 9,354	24,902	12,638	39,392
Total coal products		6,669,963		4,038,118
Total coal and its products		103,039,870		71,065,626
GLASS AND GLASSWARE				
Cut, Pressed or Blown Glass				
Glass plates or discs, rough cut or unwrought, for use in the manufacture of optical instruments, when imported by manufacturers of such optical instruments		69,253		67,083
Glass milk bottles—(From May 24, 1922)		22,499		17,051
Glass carboys or demijohns, bottles, decanters, flasks, jars and phials		1,102,279		1,161,532
Glass bulbs, and cut, pressed or moulded crystal glass tableware, blown glass tableware, and other cut glassware		653,688		647,197
Incandescent lamp bulbs and glass tubing for use in the manufacture of incandescent lamps		513,225		383,745
Lamp chimneys, glass shades or globes		255,220		230,704
Lenses, glass, unfinished		187,982		159,922

[1] Duty free of a kind not made in Canada.
[2] Coal anthracite and anthracite coal dust, duty free.
[3] Duty, 35 cents per ton.
[4] Duty, 14 cents per ton.

Table 16.—Imports into Canada of Non-Metallic Minerals and Their Products, 1923 and 1924—Continued

Commodity	1923		1924	
	Quantity	Value	Quantity	Value
		$		$
GLASS AND GLASSWARE—*Concluded*				
PLATE, SHEET AND WINDOW GLASS				
Common and colourless window glass.....sq. ft.	22,314,498	1,069,803	23,092,455	1,042,570
Glass, cut to size for the manufacture of dry plates for photographic purposes, when imported by the manufacturers of such dry plates for use exclusively in the manufacture thereof in their own factories	.....	15,277	.....	16,484
Plate glass, not bevelled, in sheets or panes not exceeding 7 sq. ft. each, n.o.p.....sq. ft.	2,142,853	1,260,883	1,927,123	878,983
Plate glass, not bevelled, in sheets or panes exceeding 7 sq. ft. each, and not exceeding 25 sq. ft. each, n.o.p.....sq. ft.	748,906	437,172	583,277	310,476
Plate glass, n.o.p.....sq. ft.	1,115,979	676,017	783,624	463,866
Plate glass, bevelled, n.o.p.....“	31,797	18,860	24,766	14,586
German looking-glass (thin plate), unsilvered or for silvering.....	.....	541	.....	.....
Glass in sheets and bent plate glass, n.o.p.....	.....	253,607	.....	172,150
STAINED, ORNAMENTAL AND SILVERED GLASS				
Lenses, silvered, for automobile lamps.....	.....	54	.....	136
Ornamental, figured and enamelled coloured glass, and memorial or other ornamental window glass.....	.....	15,261	.....	10,819
Painted or vitrified, chipped, figured, enamelled and obscured white glass.....	.....	5,009	.....	16,607
Plain, coloured, opaque, stained or tinted or muffled glass in sheets.....	.....	6,638	.....	11,176
Stained or ornamental glass windows.....	.....	27,799	.....	9,810
Silvered glass, bevelled or not, framed or not framed.....	.....	206,933	.....	178,871
OTHER GLASS AND GLASSWARE				
Articles of glass, not plate or sheet, designed to be cut or mounted.....	.....	206,126	.....	182,004
Photographic dry plates.....	.....	20,656	.....	25,194
Spectacles, eye-glasses and ground or finished spectacle or eye-glass lenses.....	.....	64,996	.....	77,994
Manufactures of glass, n.o.p.....	.....	539,790	.....	573,665
Total glass and glassware.....	.....	7,629,598	.....	6,652,625
GRAPHITE AND ITS PRODUCTS				
Crucibles, plumbago.....	.....	57,322	.....	42,740
Plumbago not ground or otherwise manufactured.....	.....	1,661	.....	2,651
Plumbago ground and manufactures of, n.o.p.....	.....	70,704	.....	50,924
Total graphite.....	.....	129,687	.....	96,315
PETROLEUM, ASPHALT AND THEIR PRODUCTS				
ASPHALT AND ITS PRODUCTS				
Asphalt or asphaltum solid.....cwt.	251,442	267,462	341,408	283,658
Asphalt, not solid.....	.....	17,095	.....	10,536
Asphaltum oil.....	.....	27,282	.....	37,794
Total asphalt and its products.....	.....	311,839	.....	331,988
PETROLEUM OILS, CRUDE, FUEL AND GAS				
Crude petroleum not in its natural state, ·7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners, to be refined in their own factories (May 12, 1923).gal	15,922	966	55,758	3,953
Crude petroleum in its natural state, ·7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners to be refined in their own factories.....gal.	392,185,557	17,449,032	465,958,509	20,260,488
Crude petroleum, gas oils other than naphtha, benzine and gasoline lighter than ·8235 but not less than ·775 specific gravity at 60 degrees.....gal.	475,842	38,908	139,745	10,875
Petroleum (not including crude petroleum) imported to be refined or illuminating or lubricating oils, ·8235 specific gravity or heavier at 60 degrees temperature.....gal.	108,506,938	4,206,193	94,104,526	4,122,333
Petroleum, imported by miners or mining companies or concerns, for use in the concentration of ores of metals in their own concentrating establishments.....gal.	32,960	5,913	139,473	35,880

Table 16—Imports into Canada of Non-Metallic Minerals and Their Products, 1923 and 1924—Continued

Commodity	1923		1924	
	Quantity	Value	Quantity	Value
		$		$
PETROLEUM, ASPHALT AND THEIR PRODUCTS—Concluded				
Petroleum Oils, Refined				
Coal oil and kerosene, distilled, purified or refined ..... gal.	4,118,943	322,434	5,410,973	444,646
Coal oil and kerosene distilled known as "engine distillates" ·725 specific gravity and heavier but not heavier than ·770 specific gravity at 60 degrees temperature ..... gal.	8,203	962	20,420	2,942
Illuminating oils, composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon ..... gal.	42,474	16,296	10,655	4,215
Lubricating oils, composed wholly or in part of petroleum, and costing less than 25 cents per gallon ..... gal.	4,295,635	737,053	3,075,337	728,250
Lubricating oils, n.o.p. ..... gal.	3,901,048	1,573,897	4,521,086	1,714,403
Gasoline under ·725 specific gravity at 60 degrees temperature .. gal.	35,845,251	5,134,286	56,389,078	7,138,561
Gasoline, n.o.p. ..... gal.	177,566	32,750	284,115	38,745
Gasoline ·725 specific gravity but not heavier than ·770 specific gravity at 60 degrees temperature ..... gal.	13,927,843	1,993,596	17,084,248	2,166,847
All other oils, n.o.p. ..... gal.	248,888	86,958	260,901	119,088
Other Products of Petroleum				
Grease, axle ..... lb.	2,981,849	176,216	2,853,720	165,694
Paraffine wax ..... "	1,034,921	63,695	837,317	65,782
Paraffine wax candles ..... "	176,487	32,516	202,505	36,884
Vaseline and all similar preparations of petroleum for toilet, medicinal or other purposes	.....	268,267	.....	195,457
Petroleum, products of, n.o.p. ..... gals.	1,712,665	299,388	1,298,590	242,996
Total petroleum and its products	.....	32,439,326	.....	37,408,039
Total asphalt, petroleum and their products	.....	32,751,165	.....	37,830,027
STONE AND ITS PRODUCTS				
Abrasives				
Grindstones	.....	482,340	.....	593,670
Burrstones in blocks, etc. ..... No.	319	6,908	145	791
Diamond dust or bort and black diamonds for borers	.....	244,252	.....	399,835
Emery in bulk, crushed or ground	.....	57,267	.....	53,208
Emery and carborundum wheels and manufactures	.....	151,065	.....	76,071
Pumice and pumice stone ground	.....	28,222	.....	28,127
Iron sand or globules for polishing and sawing	.....	20,855	.....	17,085
Sandpaper, emery paper, etc	.....	203,965	.....	279,586
Artificial abrasives	.....	243,408	.....	125,303
Total abrasives	.....	1,528,282	.....	1,575,476
Building and Paving Stone				
Building stone	.....	403,550	.....	267,699
Granite	.....	158,864	.....	140,237
Marble	.....	293,806	.....	291,380
Paving blocks	.....	61	.....	.....
Refuse stone ..... ton	392,819	225,565	281,824	174,738
Total building and paving stone	.....	1,081,846	.....	874,054
Lime, Plaster and Cement				
Portland cement ..... brl.	17,697	75,294	27,672	69,320
Manufactures of	.....	86,974	.....	9,772
Total cement	.....	162,268	.....	79,092
Lime ..... ton	4,989	55,820	4,418	46,578
Gypsum				
Crude ..... ton	3,654	39,336	3,252	63,156
Ground ..... "	78	3,253	102	2,174
Plaster of Paris ..... "	3,617	54,591	3,969	62,770
Total gypsum ..... "	7,349	97,180	7,323	128,100

Table 16—Imports into Canada of Non-Metallic Minerals and Their Products, 1923 and 1924—Concluded

Commodity	1923		1924	
	Quantity	Value	Quantity	Value
		$		$
STONE AND ITS PRODUCTS—*Concluded*				
SLATE				
Roofing ..... square	5,905	67,507	5,718	71,298
School-writing	.....	111,922	.....	74,879
Pencils	.....	9,027	.....	7,601
All other	.....	77,390	.....	66,624
Total slate	.....	265,846	.....	220,402
OTHER STONE PRODUCTS				
Chalk, China or Cornwall stone, cliff stone and mica schist, ground or unground	.....	32,693	.....	17,595
Chalk, prepared	.....	110,815	.....	94,355
Curling stones and handles therefor ..... pair	1,034	20,199	855	17,703
Feldspar ..... ton	1,701	36,622	1,921	37,845
Quartz—				
Silex ..... ton	2,303	57,940	1,941	49,552
Flint ..... ton	6,327	81,704	6,016	64,753
Hydro-fluo-silicic acid ..... ton	3·8	662	0·14	40
Fluorspar ..... ton	17,235	199,595	4,355	50,158
Ganister ..... cwt.	99,063	21,843	6,095	2,211
Lithographic stones, not engraved	.....	4,585	.....	3,553
Magnesite ..... ton	244	9,223	280	8,980
Phosphate rock ..... ton	15,845	86,192	11,668	56,965
Sand, silica for glass, etc ..... cwt.	3,351,123	317,250	2,635,560	324,279
Sand and gravel ..... ton	355,126	247,388	150,868	118,397
Whiting, gilder's whiting, and Paris white ..... cwt.	277,958	178,070	279,706	166,915
Manufactures of stone, n.o.p.	.....	52,048	.....	36,103
Total other stone products	.....	1,456,829	.....	1,049,404
Total stone and its products	.....	4,648,071	.....	3,973,106
OTHER NON-METALLICS				
BARIUM COMPOUNDS				
Barium peroxide ..... ton	60	16,495	37	11,883
Blanc fixe and satin white ..... ton	1,946	68,502	.....	.....
Blanc fixe ..... ton	.....	.....	354	21,742
Satin white ..... ton	.....	.....	758	21,591
Barytes ..... ton	2,420	53,670	2,322	48,693
Total barium compound	.....	138,667	.....	103,909
Blast furnace slag	.....	7,577	.....	25,665
Carbons over 3 inches in circumference and not exceeding 35 inches	.....	725,931	.....	754,109
Carbon electrodes over 35 inches in circumference	.....	12,827	.....	14,483
Carbons, electric light, and carbon points, of all kinds, n.o.p.	.....	51,672	.....	35,287
Diamonds, unset	.....	2,348,706	.....	2,166,564
Earths, crude only	.....	847	.....	1,092
Foundry facings of all kinds	.....	31,170	.....	12,109
Fuller's earth, in bulk only	.....	23,159	.....	25,142
Insulators, electric	.....	653,247	.....	631,987
Meerschaum, crude or raw ..... lb.	.....	428	9	64
Total	.....	3,855,564	.....	3,666,502
SALT				
Fine, in bulk[1] ..... ton	65,118	317,773	68,199	332,649
In bags, barrels[2] ..... ton	38,799	455,306	43,508	462,184
All other[3] ..... ton	67,941	294,526	71,179	339,557
Total salt ..... ton	171,858	1,067,605	182,886	1,134,390
Brimstone or sulphur, crude, or in roll or flour ..... ton	135,767	1,803,550	131,547	1,776,978
Mineral and bituminous substances, n.o.p.	.....	940,233	.....	724,035
Grand total	.....	**165,093,416**	.....	**134,842,648**

[1] Duty 5 cents per 100 pounds.
[2] Duty 7½ cents per 100 pounds.
[3] Free—imported for use of sea or gulf fisheries.

Table 17.—Exports from Canada of Non-Metallic Minerals and Their Products, 1923 and 1924

Commodity		1923		1924	
		Quantity	Value	Quantity	Value
			$		$
ASBESTOS					
Asbestos	ton.	137,551	7,628,777	107,200	6,297 819
Sand and waste	"	77,951	931,245	95,089	1,220.070
Manufactures		.....	72,498	.....	44.132
Total		.....	8,632,520	.....	7,562,021
CLAY AND ITS PRODUCTS					
Building brick	M	4,069	42,742	2,988	38,105
Clay—					
Unmanufactured	cwt.	11	52	1,346	1,127
Manufactures		.....	109,957	.....	109,295
Earthenware		.....	432,092	.....	72,839
Porcelain insulators		.....	.....	.....	322,206
Total		.....	584,843	.....	543,572
COAL AND ITS PRODUCTS					
Coal	ton.	1,654,406	10,661,399	773,246	4,836,548
Cinders		.....	2,897	.....	10,918
Coke	"	34,407	433,497	23,144	393,979
Tar and pitch, coal	gal.	4,586,753	582,013	2,339,041	273,900
Total		.....	11,679,806	.....	5,515,345
GLASS AND GLASSWARE					
Glass for lighting		.....	147,736	.....	68,009
Glass and glassware n.o.p		.....	751,638	.....	250,666
Total		.....	899,374	.....	318,675
GRAPHITE AND ITS PRODUCT					
Graphite or plumbago, crude or refined	ton	799	36,980	1,148	59,992
MICA AND ITS PRODUCTS					
Cobbed	ton.	85	40,286	88	52,527
Splittings	"	502	624,110	285	424,503
Scrap and waste	"	4,855	70,866	4,519	63,610
Plate and manufactures	"	.....	22,014	.....	3,326
Total		.....	757,276	.....	543,966
PETROLEUM AND ITS PRODUCTS					
Oil, coal and kerosene, crude	gal.	2,384,899	138,381	18,263,236	529,497
Oil, coal and kerosene, refined	"	1,450,051	139,924	1,525,427	165,520
Oil, gasoline and naphtha	"	1,217,298	263,326	1,403,716	256,966
Oil, mineral, n.o.p	"	1,200,347	223,511	627,671	161,259
Wax, mineral	cwt.	66,274	206,575	33,171	147,810
Total		.....	971,717	.....	1,261,052
STONE AND ITS PRODUCTS					
Building and Paving Stone					
Crushed	ton.	89,434	159,088	59,984	100,873
Ornamental, rough[1]	"	3,165	30,350	3,390	45,195
Building, rough[2]	"	1,302	12,575	2,059	18,680
Dressed		.....	20,227	.....	5,365
Total		.....	222,240	.....	170,113

[1]Granite marble unwrought.
[2]Freestone, limestone, etc., unwrought.

Table 17.—Exports from Canada of Non-Metallic Minerals and Their Products, 1923 and 1924—Concluded

Commodity		1923		1924	
		Quantity	Value	Quantity	Value
STONE AND ITS PRODUCTS—Concluded			$		$
ABRASIVES					
Grindstones, manufactured			37,101		49,630
Stone for the manufacture of grindstones	ton.	170	1,190	120	1,080
Abrasives—					
Natural, n.o.p.	cwt.	47,710	115,342	5,756	10,321
Artificial, crude, including carborundum	"	887,343	2,819,558	791,863	2,591,310
Artificial, made up into wheels, stones, etc.			27,127		13,264
Corundum	ton.	6	744	2	251
Total			3,001,062		2,665,856
LIME, PLASTER AND CEMENT					
Lime	ton	24,326	428,286	22,750	411,122
Cement	brl.	493,751	824,811	153,520	213,845
Gypsum—					
Crude	ton.	397,329	578,859	472,236	747,829
Ground	"	4,654	92,478	5,226	83,927
Total	"	401,983	671,337	477,462	831,756
Total lime, plaster and cement			1,924,434		1,456,723
OTHER STONE PRODUCTS					
Feldspar	ton.	26,476	177,569	37,869	274,681
Magnesite calcined dead burned	"	563	14,056	293	8,520
Sand and gravel	"	764,521	182,750	1,036,029	210,496
Talc	"	7,233	99,239	7,876	98,571
Total other stone products			473,614		592,268
Total stone and its products			5,621,351		4,884,960
OTHER NON-METALLIC PRODUCTS					
Carbon electrodes			50,085		168,369
Sulphur contained in pyrites	ton.	9,670	46,514	219	1,081
Salt	cwt.	17,220	10,201	19,304	10,795
Other non-metallic minerals and their products			214,862		80,119
Total			321,662		260,364
Grand total			**29,505,528**		**20,949,947**

Table 18.—Alphabetical List of Products Made in All the Industries Classified under Manufactures of the Non-Metallic Minerals in Canada, 1924

Commodity	Industry Number — See list at end of table	Unit	Quantity	Total selling value
				$
Ammonia liquor	2-3	1 lb. NH_3	1,756,054	113,793
Ammonium sulphate	2-3	"	34,685,134	865,538
Asphalt	8	Imp. gal.	20,173,934	1,817,060
Asbestos linings	1	Sq. ft.	429,698	186,295
Asbestos packing	1	lb.	219,422	128,037
Asbestos shingles, millboard and building lumber				97,361
Asbestos pipe covering and corrugated sheathings	1			83,373
Bricks, cement	12	M.	37,481	53,066
Bricks, sand-lime	15	M	55,873	619,946
Carborundum, crude, and firesand; aluminous abrasives such as aloxite, alundum, fuse alumina, etc.	13			4,990,441
Cement blocks, hollow building	12			523,326
Cider	17			186,134
Coke	2-3	Ton	1,370,599	10,288,803
Coke breeze	2	"	66,313	144,144
Coke, acid	8	"	11,223	42,118
Coke, petroleum	8	"	38,102	270,403

Table 18.—Alphabetical List of Products Made in All the Industries Classified under Manufactures of the Non-Metallic Minerals in Canada, 1924—Concluded

Commodity	Industry Number — See list at end of table	Unit	Quantity	Total selling value
				$
Custom work and repairs	1-4-7-18	.....	.....	73,698
Drain pipe, cement	12	.....	.....	53,989
Distillate	8	Imp. gal.	2,648,738	289,543
Fireclay blocks and shapes	16	.....	.....	146,016
Gas, acetylene	3	M. cu. ft.	1,584	.....
Gas, straight coal	3	"	7,991,915	.....
Gas, carburetted water	3	"	5,027,331	.....
Gas, mixed coal and water	3	"	103,218	.....
Gas, pintsch	3	"	69,621	.....
Gas, still	8	"	1,186,787	302,946
Gas sold	2-3	"	12,814,713	14,689,336
Gas used in heating ovens or retorts	2	"	5,125,920	879,682
Gas otherwise used in plant or otherwise accounted for but not sold	2	"	2,375,792	578,593
Gasoline	7-8	Imp. gal.	160,245,739	25,847,219
Glass, building	5	.....	.....	321,561
Glass, cut	4	.....	.....	500,563
Glass, ornamental and art	4	.....	.....	34,809
Glass, pressed and blown	5	.....	.....	8,467,875
Glass, window, show case, windshield, etc	4	Ft.	502,502	355,678
Glass and lights, leaded	4	.....	.....	169,578
Glass for glazing, bent glass and cut plates	4	.....	.....	50,361
Grinding wheels, abrasive wheels, razor hones and alundum tile	13	.....	.....	432,161
Granite, cut and polished for building purposes	9	.....	.....	465,539
Grease, axle, cup and other	7-8	lb.	10,427,590	260,675
Gypsum wallboard and wall coating	11	.....	.....	659,837
Insulators, porcelain	16	.....	.....	1,332,079
Kerosene	7-8	Imp. gal.	61,328,467	7,490,442
Lamp stands and shades	4-11	.....	.....	16,906
Limestone, for building purposes	9	.....	.....	1,041,485
Marble, for building purposes	9	.....	.....	633,356
Marble chips and dust	9	.....	.....	46,530
Mica, thumb trimmed and knife trimmed	18	lb.	95,420	22,689
Mica, n.e.s.	18	"	40,318	43,561
Mica plate, amber commutator and flexible	18	"	13,270	24,063
Mica splittings	18	"	388,548	298,318
Mineral water, natural	17	.....	.....	178,715
Mirrors and bevelled plates	4	.....	.....	699,805
Monuments finished (lettered only)	9	.....	.....	822,661
Monuments, granite, cut and polished	9	.....	.....	1,223,417
Monuments, marble, cut and polished	9	.....	.....	298,482
Monuments, and bases, limestone	9	.....	.....	42,577
Oil, acid	8	Imp. gal.	1,568,004	71,672
Oils, fuel and gas	8	"	177,123,232	9,076,746
Oils, lubricating	7-8	"	15,479,465	3,061,116
Oils, light	2-3	"	1,201,634	93,179
Oils, n.e.s. (absorption, core, ink, road and motor fuel)	2-4-7-8	"	549,648	156,548
Petroleum spirits	8	"	788,571	132,093
Pottery, glazed and unglazed	16	.....	.....	53,678
Plaster castings, assorted statues and church supplies	10	.....	.....	102,040
Sewer pipe and culvert tile, cement	12	.....	.....	419,730
Soap, liquid, soft and powder	7	.....	.....	64,933
Soda water and carbonated beverages	17	.....	.....	5,438,462
Stone, artificial	12	.....	.....	77,484
Syrups and fruit juices	17	.....	.....	264,559
Tar and tar products	2-3	Imp. gal.	19,007,522	736,034
Wax and candles	8	lb.	9,112,143	551,434
Windows, church and memorial	4	.....	.....	85,301
All other products (including ceramic wall tile, glazed and unglazed, electrodes, foundry supplies, graphite, cement posts, poles, etc., pavement and window prisms, sanitary ware, and various other products	.....	.....	.....	1,561,573
Total	.....	.....	.....	111,151,828

KEY TO THE NUMBERED INDUSTRIES

1. Asbestos and Allied Products
2. Coke and Its By-Products
3. Illuminating and Fuel Gas
4. Plate, Cut and Ornamental Glass
5. Pressed and Blown Glass
6. Graphite and Its Products
7. Lubricating Oils, Greases, Etc.
8. Petroleum Refining
9. Monumental and Ornamental Stone
10. Plaster Castings and Models
11. Gypsum Products
12. Cement Products
13. Abrasive Products
14. Artificial Abrasives
15. Sand Lime Brick
16. Products From Imported Clay
17. Aerated Waters
18. Mica Trimming
19. Miscellaneous Non-Metallic Mineral Products

Table 19.—Quantities and Values of Mineral Products from Canadian Sources, 1923 and 1924

		1923			1924		
		Quantity	Value	Per cent of total	Quantity	Value	Per cent of total
Metallic			$			$	
Arsenic AS_2O_3	Lb.	6,421,587	626,815	0·29	4,621,567	348,293	0·16
Bismuth	"				12,863	27,913	0·01
Chromite Cr_2O_3	Ton.	3,558	52,650	0·03			
Cobalt, metallic and contained in oxide	Lb.	888,061	2,530,974	1·18	948,704	1,682,395	0·80
Copper	"	86,881,537	12,529,186	5·85	104,457,447	13,604,538	6·50
Gold	Fine oz.	1,233,341	25,495,421	11·92	1,525,382	31,532,443	15·05
Iron pig, from Canadian ore	Ton.	20,739	432,298	0·20	3,710	92,750	0·04
Iron ore sold for export	"	5,670	20,279	0·01	1,408	3,771	
Lead	Lb.	111,234,466	7,985,522	3·73	175,485,499	14,221,345	6·79
Manganese ore	Ton.	200	1,400		584	4,088	
Molybdenite	Lb.				18,739	9,370	
Nickel	"	62,453,843	18,332,077	8·56	69,536,350	19,470,178	9·29
Palladium	Fine oz.	1,732	138,560	0·06	8,923	811,993	0·39
Platinum	"	1,217	141,826	0·07	9,186	1,091,427	0·52
Rhodium, Osmium, Iridium	"	304	45,000	0·02	593	51,120	0·02
Silver	"	18,601,744	12,067,509	5·64	19,736,323	13,180,113	6·29
Zinc	Lb.	60,416,240	3,991,701	1·86	98,909,077	6,274,791	3·00
Total			**84,391,218**	**39·42**		**102,406,528**	**48·86**
Non-metallic							
Actinolite	Ton.	53	583		90	1,225	
Asbestos	"	231,482	7,522,506	3·51	225,744	6,710,830	3·20
Barytes	"	409	8,548		151	3,308	
Bituminous sands	"				531	2,127	
Coal	"	16,990,571	72,058,986	33·66	13,638,197	53,593,988	25·58
Feldspar	"	29,225	237,601	0·11	44,804	358,540	0·17
Fluorspar	"	139	1,732		76	1,343	
Garnets	"	1,250	100,000	0·05	360	7,200	
Graphite	"	1,113	67,873	0·03	1,334	76,117	0·04
Grindstones	"	2,014	80,083	0·04	2,691	130,824	0·06
Gypsum	"	578,301	2,243,100	1·05	646,016	2,208,108	1·06
Magnesite	"	4,801	134,382	0·06	3,873	101,356	0·05
Magnesium sulphate	"	121	6,580				
Mica	"	3,525	326,071	0·15	4,091	357,272	0·17
Mineral water	Imp. gal.	232,451	16,455		209,353	15,421	0·01
Natro-alunite	Ton.	15	750				
Natural gas	M cu. ft.	15,960,583	5,884,618	2·75	14,881,336	5,708,636	2·73
Oxides, iron	Ton.	10,424	129,636	0·06	7,266	91,160	0·04
Petroleum, crude	Brl.	170,189	522,018	0·24	160,773	467,400	0·22
Phosphate	Ton.	30	600				
Pyrites	"	28,591	113,020	0·05	23,552	95,620	0·05
Quartz	"	264,076	599,250	0·28	150,896	323,156	0·15
Salt	"	202,397	1,713,516	0·80	207,979	1,374,780	0·66
Sodium carbonate	"	265	3,975		510	5,173	
Sodium sulphate	"	733	10,489		1,083	6,004	
Talc and soapstone	"	10,366	150,507	0·07	11,332	154,480	0·07
Tripolite	"	130	3,250		33	838	
Volcanic ash	"				245	1,103	
Total			**91,936,732**	**42·95**		**71,796,009**	**34·26**
Structural material and clay products							
Cement, portland and puzzolan	Brl.	7,543,589	15,064,661	7·04	7,498,624	13,398,411	6·39
Clay products—							
Brick—Soft mud process, Face	M				10,831	185,248	0·09
Brick—Soft mud process, Common	"				50,079	746,014	0·36
Brick—Stiff mud process (wire cut), Face	"				80,565	1,842,224	0·88
Brick—Stiff mud process (wire cut), Common	"	388,647	6,701,317	3·13	124,556	1,880,631	0·90
Brick—Dry press, Face	"				35,203	761,572	0·36
Brick—Dry press, Common	"				12,794	168,043	0·08
Fancy or ornamental brick	"				755	98,460	0·05
Sewer brick	"				2,690	40,775	0·02
Fire brick from domestic clay	"	6,122	295,037	0·13	4,327	209,256	0·10
Fireclay	Ton.	2,685	24,158		3,645	26,258	0·01
Kaolin	"	163	2,369				
Fireclay blocks and shapes	"		81,345	0·04		51,273	0·02
Structural tile—Hollow blocks (including fire-proofing and load-bearing tile)	"		1,209,605	0·55	96,818	926,777	0·44
Roofing tile	No.				7,377	917	
Floor tile (quarries)	Sq. ft.				444,601	35,608	0·02
Drain tile	M	10,599	323,314	0·15	15,137	409,369	0·20
Sewer pipe (including copings, flue lining, etc.)	Ton.	70,252	1,616,324	0·75	76,355	1,594,280	0·76
Pottery, glazed or unglazed			229,547	0·10		238,342	0·11
Lime	Bush.	10,035,319	3,266,608	1·53	9,136,952	3,178,541	1·51
Sand and gravel	Ton.	12,752,515	3,016,518	1·41	11,603,500	3,181,083	1·52
Slate	"	1,836	17,289				
Stone—							
Granite	Ton.	398,432	1,159,303	0·54	419,971	1,013,345	0·47
Limestone	"	3,687,663	4,475,921	2·09	4,249,001	4,831,684	2·35
Marble	"	2,473	201,518	0·09	4,379	322,455	0·14
Sandstone	"	22,766	66,547	0·03	94,603	240,273	0·10
Total			**37,751,381**	**17·63**		**35,380,469**	**16·88**
Grand total			**214,079,331**	**100·00**		**209,583,406**	**100·00**

Table 20.—Values by Classes of Products of the Mineral Production of Canada, by Provinces, 1924

Province	Metallic	Non-Metallic	Structural materials and clay products	Total
	$	$	$	$
Nova Scotia*	36,916	23,250,539	532,897	23,820,352
New Brunswick	4,088	1,643,178	321,994	1,969,260
Quebec	604,279	7,259,686	11,272,539	19,136,504
Ontario	61,980,175	6,989,032	17,429,449	86,398,656
Manitoba	24,486	348,272	1,161,491	1,534,249
Saskatchewan	.....	893,775	234,325	1,128,100
Alberta	.....	20,687,198	1,657,742	22,344,940
British Columbia	38,812,037	10,716,064	2,770,432	52,298,533
Yukon Territory	944,547	8,265	.....	952,812
Canada	**102,406,528**	**71,796,009**	**35,380,869**	**209,583,406**

*Includes a small production from Prince Edward Island.

Table 21.—Prices of Non-Metallic Minerals and Structural Materials, 1923 and 1924, showing Average Returns Received by Producers, f.o.b. Shipping Points in Canada as Computed from the Total Receipts and Total Shipments for the Year.

Commodity	Unit	1923	1924
NON-METALLIC		$	$
Actinolite	Ton	11·00	13·60
Asbestos	"	32·50	29·73
Barytes	"	20·89	21·90
Coal	"	4·24	3·93
Feldspar	"	8·13	8·00
Fluorspar	"	12·46	17·66
Graphite	"	60·98	57·05
Grindstones	"	39·76	48·60
Gypsum (crushed)	"	1·90	1·82
Magnesite	"	27·90	26·17
Magnesium sulphate	"	54·38	.....
Mica (rough cobbed)	Pound	0·10	0·06
Mineral water	Gal.	0·07	0·07
Natro-alunite	Ton	50·00	.....
Natural gas	M. cu. ft.	0·36	0·38
Oxides, iron	Ton	12·43	12·54
Petroleum, crude	Brl.	3·06	2·91
Phosphate	Ton	20·00	.....
Pyrites	"	3·95	4·06
Quartz	"	2·26	2·14
Salt	"	8·46	6·61
Sodium sulphate	"	13·90	5·54
Talc	"	14·51	13·63
Tripolite	"	25·00	25·40
STRUCTURAL MATERIALS AND CLAY PRODUCTS			
Cement, portland and puzzolan	Brl.	2·00	1·78
Clay products—			
Brick, common	M	15·50	.....
Brick, pressed	"	19·91	.....
Brick, hollow building	"	80·35	.....
Brick, moulded and ornamental	"	20·95	.....
Brick, face (Soft mud process)	"	.....	17·10
Brick, common (Soft mud process)	"	.....	14·89
Brick, face (Stiff mud process, wire cut)	"	.....	22·86
Brick, common (Stiff mud process, wire cut)	"	.....	15·09
Brick, face (Dry press)	"	.....	21·60
Brick, common (Dry press)	"	.....	13·13
Brick, fancy or ornamental	"	.....	130·41
Brick, sewer	"	.....	15·15
Firebrick	"	48·19	48·36
Fireclay	Ton	9·00	7·20
Kaolin	"	14·53	.....
Sewer-pipe	Ton	23·01	20·87
Tile, drain	M	30·50	27·04
Lime	Bush.	0·33	0·34
Sand and gravel	Ton	0·24	0·28
Stone—			
Granite	Ton	2·91	2·41
Limestone	"	1·21	1·14
Marble	"	81·49	73·63
Sandstone	"	2·92	2·54

Table 22.—Index Numbers of Prices for Non-Metallic Minerals and their Products, 1914 and 1920-1924

(Average of 1913 Prices=100)

Commodity	1914	1920	1921	1922	1923	1924
Clay Products	83·4	157·5	156·4	157·0	160·5	170·5
1 Bricks, pressed No. 1	92·9	154·7	157·2	170·9	170·9	182·3
2 Bricks, plastic, common	80·0	158·5	156·2	152·0	156·7	166·3
Pottery	100·8	504·4	473·9	391·0	309·9	276·0
3 Cups and saucers, No. 1 quality	115·4	368·8	378·3	292·3	233·8	212·8
4 Dinner sets, printed	100·0	511·8	479·3	396·6	314·0	279·8
Coal and its products	97·4	210·1	233·7	213·8	217·1	216·7
5 Coal, anthracite, egg	98·0	196·3	215·3	199·5	202·4	208·3
6 Coal, run of mine	100·0	211·1	254·5	221·1	227·3	227·3
7 Coal, run of mine	103·6	231·4	242·5	221·1	227·3	.....
8 Coal, run of mine	90·9	218·0	240·7	221·4	220·3	210·9
9 Coke	88·3	184·9	206·7	206·7	206·7	203·6
Glass and its products	102·9	446·8	181·5	158·7	163·8	137·7
10 Glass, window, star	103·2	449·5	181·6	158·9	164·4	137·9
11 Tumblers, tank glass	75·0	166·5	172·5	145·5	113·1	117·5
Petroleum, and its products	85·9	157·8	139·2	129·2	107·6	109·8
12 Coal oil, W.W	96·7	165·7	136·5	125·4	118·1	129·9
13 Gasoline	81·2	154·4	140·4	130·8	103·0	101·0
Lime, plaster and cement	100·0	193·1	198·0	176·7	159·6	153·5
14 Lime, high calcium	100·0	232·7	257·5	198·0	181·6	175·0
15 Cement, portland	100·0	188·7	191·4	174·3	157·1	151·1
Miscellaneous non-metallic minerals	102·7	200·1	208·7	188·2	168·3	153·1
16 Salt, fine	104·7	269·3	291·3	257·9	227·6	190·8
17 Sulphur, refined	100·0	106·2	96·7	93·7	87·8	87·8
Index number of non-metallic minerals and their products	**94·5**	**197·5**	**205·4**	**188·4**	**183·8**	**183·4**

CHAPTER TWO

THE AERATED WATERS INDUSTRY

General.—The aerated waters industry in Canada is one of considerable importance and is widely distributed over the Dominion. Demand for these beverages is greatest in the more thickly populated sections, and so, naturally, the industry is centred in Ontario and Quebec. In 1924, there were 131 plants making carbonated beverages and aerated waters in Ontario; 80 in Quebec; 16 in Nova Scotia; 16 in British Columbia; 15 in New Brunswick; 16 in Alberta; 12 in Saskatchewan; 8 in Manitoba; 2 in Prince Edward Island making 296 plants in all.

In the manufacture of aerated waters, cleanliness is the prime requisite. Empty bottles returned from the dealers are thoroughly washed, sometimes with a weak solution of caustic soda, and then rinsed with hot and cold water. The cleansed bottles are placed in a travelling device, which passes under an autonatic machine that feeds the required amount of flavouring extract or syrup into each bottle. Carbonated water is then added, the bottles are capped, and placed in boxes ready for shipment or delivery. As all this work can now be done with automatic machinery, each bottle of a given size contains the same amount of a uniformly flavoured product. It is recommended that all water be cleansed by filtering before being carbonated as it is generally conceded that while carbonation helps to kill dangerous bacteria, no manufacturer should depend solely on this factor to make his products pure.

The business is one that lends itself to manufacturing on a small scale with a very limited equipment as evidenced by the fact that 118 plants in Canada had a production valued at less than $5,000 each and 71 others were each below the $10,000 mark. On the other hand, the firms manufacturing the more widely known and popular brands of carbonated beverages, maintained large plants in several different cities. Altogether the 296 plants employed a capital of slightly over 9 million dollars and made $6,354,358 worth of products. Many of the smaller plants are really only bottling works. They purchase flavours or extracts from the manufacturers and then carbonate the waters and add the flavouring.

Table 23.—Summary Statistics of the Aerated Waters Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1920	330	8,259,814	1,913	774,240	1,305,181	112,245	4,343,849	9,354,693	5,010,844
1921	320	8,236,946	1,932	578,356	1,233,627	113,714	3,607,147	9,176,868	5,569,721
1922	283	8,205,457	1,537	775,182	1,028,182	88,707	2,705,957	6,594,509	3,888,552
1923	295	8,315,389	1,724	704,047	1,139,484	98,807	2,672,332	6,408,832	3,736,500
1924	296	9,385,802	1,543	673,094	1,134,478	*131,609	1,982,340	6,354,358	4,372,018

* Includes cost of electricity used.

Capital Employed.—Capital invested in the aerated waters industry in Canada showed an increase in 1924 of a million dollars over 1923 and reached the record total of $9,385,802, of which 57 per cent was tied up in fixed assets such as lands, buildings and plant equipment. Ontario accounted for about 45 per cent of the total investment, while Quebec accounted for about one-half of the remainder.

Table 24.—Capital Employed in the Aerated Waters Industry in Canada, by Classes and by Provinces, 1923 and 1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
Prince Edward Island and Nova Scotia	175,888	96,535	43,904	316,327	101,926	68,000	33,276	203,202
New Brunswick	110,154	47,250	61,949	219,353	99,178	69,404	77,141	245,723
Quebec	1,408,795	474,532	401,796	2,285,123	1,271,743	386,423	555,419	2,213,585
Ontario	2,868,004	468,754	257,010	3,393,828	2,497,505	506,409	1,290,101	4,294,015
Manitoba	536,277	208,962	35,434	780,673	597,608	287,990	30,871	916,529
Saskatchewan	243,300	232,046	44,801	520,747	228,416	190,114	41,337	462,867
Alberta	247,209	277,721	25,064	549,994	369,202	286,537	37,937	693,766
British Columbia	136,388	72,361	40,595	249,344	214,113	104,316	37,686	356,115
Canada	**5,526,075**	**1,878,761**	**910,553**	**8,315,389**	**5,379,841**	**1,899,193**	**2,106,768**	**9,385,802**

Employment.—Including salaried employees as well as wage-earners, the total number of employees was 1,543 as compared with 1,724 in 1923. Wages and salaries at $1,807,572 were also slightly below the corresponding figure for the preceding year.

Some years ago the areated waters industry in Canada was largely seasonal in nature and there was very little production during the winter months. Now due to the persistent advertising of large companies, people have been educated to the fact that carbonated waters are less likely to carry disease germs than some ordinary drinking waters and for this reason carbonated beverages are used to a greater extent throughout the year. But the sultry summer months promote the more extensive use of all cold carbonated drinks and the summer season is the busy time for all bottling companies in Canada. This seasonal trend is shown by the monthly employment records. In January, 1924, there were only 855 wage-earners on the rolls but by August the number had risen to 1,512, an increase of over 40 per cent during the first eight months of the year. From this point employment gradually fell away until, in December, only 915 names were recorded. The average for the year stood at 1,167 as against 1,303 in the preceding year.

Table 25.—Employment, Salaries and Wages Paid in the Aerated Waters Industry in Canada, 1923 and 1924

	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees:						
Salaried employees	365	56	421	323	53	376
Wage-earners, by months:						
January	870	61	931	806	49	855
February	881	56	937	842	52	894
March	902	66	968	888	56	944
April	978	64	1,042	976	58	1,034
May	1,202	85	1,287	1,198	68	1,266
June	1,421	92	1,513	1,297	75	1,372
July	1,514	92	1,606	1,434	78	1,512
August	1,422	95	1,517	1,337	68	1,405
September	1,189	86	1,275	1,113	62	1,175
October	1,000	74	1,074	956	57	1,013
November	879	61	940	892	56	948
December	869	60	929	859	56	915
Average	1,218	85	1,303	1,097	70	1,167
Total employees	**1,583**	**141**	**1,724**	**1,420**	**123**	**1,543**
(b) Salaries and Wages:						
Salaries $			704,047			673,094
Wages $			1,139,484			1,134,478
Total $			**1,843,531**			**1,807,572**

Table 25—Employment, Salaries and Wages Paid in the Aerated Water Industry in Canada, 1923 and 1924—Concluded

	1923			1924		
	Male	Female	Total	Male	Female	Total
(c) Average yearly earnings of each wage-earner.....$			875			972
(d) Average number of days on which plants in this industry operated during the year			226			260
(e)Labour turnover:						
Total number of different wage-earners employed during the year						2,647
Average number of wage-earners employed within the year			1,303			1,167
Difference						880
Apparent labour turnover.....(per cent)						75

Table 26.—Fuel and Electricity Used in the Aerated Waters Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Anthracite coal	Short ton	1,031	17,042	1,406	19,139
Bituminous coal	"	5,897	52,884	4,244	36,055
Lignite	"			592	2,739
Coke	"	71	960	77	911
Fuel oil	gallon	4,263	970	3,610	950
Gasoline	"	103,016	17,331	80,357	23,472
Gas	M cu. ft.	8,825	3,762	13,508	6,012
Wood	cord	1,076	5,644	1,472	6,632
Other fuel			214		458
Electric power	K.W.H.		27,337	1,442,366	35,241
Total			**126,144**		**131,609**

Table 27.—Power Employed in the Aerated Waters Industry in Canada, 1923 and 1924

Description	1923	1924	
	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Boilers	919	46	1,092
Engines:			
(a) Steam	242	13	194
(b) Oil and gasoline	110	20	67
(c) Gas	16	7	16
Hydraulic turbines or water wheels	11	7	14
Electric motors:—			
(a) operated by purchased power	1,426	516	1,620
(b) operated by power generated by the establishment		9	45

Materials Used.—Chief among the materials used in the aerated waters industry are sugar, carbon dioxide gas, syrup, fruit juices, and flavouring extracts. In 1924, the total cost of all ingredients used in manufacturing was $1,349,434 and cases, bottles, labels, etc., cost $632,906, making a total expenditure of $1,982,340 for materials of all kinds.

Table 28.—Materials Used in the Aerated Waters Industry in Canada, 1923 and 1924

Materials	Cost at works	
	1923	1924
	$	$
Manufacturing materials used	1,925,141	1,349,434
Boxes, barrels, bottles, packages, labels, etc., purchased during the year	747,191	632,906
Total	**2,672,332**	**1,982,340**

Products.—Products of the aerated waters industry in 1924 consisted largely of non-alcoholic carbonated beverages of all kinds which amounted in value to 5·4 million dollars. Natural mineral water, cider, syrups and fruit juices were also sold in considerable quantities.

Table 29.—Products of the Aerated Waters Industry in Canada, 1923 and 1924

Products	Total selling value at works	
	1923	1924
	$	$
Cider	81,607	186,134
Natural mineral water (fortified or not)	84,949	178,715
Soda water and other carbonated beverages (non-alcoholic)	5,026,190	5,438,462
Syrups and fruit juices	382,755	264,559
Vinegar	2,645	.....
All other products	830,686	286,488
Total	**6,408,832**	**6,354,358**

Mineral Waters (From the "*Annual Report on the Mineral Production of Canada, 1924*").—Mineral waters produced in Canada during 1924 amounted to 209,353 imperial gallons valued at $15,421 as compared with 232,451 gallons valued at $16,455 in the previous year. Mineral springs in Ontario and Quebec contributed the whole of the Canadian production. In the present compilation there has been included a record of all natural mineral waters sold to the general public for medicinal purposes. No record has been kept of the shipments made of ordinary spring waters. The values given, do not take into account any mineral waters used at the springs for drinking or bathing purposes but include only the shipments from the springs in bottles or other containers.

Table 30.—Production in Canada, Imports and Exports of Mineral Waters, 1923 and 1924

Item	1923		1924	
	Imp. gals.	Value	Imp. gals.	Value
		$		$
PRODUCTION, by provinces—				
Quebec	5,421	2,408	7,683	2,288
Ontario	227,030	14,047	201,670	13,133
Total	**232,451**	**16,455**	**209,353**	**15,421**
IMPORTS—Mineral and aerated waters	.....	169,473	.....	181,107
EXPORTS—Mineral and aerated waters	.....	192,261	.....	109,735

CHAPTER THREE

ASBESTOS AND ALLIED PRODUCTS

General.—Although Canada produces about 85 per cent of the world's supply of crude asbestos, the fabrication of asbestos products and other similar materials such as compounds of magnesia and asbestos, used for insulating purposes in the protection of hot water and steam lines, boilers, etc., is yet in its infancy in Canada. During 1924, Canada exported $7,561,221 worth of asbestos and of this amount only $44,132 worth was in the form of manufactured materials. Imports of manufactured asbestos commodities in the same year were worth $660,764 while the value of the production in Canada amounted to only $589,339.

The heat-insulating properties of asbestos have been known for a long time, but it is only in recent years that there has been any great development in the application of this fact; now, however, practically every steam power plant of any size is properly insulated and the practice has been extended to the domestic heating plants. Pipes and conduits are covered with air-cell insulating materials and boilers are protected with a preparation of asbestos and magnesia bonded with fireclay or sodium silicate. Manufacturers want the maximum power delivered for every pound of coal burned and the householder is equally anxious to get the greatest possible amount of heat out of each ton of coal used. Prevention of heat losses, is the first step towards the attainment of these ends. Not only is asbestos used to prevent heat losses as just noted, but it is also used in insulation of refrigerating plants with a view to preventing the access of heat to the refrigerating liquids. Other uses are found in the manufacture of brake-linings, building materials such as shingles, roofing felts, flooring sheathing, etc., refractory cements, insulating materials used in electric wiring, fireproofing materials and packings for pistons and pumps.

Most of the Canadian plants making asbestos products are subsidiaries making only a limited number of commodities and marketing all lines produced by the parent company. The close relation between the manufacturing and the jobbing divisions of such concerns made it difficult in some instances to obtain a separation of the data relating to manufacturing operations only. The same 9 plants operated in 1924 as in the previous year; there were 5 plants in Ontario, 2 in Quebec and 1 in each of the provinces of Nova Scotia and British Columbia.

Table 31.—Summary Statistics of the Asbestos and Allied Products Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1920	11	1,180,101	201	67,102	181,112	8,973	432,350	940,072	507,722
1921	11	1,351,278	132	87,609	185,913	12,765	385,810	804,603	418,793
1922	11	1,610,700	156	91,798	97,261	10,682	271,749	615,160	343,411
1923	9	1,486,589	145	83,518	93,468	12,292	260,281	583,013	322,732
1924	9	1,468,728	120	92,514	77,465	*19,949	267,201	589,339	322,138

* Includes cost of electricity.

Capital Employed.—Capital employed in the asbestos products industry amounting to $1,468,728 was only slightly below the 1923 figure. Lands, buildings and plant equipment were valued at nearly a million dollars. Ontario plants accounted for $519,650 or about 35 per cent of the total capital employed in the industry.

Table 32.—Capital Employed in the Asbestos and Allied Products Industry in Canada, by Classes and by Provinces, 1923 and 1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash trading and operating accounts	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
Ontario	296,287	188,847	55,159	540,293	296,207	152,267	71,176	519,650
Canada*	**956,742**	**353,468**	**176,379**	**1,486,589**	**959,740**	**333,977**	**175,011**	**1,468,728**

* Totals for Canada also include data for 1 firm in Nova Scotia, 2 in Quebec and 1 in British Columbia.

Employment.—Plants fabricating asbestos products employed 43 salaried employees and 77 wage-earners, 120 persons in all, and paid out $169,979 in salaries and wages. The trend of employment is distinctly seasonal, the demand for asbestos building materials, etc., being greater in the summer months. In January, there were 74 wage-earners employed; in June, 110; in October, 45, and at the end of the year there were only 43 wage-earners on the rolls. The last three months of 1924 showed the lowest employment records of any year since the Bureau started collecting data on this industry in 1919.

Table 33.—Employment, Salaries and Wages Paid in the Asbestos and Allied Products Industry in Canada, 1923 and 1924

—	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees:						
Salaried employees	34	13	47	33	10	43
Wage-earners, by months:						
January	56	9	65	68	6	74
February	86	9	95	76	6	82
March	91	11	102	77	5	82
April	103	11	114	76	7	83
May	97	10	107	78	6	84
June	92	10	102	104	6	110
July	94	10	104	103	6	109
August	100	8	108	99	6	105
September	101	6	107	59	6	65
October	93	7	100	39	6	45
November	90	7	97	39	5	44
December	55	6	61	39	4	43
Average	89	9	98	71	6	77
Total employees	**123**	**22**	**145**	**104**	**16**	**120**
(b) Salaries and Wages—						
Salaries $			83,518			92,514
Wages $			93,468			77,465
Total $			176,986			169,979
(c) Average yearly earnings of each wage-earner $			954			1,019
(d) Average number of days on which plants in this industry operated during the year			278			290
(e) Labour turnover:						
Total number of different wage-earners employed during the year						165
Average number of wage-earners employed within the year			98			76
Difference						89
Apparent labour turnover per cent)						117

Table 34.—Fuel and Electricity Used in the Asbestos and Allied Products Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Anthracite coal	Short ton	28	486	.....	.....
Bituminous coal	"	1,013	7,650	893	5,232
Fuel oil	Gallon	41,564	4,156	38,791	3,654
Wood	Cord	.....	.....	3	25
Electric power	K.W.H.	.....	.....	405,143	11,038
Total	.....	.....	**12,292**	.....	**19,949**

Table 35.—Power Employed in the Asbestos and Allied Products Industry in Canada, 1923 and 1924

Description	1923	1924	
	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Boilers	100	5	273
Electric motors:			
(a) operated by purchased power	548	36	536
(b) operated by power generated by the establishment	.....	8	97

Materials Used.—The chief materials used in this industry are asbestos fibre, asbestos paper, asbestos cloth and yarn, and some bonding materials such as sodium silicate and clays. In 1924, materials used were valued at $267,201.

Table 36.—Materials Used in the Asbestos and Allied Products Industry in Canada, 1923 and 1924

Materials	Unit	1923	1924	
		Cost at works	Quantity	Cost at works
		$		$
Asbestos cloth and yarn	yd.	178,286	105,152	46,632
Asbestos, crude and fibre	lb.		75,967	24,753
Asbestos paper, corrugated and plain	sq. ft.		253,300	5,369
Clay	cwt.	.....	4,799	3,630
Cotton cloth and yarn	.....	800	.....	8,424
Felt	lb.	.....	4,059	5,172
Rubber	lb.	4,133	25,501	6,697
Silicate of soda	cwt.	676	7,515	13,866
Talc	cwt.	.....	350	300
Containers, boxes, etc.	.....	.....	.....	2,212
All other materials	.....	76,386	.....	150,146
Total	.....	**260,281**	.....	**267,201**

Products.—Products of the asbestos industry included asbestos lining, asbestos packing, asbestos building materials and various other commodities valued in the aggregate at $589,339.

Table 37.—Products of the Asbestos and Allied Products Industry in Canada, 1923 and 1924

Product	Unit	1923		1924	
		Quantity	Selling value	Quantity	Selling value
			$		$
Asbestos lining	ft.	.....	225,030	429,698	186,295
Asbestos packing of all kinds	lb.	.....	109,745	219,422	128,037
Asbestos pipe and boiler covering	.....	.....	13,100	.....	12,622
All other products[1]	.....	.....	235,138	.....	252,106
Amount received for custom work and repairs	.....	.....	.....	.....	10,279
Total	.....	.....	**583,013**	.....	**589,339**

[1] Includes composition flooring, furnace cements, silicate, boiler cleaners, asbestos shingles, millboard, corrugated sheathings, and asbestos building lumber.

Primary Production of Asbestos (From the *"Annual Report on the Mineral Production of Canada, 1924"*).—Production of asbestos in 1924 amounted to 225,744 tons valued at $6,710,830 as against 231,482 tons valued at $7,522,506 for 1923. Although this marked a decrease of 2·3 per cent in quantity and 10·8 per cent in value, the production of asbestos in Canada in 1924 was the second greatest ever recorded. The average value per ton received by the operators was $29.73 while in 1923 receipts averaged $32.50.

Asbestos rock mined during the year amounted to 3,323,505 tons. In the same period the mills handled 2,760,470 tons or 83 per cent of the tonnage raised, and produced 226,469 tons of marketable asbestos or 8·2 per cent of the mill input.

Exports of asbestos other than sand and waste decreased 27,821 tons in 1924 to a total of 109,730 tons and the exports of sand and waste increased approximately 17,000 tons to 95,019 tons. The decrease in export of the former grade was no doubt due to the consumption of this materials at the new asbestos manufacturing plant located at Asbestos, Quebec.

Lower prices also prevailed for Rhodesian asbestos in 1924 as the quantity produced during the year was about 6,000 tons higher than in 1923, while the total value decreased 3·7 per cent.

Table 38.—Output and Sales of Asbestos in Canada, 1923 and 1924

Classification	1923				1924			
	Total output	Sold or shipped			Total output	Sold or shipped		
		Quantity	Total sales value at mill	Average value per ton		Quantity	Total sales value at mill	Average value per ton
	Ton.	Ton.	$	$	Ton.	Ton.	$	$
Crude No. 1	1,029	603	275,101	456·22	995	980	403,304	411·54
Crude No. 2	3,066	3,246	794,834	244·86	2,805	3,808	762,166	200·16
Fiberized crude	220	5	1,306	261·20	190	71	10,280	170·14
Spinning stocks	10,439	11,708	1,456,904	124·44	8,623	10,205	1,112,796	109·04
Shingle stocks	28,861	25,533	1,215,892	47·62	15,734	19,292	903,775	46·85
Mill board stocks	6,549	7,268	189,200	26·03	12,667	11,753	355,772	30·27
Paper stocks	62,702	69,743	2,292,804	32·87	60,615	58,634	1,852,926	31·60
Paper fillers	67,791	62,689	980,964	15·65	64,866	61,451	914,931	14·88
By-products (asbestos sand, finish floats)	56,002	50,687	315,501	6·22	59,974	59,550	393,080	6·60
Total	**236,659**	**231,482**	**7,522,506**	**32·50**	**226,469**	**225,744**	**6,710,830**	**29·73**

Table 39.—Exports of Canadian Asbestos by Countries of Destination, 1923 and 1924

Commodity and Destination	1923		1924	
	Tons	Value	Tons	Value
		$		$
ASBESTOS—				
Great Britain	3,459	215,934	6,614	374,680
United States	109,025	5,596,569	72,233	3,904,161
Australia	180	9,900	473	24,130
Austria	400	30,000	.....	.....
Belgium	7,223	411,250	2,798	150,065
France	5,016	409,410	5,640	452,151
Germany	6,289	575,211	9,133	785,703
Italy	505	52,882	2,439	151,778
Japan	4,936	287,521	9,222	358,596
Netherlands	353	28,275	1,068	88,580
Other countries	165	11,825	110	7,975
Total	**137,551**	**7,628,777**	**109,730**	**6,297,819**
SAND AND WASTE—				
Great Britain	1,174	18,925	3,100	53,983
United States	75,540	892,360	89,582	1,123,231
Other countries	1,237	19,960	2,337	42,056
Total	**77,951**	**931,245**	**95,019**	**1,219,270**
ASBESTOS MANUFACTURES INCLUDING ASBESTOS ROOFING—				
Great Britain	.....	2,054	.....	1,007
United States	.....	61,160	.....	30,272
France	.....	2,631	.....	32
New Zealand	.....	193	.....	125
Other countries	.....	6,460	.....	12,696
Total	.....	**72,498**	.....	**44,132**

Table 40.—World's Production of Asbestos[1], 1913, 1920-1924

(Long tons)

Country	1913	1920	1921	1922	1923	1924
Canada[1]	118,361	178,190	82,822	146,166	206,680	201,557
Southern Rhodesia[2]	259	16,806	17,437	12,722	18,182	23,339
Union of South Africa[2]	859	6,147	4,810	3,919	7,312	6,459
Australia[2]	.....	825	1,182	741	217	.....
Cyprus[2]	(a) 1,168	(a) 896	(a) 896	2,285	2,151	3,903
India[2]	.....	1,818	316	242	247	.....
New Zealand[2]	.....	2	.....	*	*	.....
China[2]	.....	5	13	(a) 194	(a) 6,956	.....
Finland	.....	252	750	*	*	.....
Germany[2]	.....	28	*	*	*	.....
Italy[4]	172	163	413	492	1,513	.....
Philippine Islands[2]	.....	.....	.....	*	*	.....
Russia[2]	17,218	1,454	7,080	5,065	4,801	.....
Spain[2]	.....	.....	19	5	*	(5) 300
United States[3]	982	1,471	742	60	277	.....
France[2]	.....	438	500	*	*	*
Japan	.....	.....	*	919	*	*
	139,019	**208,495**	**116,981**	**172,810**	**248,336**	**235,558**

* Data not available.

Source—

[1] Dominion Bureau of Statistics, Canada.

[2] Imperial Mineral Resources Bureau (to 1921). Later figures from official reports of the different countries.

[3] Mineral Resources of United States 1923.

[4] Asbestos.

[5] The Mineral Industry, 1924.

(a) Exports.

CHAPTER FOUR

THE CEMENT PRODUCTS INDUSTRY

General.—The cement products industry in Canada in 1924 as reviewed hereunder, covers the operations of 116 different plants distributed as follows: 1 in Nova Scotia, 3 in New Brunswick, 18 in Quebec, 92 in Ontario, and 2 in Saskatchewan. The industry also includes many small plants which consist only of a gasoline engine and a cement mixer set up at a suitable place where good clean sand and gravel are procurable, but as local conditions largely control the outputs of these plants and as many reported that they manufactured cement blocks, etc., in spare time only, no record of such operations has been included in this report. Of the 116 plants reporting in 1924 only 4 had a production valued in excess of $50,000 each; 8 others were above $25,000 each; 10 others exceeded $10,000 each; 14 others were above $5,000 each; and the output of 80 plants was below the $5,000 mark each.

Portland cement is the best known binder for stone aggregates because of its peculiar setting qualities as it will harden under water or in the air, and for that reason, is adaptable to many kinds of building construction. The use of concrete blocks, sewer pipe and cement drain tile is being extended annually. In private dwelling construction, the concrete-block house is quite common; the blocks used are hollow, the air space acting as a non-conductor of heat both in summer and winter. Concrete lintels, sills, caps for verandah posts, etc., and the manufacture of cement tile for sewage and drainage purposes, afford new avenues for the use of concrete products. Tile or drainage pipe can be molded into any desired shape for the particular purpose in view or they can be manufactured in sections and transported long distances to be fitted together on the job.

Table 41.—Summary Statistics of the Cement Products Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1920	93	1,358,712	386	59,952	414,160	28,304	596,352	1,527,590	931,238
1921	108	1,416,813	441	74,125	332,020	26,991	555,915	1,433,253	877,338
1922	124	1,553,160	391	81,965	290,303	21,794	533,335	1,281,004	747,669
1923	118	1,664,580	421	97,987	360,758	25,242	596,654	1,505,528	908,874
1924	116	1,673,758	455	87,308	337,770	*26,419	493,270	1,257,871	764,601

* Includes cost of electricity.

Capital Employed.—In 1924 the total capital employed in the cement products industry was $1,673,758. Ontario led with a capital investment of $1,348,246 or about 80 per cent of the total capital employed in the industry.

Table 42.—Capital Employed in the Cement Products Industry in Canada, by Classes and by Provinces, 1923 and 1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
New Brunswick	47,124	9,766	5,742	62,632	36,853	3,208	3,150	43,211
Quebec	143,083	43,372	43,992	230,447	169,289	43,797	60,264	273,350
Ontario	764,922	268,606	313,588	1,347,116	776,325	286,017	291,904	1,348,246
Canada*	**970,454**	**327,644**	**366,482**	**1,664,580**	**982,982**	**334,199**	**356,577**	**1,673,758**

* 1923 totals for Canada also include data for Nova Scotia, Saskatchewan and British Columbia; 1924 totals for Canada include data for 1 plant in Nova Scotia and 2 in Saskatchewan.

Employment.—In this industry as in others that supply materials for the building trade, there is a distinct seasonal trend. At the beginning of 1924 there were 214 wage-earners employed; this number gradually increased to 466 in May after which there was a decline to 400 in August, 357 in October and 191 in December, making an average of 400 wage-earners for the year. Salaried employees numbered 55 thus making a total of 455 persons employed as compared with 421 in 1923. Salaries and wages in 1924 totalled $425,078.

Table 43.—Employment, Salaries and Wages Paid in the Cement Products Industry in Canada, 1923 and 1924

	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees:						
Salaried employees	61	10	71	48	7	55
Wage-earners, by months:						
January	169		169	213	1	214
February	175		175	193	1	194
March	202		202	292	1	293
April	277		277	391	1	392
May	437		437	465	1	466
June	520		520	451	1	452
July	468		468	413	1	414
August	462		462	398	2	400
September	408		408	384	1	385
October	346		346	356	1	357
November	258		258	269	1	270
December	263		263	190	1	191
Average	350		350	399	1	400
Total employees	**411**	**10**	**421**	**447**	**8**	**455**
(b) Salaries and Wages:						
Salaries $			97,987			87,308
Wages $			360,758			337,770
Total $			458,745			425,078
(c) Average yearly earnings of each wage-earner $			1,031			844
(d) Average number of days on which plants in this industry operated during the year			180			172
(e) Labour turnover:						
Total number of different wage-earners employed during the year						856
Average number of wage-earners employed within the year			350			400
Difference						456
Apparent labour turnover (per cent)						114

Table 44.—Fuel and Electricity Used in the Cement Products Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Anthracite coal	Short ton	60	901	487	3,656
Bituminous coal	Short ton	2,220	16,040	1,651	10,048
Lignite	Short ton	.....	.....	3	36
Coke	Short ton	63	871	57	532
Fuel oil	Gallon	3,051	899	5,425	1,283
Gasoline	"	18,225	5,583	10,624	2,925
Gas	M. cu. ft.	539	312	566	341
Wood	Cord	115	636	95	481
Other fuel	.....	.....	.....	.....	32
Electric power	K.W.H.	.....	7,259	87,362	7,085
Total	.....	.....	**32,501**	.....	**26,419**

Table 45.—Power Employed in the Cement Products Industry in Canada, 1923 and 1924

Description	1923	1924	
	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Boilers	320	19	580
Engines—			
(a) steam	254	8	253
(b) oil and gasoline	293	27	203
(c) gas	40	23	148
Electric motors—			
(a) operated by purchased power	524	57	542

Materials Used.—The main materials used in this industry were portland cement, sand, gravel and crushed stone. In 1924 the cost of these and other raw materials amounted to $470,361 which together with $22,909 expended for boxes, crates, etc., made a total expenditure of $493,270 as compared with $596,654 in the previous year.

Table 46.—Materials Used in the Cement Products Industry in Canada, 1923 and 1924

Materials	Cost at works	
	1923	1924
	$	$
Manufacturing materials used	546,485	470,361
Boxes, crates and lumber	50,169	22,909
Total	**596,654**	**493,270**

Products.—It was not found feasible to give the number of cement bricks, building blocks, drain pipes, etc., manufactured, because of the different sizes made; in many cases, also, only the value was reported. In 1924, the total value of production stood at $1,257,871 a decline of 16 per cent from 1923. Hollow building blocks produced, were worth $523,326 and sewer pipe and culvert tile made, during the year were valued at $419,730.

Table 47.—Products of the Cement Products Industry in Canada, 1923 and 1924

Product	Total selling value			
	1923		1924	
		$		$
Cement brick		70,502		53,066
Hollow, building blocks, etc		652,420		523,326
Drain pipe		67,437		53,989
Sewer pipe and culvert tile		365,165		419,730
Artificial stone		53,326		77,484
Cement posts, poles, etc				13,444
Other products		296,678		116,832
Total		**1,505,528**		**1,257,871**

Primary Production of Cement (From the *"Annual Report on the Mineral Production of Canada, 1924"*).—Sales of cement in Canada in 1924 at 7,498,624 barrels were slightly less than the sales for the preceding year which amounted to 7,543,589 barrels. The total value of sales in 1924 was $13,398,411 as against $15,064,661 in 1923. The total mill output amounted to 7,768,652 barrels, an increase of 80,456 barrels over the output for the preceding year.

Exports of Canadian cement amounted to only 153,520 barrels, a decrease of 340,231 barrels from the total for the preceding year. Importations amounted to 27,672 barrels, an increase of 10,000 barrels over the figures for 1923. While the apparent consumption of cement in Canada during 1924 amounted to 7,372,776 barrels, or 4·3 per cent more than in 1923, this total was 17·3 per cent less than the figures for 1913, when cement consumption in Canada reached its peak.

Ten plants, having in all a daily capacity of 34,235 barrels, were operated during the year. In addition to these, there were ten other plants in Canada which were idle during the whole period. Ontario and Quebec were the principal producing provinces. Sales from Ontario plants amounted to 3,564,499 barrels, averaging $1.59 per barrel; Quebec plants sold 2,758,316 barrels at an average price of $1.74. The average selling prices f.o.b. plant in the other provinces, were as follows: Manitoba, $2.60; Alberta, $2.27; British Columbia, $2.63. For Canada the average was $1.79 per barrel.

Table 48.—Summary Statistics of Cement in Canada, 1923 and 1924

—	1923		1924	
	Barrels	Value	Barrels	Value
		$		$
Made from limestone (total output)	7,688,196		7,768,652	
Sold or used	7,543,589	15,064,661	7,498,624	13,398,411
Stocks Dec. 31	1,251,548		1,521,574	
IMPORTS—				
Portland cement	17,697	75,294	27,674	69,320
Manufactures		86,974		9,772
EXPORTS	493,751	824,811	153,520	213,845
APPARENT CONSUMPTION	7,067,535		7,372,776	

CHAPTER FIVE

THE SAND-LIME BRICK INDUSTRY

General.—Sand-lime brick is used extensively in the building trade. By the addition of hydrated lime to sand in the proper proportions, a mixture can be made from which it is possible to produce fairly durable bricks. Methods of manufacture were described in the review of the industry for 1923. In general, the essentials to the production of high-grade brick are: thorough hydration of lime before being made into brick form; the proper percentage of lime and sand; the highest pressure to form the brick; and the elimination of manual labour to attain consistent results.

The sand-lime brick industry in Canada is centred in Ontario where there were 10 plants in operation in 1924; there was also 1 active plant in Manitoba and 1 in Saskatchewan. Production of sand-lime brick in that year had a total selling value of $619,946 as compared with $897,960 from the 8 plants that reported in 1923, the best year on record for the industry.

Table 49.—Summary Statistics of the Sand-Lime Brick Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1920	11	1,295,486	194	37,749	229,524	62,036	124,365	693,641	569,276
1921	10	1,372,253	223	52,917	179,996	43,320	139,008	662,744	523,736
1922	11	1,224,808	223	54,418	233,287	58,258	291,903	858,807	566,904
1923	8	1,042,619	225	49,257	235,991	50,810	218,118	897,960	679,842
1924	12	1,346,239	236	48,785	199,260	*61,237	181,260	619,946	438,686

* Includes cost of electricity.

Capital employed.—Ontario plants accounted for 70 per cent of the total capital employed which in 1924 amounted to $1,346,239. Lands, buildings and plant equipment were valued at $1,182,579, an increase of 48 per cent over the corresponding figure for 1923.

Table 50.—Capital Employed in the Sand-Lime Brick Industry in Canada, by Classes and by Provinces, 1923 and 1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
Ontario	754,420	37,296	199,833	991,549	835,995	34,368	91,072	961,435
Canada*	**799,420**	**37,296**	**205,903**	**1,042,619**	**1,182,579**	**39,224**	**124,436**	**1,346,239**

* Totals for Canada include data for 1 firm in Manitoba and 1 firm in Saskatchewan.

Employment.—In 1924 there were 236 people employed in the manufacture of sand-lime brick in Canada, and salaries and wages amounted to $248,045; in the previous year there were 225 persons employed and expenditures in salaries and wages totalled $285,248. With the exception of February when the number of wage-earners dropped to 120, employment was fairly steady, there being an average of 209 wage-earners on the rolls during the year with a maximum of 229 attained in December.

Firms in this industry operated their plants on an average of 191 days during the year and paid an average yearly wage of $953 to each person on the wage-roll throughout the year.

Table 51.—Employment, Salaries and Wages Paid in the Sand-Lime Brick Industry in Canada, 1923 and 1924

	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees:						
Salaried employees	19	1	20	22	5	27
Wage-earners, by months:						
January	187		187	164		164
February	154		154	120		120
March	182		182	153		153
April	242		242	192		192
May	234		234	228		228
June	235		235	190		190
July	219		219	212		212
August	222		222	178		178
September	212		212	177		177
October	210		210	192		192
November	182		182	219		219
December	178		178	229		229
Average	205		205	209		209
Total employees	224	1	225	231	5	236
(b) Salaries and Wages:						
Salaries $			49,257			48,785
Wages $			235,991			199,260
Total $			285,248			248,045
(c) Average yearly earnings of each wage-earner $			1,151			953
(d) Average number of days on which plants in this industry operated during the year			242			191
(e) Labour turnover:						
Total number of different wage-earners employed during the year						446
Average number of wage-earners employed within the year			205			209
Difference						237
Apparent labour turnover.....(per cent)						113

Table 52.—Fuel and Electricity Used in the Sand-Lime Brick Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Bituminous coal	Short ton	7,579	50,810	7,331	44,001
Gasoline	Gallon			592	121
Wood	Cord			20	105
Other fuel					20
Electric power	K.W.H.		12,716	955,494	16,090
Total			63,526		61,237

Table 53.—Power Employed in the Sand-Lime Brick Industry in Canada, 1923 and 1924

Description	1923		1924	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Boilers		920	8	1,115
Steam engines		350	7	700
Electric motors:				
(a) operated by purchased power		819	35	891

Materials Used.—Quicklime and sand are the principal materials used in the manufacture of sand-lime brick. In 1924, manufacturing materials cost $159,907 and boxes, crates, etc., cost $21,353 making a total of $181,260 as compared with $218,118 in the previous year.

Table 54.—Materials Used in the Sand-Lime Brick Industry in Canada, 1923 and 1924

Materials	1923	1924
	Cost at works	Cost at works
	$	$
Manufacturing materials used	218,118	159,907
Boxes, crates and lumber		21,353
Total	**218,118**	**181,260**

Products.—Production of sand-lime brick in 1924 valued at $618,946 was the lowest of any year since 1919 and was 30 per cent below the total for 1923.

Table 55.—Products of the Sand-Lime Brick Industry in Canada, 1923 and 1924

Product	Unit of measure	1923		1924	
		Quantity	Selling value	Quantity	Selling value
			$		$
Sand-lime brick	M.	60,080	897,960	55,873	618,946
Other products					1,000
Total			**897,960**		**619,946**

Primary Production of Brick, Lime and Sand (From the *Annual Report on the Mineral Production of Canada, 1924*). BRICK.—Ontario is the leading province in the manufacture of building brick in Canada. During 1924, Ontario's production was valued at $3,279,291. Quebec came next with a total valued at $1,844,680. Alberta, British Columbia, Manitoba, Nova Scotia, Saskatchewan, New Brunswick and Prince Edward Island follow in the order named. The total Canadian production in 1924 had a selling value of $5,722,997 as against $6,701,317 in 1923.

In the city of Medicine Hat, Alberta, a large brick company uses natural gas from its own wells for brick-burning. Distributing pipes from the wells are led to the kilns. Maintenance of the temperature desired is easily accomplished by the regulation of the gas-flow.

Table 56.—Production of Building Brick in Canada, by Provinces, 1923 and 1924

—		Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	*Canada
1923										
Common brick	M	6,079	2,142	98,795	117,390	8,961	2,997	8,023	6,178	250,565
	$	71,072	34,663	1,421,376	2,008,614	142,896	35,032	89,029	81,792	3,884,474
Pressed brick	M	.....	.....	4,319	57,642	.....	1,091	8,925	1,423	73,400
	$	.....	.....	118,705	1,142,988	.....	33,291	109,066	57,433	1,461,483
Moulded and ornamental brick	M	400	.....	13,505	49,682	.....	133	554	408	64,682
	$	6,000	.....	341,337	975,608	.....	4,988	11,093	16,334	1,355,360
Total	M	6,479	2,142	116,619	224,714	8,961	4,221	17,502	8,009	388,647
	$	77,072	34,663	1,881,418	4,127,210	142,896	73,311	209,188	155,559	6,701,317
1924										
Soft mud process	Face M	.....	.....	.....	10,605	.....	226	.....	.....	10,831
	Face $	.....	.....	.....	182,385	.....	2,863	.....	.....	185,248
	Common M	440	2,345	4,802	31,041	5,722	1,603	1,446	2,565	50,079
	Common $	5,880	38,131	48,865	488,742	93,698	20,473	19,195	29,470	746,044
Stiff mud process (wire cut)	Face M	675	.....	14,611	63,353	165	1,200	213	348	80,565
	Face $	13,581	.....	381,519	1,385,131	4,911	32,210	5,736	19,106	1,842,224
	Common M	4,161	.....	93,343	22,563	127	227	3,502	633	124,556
	Common $	50,322	.....	1,351,657	424,536	1,270	3,570	38,823	10,453	1,880,631
Dry press	Face M	.....	.....	1,817	30,597	.....	173	1,486	1,130	35,203
	Face $	.....	.....	53,006	636,101	.....	6,064	25,824	40,577	761,572
	Common M	.....	.....	.....	2,433	.....	128	7,510	2,723	12,794
	Common $	.....	.....	.....	34,093	.....	2,018	96,533	35,399	168,043
Fancy or ornamental brick	M	.....	.....	223	532	.....	.....	.....	.....	755
	$	.....	.....	9,603	88,857	.....	.....	.....	.....	98,460
Sewer brick	M	.....	.....	.....	2,656	.....	.....	.....	34	2,690
	$	.....	.....	.....	39,446	.....	.....	.....	1,329	40,775
Total	M	5,276	2,345	114,796	163,780	6,014	3,557	14,157	7,433	317,473
	$	69,783	38,131	1,841,689	3,379,291	99,879	67,198	185,111	136,334	5,722,997

* Includes record of small production in Prince Edward Island.

LIME.—Production of lime in Canada during 1924 amounted to 9,136,952 bushels valued at $3,178,541 as against 10,035,319 bushels valued at $3,266,608 in 1923. The average prices obtained for quicklime during the year was 33·6 cents per bushel and hydrated lime sold for $11.92 per ton.

Importations of lime were recorded at 4,418 tons appraised at $46,578 and exports amounted to 22,750 tons worth $411,122.

Table 57.—Production of Lime in Canada, 1923 and 1924, Showing Purpose for which Sold or Used

Purpose for which sold or used	1923				1924			
	Quicklime		Hydrated lime		Quicklime		Hydrated lime	
	Bushels	Value*	Tons	Value*	Bushels	Value*	Tons	Value*
		$		$		$		$
Building trades	1,538,188	530,342	27,110	340,746	1,056,281	430,624	22,772	284,327
Chemical works	2,513,848	697,233	1,838	13,108	2,653,362	843,111	1,953	13,835
Glass works	75,736	22,206	300	3,362	94,602	26,567	25	287
Smelters	242,366	80,787	.....	.....	56,518	35,689	.....	.....
Pulp and paper mills	1,993,103	496,306	2,945	27,672	1,896,907	466,189	3,535	33,915
Sugar refineries	446,970	76,100	.....	.....	315,323	94,383	.....	.....
Tanneries	52,544	20,749	25	250	63,141	21,441	111	1,166
Agricultural uses (fertilizers)	36,557	3,794	1,033	9,501	.....	.....	399	3,374
Dealers (uses unspecified)	1,130,676	530,624	18,371	230,785	743,816	287,362	13,073	160,937
Other consumers	526,353	180,748	143	2,295	940,259	424,002	4,218	51,362
Total sold or used	8,556,319	2,638,889	51,765	627,719	7,820,209	2,629,338	46,086	549,203

*Total selling value at kiln.

Table 58.—Imports into Canada and Exports of Lime, 1923 and 1924

Item	1923		1924	
	Tons	Value	Tons	Value
		$		$
Imports	4,989	55,820	4,418	46,578
Exports	24,326	428,286	22,750	411,122

Sand and Gravel.—Sand and gravel produced in 1924 totalled 11,603,500 tons valued at $3,181,083 as against 12,752,515 tons valued at $3,016,518 in 1923. This was a decrease in quantity of 1,149,015 tons and an increase in value of $164,565.

Imports of sand and gravel into Canada during the year amounted to 150,868 tons a decrease of 204,258 tons from the total recorded for 1923. Importations of silica sand, for the manufacture of glass and carborundum, and for use in foundries totalled 131,778 tons or 21 per cent less than in the preceding year. (See also the chapter on The Glass Industry.)

Table 59.—Production in Canada, Imports and Exports of Sand and Gravel, 1923 and 1924

Kind	1923		1924	
	Tons	Value	Tons	Value
		$		$
Production—				
Moulding sand	154,711	111,537	118,202	80,072
Building sand and sand for concrete roadwork, etc	1,740,573	706,250	2,662,809	911,173
Other sand (including blast, core and engine sands)	101,695	72,980	46,515	22,346
Sand and gravel for railway ballast	6,149,789	800,496	5,076,511	696,966
Sand and gravel for concrete, road building, etc	4,115,260	1,050,504	3,086,663	1,203,259
Crushed gravel	490,487	274,751	612,800	267,267
Total	**12,752,515**	**3,016,518**	**11,603,500**	**3,181,083**
Imports—				
Sand, silica for glass and carborundum manufacture, etc	167,556	317,250	131,778	324,279
Sand and gravel, n.o.p	355,126	247,388	150,868	118,397
Total	**522,682**	**564,638**	**282,646**	**442,676**
Exports	764,521	182,750	1,036,029	210,496

CHAPTER SIX

THE COKE AND BY-PRODUCTS INDUSTRY

General.—Coke is produced in Canada in three different industries. Besides that produced in the familiar beehive and by-product ovens, coke is obtained in the manufacture of illuminating and fuel gas and in the refining of petroleum. Petroleum coke is of little importance as the production is relatively small and it is not commonly sold in competition with gas-house or by-product coke; it is used in the manufacture of electrodes and as a fuel in the refineries. Gas coke is used extensively as a domestic fuel but is usually too soft for metallurgical or foundry purposes, the industries which consume the great bulk of all the coke produced in Canada.

In 1924, the total production of coke in Canada amounted to 1,486,237 tons as compared with 1,707,034 tons in 1923.

A large part of the output of coke is used in the metallurgical industry where it is employed as a blast furnace fuel to the exclusion of almost any other fuel and it is also used in foundry and other metallurgical operations. The coke-producing industry, therefore, is to a great extent operated as an adjunct to metallurgical works, especially iron blast furnaces, and the output of coke bears a constant relation to the output of pig iron which in turn is controlled by the condition of general business. Even the growing demand for coke as a domestic fuel has not destroyed this parallelism; blast furnaces and other metallurgical industries continue to be the principal customers of the cokemaker.

Coke is produced by the destructive distillation of bituminous coal and is made in two kinds of ovens,—the by-product and the beehive types. From the by-product oven, as the name implies, are recovered coke, breeze, gas, ammonia liquor which may be made into ammonium sulphate, and light oils, such as tolnol, benzol, motor oil, etc. The beehive type is designed to produce coke only and no provision is made for the recovery of the by-products.

Metallurgical coke is made in Canada by (a) Dominion Iron and Steel Company, Ltd., at Sydney, N.S., (b) Steel Co. of Canada, Ltd., at Hamilton, Ont., (c) Algoma Steel Corporation, Ltd., at Sault Ste. Marie, Ont., (d) Hamilton By-Product Coke Ovens Ltd., at Hamilton, Ont., (e) Crow's Nest Pass Coal Company Ltd., and (f) Granby Consolidated Mining, Smelting, and Power Co., Ltd., at Anyox, B.C. The by-product type of oven is operated by all these companies with the exception of the Crow's Nest Pass, who, as yet, have not deemed it advisable to instal the newer type of oven.

In general, by-product coke is made by charging bitumionus coal of a good coking quality into a fire-brick chamber called a retort. This chamber is narrow and long, approximately 20 inches wide by 35 feet long and 6 feet high. On each end are iron doors that are opened for discharging the coke and which are luted up while the coking is going on. The coal is distilled by the gas produced from a previous charge, this gas having been washed and then stored in a storage tank. Pre-heated air is admitted with the gas to increase the temperature around the oven. Two sets of burners operate intermittently, so that the burning gas may pass in first one direction and then in an opposite direction around the retort. This insures even heating of the oven and results in better coking conditions. Coking time varies from 12 to 72 hours. About 70 per cent of the coal used is recovered in the form of coke, which includes the breeze or fine coke.

In the carbonization of coal in a by-product oven, much of the volatile matter is driven off in the form of a vapour which is afterwards condensed to form tar. Tar thus obtained may be refined and as such forms the basis of the many organic derivatives now used in a variety of processes. The nitrogen in the coal is converted into ammonia which is recovered and sold in the form of crude ammonia liquor or converted into ammonium sulphate for fertilizing purposes. Crude light oils consisting principally of benzol are also recovered. The gas produced is used for heating the ovens or sold for other heating purposes.

The data given in Tables 61-67, show the production of coke and by-products in Canada in 1924, in both the beehive and by-product plants but do not include the coke produced in gas plants or in petroleum refineries. These latter industries are treated in separate chapters of this report.

Table 60.—Production of Coke in Canada, by Industries, 1923 and 1924

Industry	1923		1924	
	Quantity	Value	Quantity	Value
	Tons	$	Tons	$
Coke and its by-products industry	1,169,989	10,236,524	985,305	7,268,713
Illuminating and fuel gas industry	492,946	3,670,049	451,607	3,164,234
Petroleum refining industry	44,099	345,041	49,325	312,521
Total	**1,707,034**	**14,251,614**	**1,486,237**	**10,745,468**

Table 61.—Summary Statistics of the Coke and By-Products Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1920	6	19,278,539	875	117,854	1,578,234	70,772	13,409,921	15,580,615	2,170,694
1921	5	19,866,300	647	283,554	939,235	38,638	12,295,797	14,214,728	1,918,931
1922	6	20,363,785	533	99,865	617,028	291,225	6,130,628	7,336,627	1,205,999
1923	5	20,494,442	598	86,979	755,397	211,515	11,437,863	13,901,445	2,463,582
1924	6	24,315,744	530	84,854	816,138	*1,125,067	6,879,516	10,438,462	3,558,946

* Includes cost of electricity.

Capital Employed.—Capital employed in the coke and by-products industry in Canada in 1924 amounted to $24,315,744, most of which was tied up in lands, buildings, and plant equipment. This was an increase of 3.9 millions over 1923 due to the opening of another large by-product coke plant in Ontario during the year. Ontario's plants accounted for 45 per cent of the total capital investment.

Table 62.—Capital Employed in the Coke and By-Products Industry in Canada, by Classes and by Provinces, 1923 and 1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
Ontario					9,090,384	1,565,063	270,317	10,925,764
Canada*	**19,639,208**	**855,234**		**20,494,442**	**22,446,224**	**1,579,203**	**290,317**	**24,315,744**

*1923 total for Canada includes data for Nova Scotia, Ontario and British Columbia: 1924 total for Canada also includes data for 1 plant in Nova Scotia and 2 in British Columbia.

Employment.—Although there was one more operating plant in 1924, only 530 persons were employed throughout the year as against 598 in 1923. Employment was greatest in the forepart of the year and reached a maximum in March after which there was a distinct falling off for the remainder of the year. The coke industry is closely related to the iron and steel industry and conditions generally follow the same trend.

Table 63.—Employment, Salaries and Wages Paid in the Coke and By-Products Industry in Canada, 1923 and 1924

	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees:						
Salaried employees	33	.....	33	28	.....	28
Wage-earners, by months:						
January	542	.....	542	575	.....	575
February	556	.....	556	531	.....	531
March	568	.....	568	735	.....	735
April	575	.....	575	628	.....	628
May	598	.....	598	446	.....	446
June	629	.....	629	477	.....	477
July	493	.....	493	456	.....	456
August	607	.....	607	349	.....	349
September	585	.....	585	349	.....	349
October	545	.....	545	458	1	459
November	541	.....	541	392	1	393
December	539	.....	539	360	1	361
Average	565	.....	565	501	1	502
Total employees	**598**	.....	**598**	**529**	**1**	**530**
(b) Salaries and wages:						
Salaries $	.....	.....	86,979	.....	.....	84,854
Wages $	.....	.....	755,397	.....	.....	816,138
Total $	.....	.....	**842,376**	.....	.....	**900,992**
(c) Average yearly earnings of each wage-earner $	.....	.....	**1,337**	.....	.....	**1,626**
(d) Average number of days on which plants in this industry operated during the year	.....	.....	**335**	.....	.....	**326**
(e) Labour turnover:						
Total number of different wage-earners employed during the year	.....	.....	.....	.....	.....	1,141
Average number of wage-earners employed within the year	.....	.....	**565**	.....	.....	**502**
Difference	.....	.....	.....	.....	.....	**639**
Apparent labour turnover (per cent)	.....	.....	.....	.....	.....	**127**

Table 64.—Fuel and Electricity Used in the Coke and By-Products Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Bituminous coal	Short ton	1,707	7,672	11,589	37,793
Coke	"	780	4,680	13,123	66,879
Gasoline	Gallon	113,064	3,972	.....	.....
Gas	M cu. ft.	1,559,383	167,524	5,913,099	942,656
Other fuel	.....	.....	27,667	.....	1,758
Electric power	K.W.H.	.....	36,902	8,578,445	75,981
Total	.....	.....	**248,417**	.....	**1,125,067**

Table 65.—Power Employed in the Coke and By-Products Industry in Canada, 1923 and 1924

Description	1923	1924	
	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Boilers	4,473	27	6,137
Steam engines	3,224	89	2,993
Electric motors—			
(a) operated by purchased power	3,860	162	4,080
(b) operated by power generated by the establishment	4,660	191	5,043

Materials Used.—Both imported and domestic coal are used in the coke-making industry in Canada. In 1924, the cost of foreign coal used for coke-making was $4,415,142; Canadian coal used cost $2,110,064. Only 1,410,917 tons of coal were used in 1924 as compared with 1,707,024 tons in 1923. Sulphuric acid is used to convert the ammonia recovered to ammonium sulphate which finds an extensive market as a fertilizer.

Table 66.—Materials Used in the Coke and By-Products Industry in Canada, 1923 and 1924

Materials	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
		No.	$	No.	$
Bituminous coal, for coke making:					
Canadian	Short ton	736,818	3,120,403	584,304	2,110,064
Foreign	"	970,206	6,071,461	826,613	4,415,142
Total coal	"	1,707,024	9,191,864	1,410,917	6,525,206
Sulphur	"	1,274	28,027	7,390	74,340
Sulphuric acid	"	10,628	170,495	9,860	149,885
All other materials			20,188		39,897
Total			218,710		264,122
Total purchased materials			9,410,574		6,789,328
Intermediate products used as materials			2,027,289		90,188
Total value of materials used			**11,437,863**		**6,879,516**

Products.—The amount of coke manufactured in this industry in 1924 was 985,305 tons valued at $7,268,713; this was 21 per cent in quantity, and 30 per cent in value below the production of 1923. The decrease was due to the lessened demand in the metallurgical industry. In 1924, Ontario's ovens produced 562,618 tons of coke or 61 per cent of the total production in this industry.

Disposition of coke by the producing plants showed that 13,123 tons were used in the coking plants for heating and power development; 781,445 tons were used in the associated metallurgical works; and 190,737 tons were sold during the year.

The percentage of yield of coke obtained from any coal is dependent primarily upon the quantity of volatile matter present in the coal. Practically all the volatile matter is eliminated during coking, the fixed carbon and ash with only a low percentage of volatile matter being left to form the coke. Yields of coke from any particular coal are lower in the beehive than in the by-product ovens because in the former a small part of the coke is burned in order to produce the heat required for the coking operations. In 1924, 1,410,917 tons of bituminous coal were treated to produce 985,305 tons of coke, an average yield of 65 per cent.

Most of the gas from the by-product ovens was used either to heat the ovens or in the associated steel plants; some gas was sold for domestic and industrial uses.

Ammonia liquor recovered in the plant, was nearly all made into ammonium sulphate and marketed as such. Tar and tar products and light oils were also recovered.

Table 67.—Products of the Coke and By-Products Industry in Canada, 1923 and 1924

Product	Unit of measure	1923		1924	
		Quantity	Selling value	Quantity	Selling value
		No.	$	No.	$
MADE FOR USE IN COKE PLANT—					
Coke	Short ton			9,573	63,329
Coke breeze	"			3,550	3,550
Gas used in heating ovens or retorts	M cu. ft.	2,280,466	496,077	5,125,920	879,682
Gas otherwise used in plant	"	1,559,383	167,524	787,179	62,974
Tar and tar products	Imp. gal.			47,481	1,758
Light oils (toluol, benzol, drip oil, holder oil, etc.)	"	1,587,261	122,060	1,184,064	90,188
All other products			61,915		
Total			847,576		1,101,481
MADE FOR USE IN METALLURGICAL WORKS—					
Coke	Short ton	943,927	8,127,590	724,322	5,555,406
Coke breeze	"	5,193	20,771	57,123	107,894
Gas otherwise used in plant	M cu. ft.	7,237,170	804,149	1,588,613	515,619
Gas not accounted for	"	3,619,748	346,692		
Tar and tar products	Imp. gal.			2,956,064	134,812
Other products			8,101		8,338
Total			9,307,303		6,322,069
MADE FOR SALE—					
Coke	Short ton	220,869	2,088,163	185,097	1,595,834
Coke breeze	"			5,640	32,700
Gas sold	M cu. ft.	102,090	27,564	935,602	421,021
Tar and tar products	Imp. gal.	9,734,491	222,497	7,825,068	190,462
Ammonium sulphate	lb.	37,495,062	1,108,707	30,037,134	742,925
Light oils (benzol, toluol, drip oil, holder oil, etc.)			279,409		116,445
All other products			20,226		5,525
Total			3,740,566		3,014,912
Total value of products for use and for sale			**13,901,445**		**10,438,462**

CHAPTER SEVEN

THE GLASS INDUSTRY

General.—This report of the glass industry in Canada covers the manufacture of pressed and blown glass and window glass, the bevelling, cutting and bending of imported glass—there being no plate glass manufactured in Canada—and the manufacture of leaded art glass, and glass cutting.

In the pressed and blown glass and window glass industry there were 10 plants operating in 1924 including 6 in Ontario, 3 in Quebec, and 1 in Alberta. Plants which cut and bevelled plate glass, manufactured cut glass, and made ornamental glass, numbered 38 in the Dominion in the same year. Of these, 8 operated in Quebec, 22 in Ontario, 3 in Manitoba, 4 in British Columbia, and 1 in New Brunswick. In 1923, there were 11 plants making pressed, blown and window glass and 35 in the cut, plate and ornamental glass industry making 46 in all or 2 less than in 1924. The 2 additional plants operating in 1924 were small, however, and in spite of the greater number of plants in operation the total value of production in 1924 at $10,776,816 was slightly lower than in the preceding year.

Glass is produced by the fusion of silica, lime or lead, and sodium or potassium salts. Oxides of other metals are sometimes introduced into the melt, but only for some particular purpose, such as for colouring, toughening or lowering or raising its fusibility. White arsenic, As_2O_3, is almost always used. It is reduced first to metallic arsenic, which then volatilizes; it is said that its use makes a much clearer glass. Silica is supplied in the form of sand, which is required practically free from iron oxide for the finer glass, but for the more common ware such as bottle glass, a small percentage of iron is permissible.

Lime is supplied in the form of ground limestone, which should be free from magnesia and iron. Magnesia raises the melting point and also makes the glass very hard. Burnt lime and hydrated oxide of lime are also used. Lead is added as litharge or red lead. The higher oxide is preferred because of the oxygen liberated, which assists in oxidising any iron present and also prevents the lead from being reduced to the metallic state. Sodium is added either as the carbonate or as the sulphate. When the latter is used, carbon is also added as a reducing agent. Potassium carbonate in the form of pearl ash is the chief source of potash. Other metallic oxides are sometimes introduced to impart a particular colour to the glass.

Glass is made by introducing into a carefully-made fireclay pot or tank the required amount of raw materials and fusing by means of a flame free from smoke. Good dry hardwood was originally used for fuel, but high-grade coal and gas or, more particularly natural gas, are being utilized at the present time.

Generally speaking, there are two kinds of furnaces: the pot furnace and the tank furnace. A tank furnace is more economical when a large amount of the same kind of glass is required. Fireclay for the pot furnace is mixed with old ground-up pots, wetted and kneaded until the whole becomes plastic, allowed to age and then built into pots by hand. Tank furnaces consist of a fireclay hearth or tank with a silica-brick arch and the heat is applied to the top of the charge. A bridge or wall of fireclay is placed across the hearth. The charge is introduced at one end and as the glass melts, it flows under the partition and is drawn off at the other end without interrupting the process.

Window glass was formerly made entirely by hand but in the modern plants the use of compressed air and newer machinery has replaced much of the manual labour formerly so characteristic of this industry. In making window glass a quantity of molten glass is collected on the end of a hollow iron blow-pipe and then by blowing and manipulation, it is made into a long cylinder of glass. This cylinder is laid on a table and cut along the longer axis, after which it is placed in the "flattening oven" with the cut on the upper side. In some plants the cylinder is cut into two semi-cylinders before flattening. The temperature is slightly raised and the cylinder gradually opens until it lies perfectly flat. It is then passed slowly through an annealing oven which is hot at one end and cool at the other.

Gradual cooling of the glass prevents the setting up of internal stresses. When the glass leaves this last oven it is ready to be cut into commercial sizes.

Bottles, lamp chimneys and other similar hollow-ware are made by blowing the molten glass into a mould; mechanical devices make it possible to produce many of these moulded products at one operation.

For the manufacture of plate glass, the molten glass is poured on a perfectly flat table and rolled to the desired thickness. After careful annealing, it is polished first by abrasion with coarse sand, then with finer abrasive materials, and finally with felt and rouge.

Cut glass is nearly always lead glass which has been either blown or pressed into moulds of the desired shape. The blank is cut by being held against a fast-revolving wheel of steel or sandstone fed with some abrasive material and water.

Coloured glass is made by adding the oxides of different metals, the choice of oxide being governed by the effect required.

Table 68.—Summary Statistics of the Glass Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1920	52	13,057,183	4,039	519,267	4,348,253	1,354,101	4,604,534	13,795,690	9,191,156
1921	48	13,725,482	3,097	548,012	3,073,756	1,485,165	3,974,358	11,461,912	7,487,574
1922	45	15,053,327	2,984	569,961	2,799,893	1,064,974	3,287,091	8,842,588	5,555,497
1923	46	14,892,372	3,350	559,403	3,219,399	1,365,903	3,714,515	11,098,020	7,383,511
1924	48	13,304,814	3,137	511,660	3,154,553	*1,255,190	3,667,660	10,776,816	7,109,156

*Includes cost of electricity used.

Capital Employed.—Although there were 48 plants reporting in 1924 as compared with 46 in the previous year, capital employed in the glass industry as a whole in Canada dropped 1·6 million dollars to $13,304,814. This decline was almost entirely accounted for by a decrease in the value of lands, buildings and plant equipment which fell to $8,414,045 in 1924 from $9,945,874 in 1923, due to the closing of one large glass factory in Ontario. The glass industry is centred in the provinces of Ontario and Quebec which together accounted for about 93 per cent of the total capital invested in the industry.

Table 69.—Capital Employed in the Glass Industry in Canada, by Classes and by Provinces, 1923 and 1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, fixtures, machinery and tools	Materials on hand and stocks in process	Cash, trading and operating accounts	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
Quebec	3,621,696	960,261	711,468	5,293,425	3,622,018	1,204,162	617,627	5,443,807
Ontario	5,779,277	1,654,419	1,273,115	8,706,811	4,181,174	1,541,107	1,107,353	6,829,634
Manitoba	10,121	11,204	4,602	26,077	59,365	34,070	12,606	106,041
British Columbia	2,944	29,837	7,059	39,840	11,137	23,152	10,257	44,546
Canada*	9,945,874	2,760,170	2,186,328	14,892,372	8,414,045	2,991,799	1,898,970	13,304,814

*1924 totals for Canada also include data for 1 plant in New Brunswick and in Alberta.

Employment.—Glass manufacturing and working in 1924 afforded employment to 244 salaried workers and 2,893 wage-earners, a total of 3,137 as compared with 3,350 in 1923. Salaries and wages amounted to $3,666,213. Each wage-earner received an average yearly wage of $1,090. Operating plants in this industry worked on the average 301 days during the year.

Table 70.—Employment, Salaries and Wages Paid in the Glass Industry in Canada, 1923 and 1924

	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees:						
Salaried employees	219	60	279	194	50	244
Wage-earners, by months—						
January	2,753	202	2,955	2,800	198	2,998
February	2,847	213	3,060	2,826	225	3,051
March	2,815	223	3,038	2,687	238	2,925
April	2,789	284	3,073	2,736	251	2,987
May	2,885	283	3,168	2,739	305	3,044
June	2,972	256	3,228	2,665	259	2,924
July	2,432	216	2,648	2,504	239	2,743
August	2,562	204	2,766	2,241	192	2,433
September	2,831	203	3,034	2,383	231	2,614
October	2,926	228	3,154	2,776	256	3,032
November	3,112	253	3,365	2,815	250	3,065
December	3,053	249	3,302	2,635	231	2,866
Average	2,836	235	3,071	2,650	243	2,893
Total employees	**3,055**	**295**	**3,350**	**2,844**	**293**	**3,137**
(b) Salaries and wages—						
Salaries $			559,403			511,660
Wages $			3,219,399			3,154,553
Total $			3,778,802			3,666,213
(c) Average yearly earnings of each wage-earner $			1,048			1,090
(d) Average number of days on which plants in this industry operated during the year			278			301
(e) Labour turnover:						
Total number of different wage-earners employed during the year						5,893
Average number of wage-earners employed within the year			3,071			2,893
Difference						3,000
Apparent labour turnover (per cent)						104

Table 71.—Fuel and Electricity Used in the Glass Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Anthracite coal	Short ton	477	7,578	689	7,922
Bituminous coal	"	106,048	859,973	72,297	526,546
Coke	"	175	674	272	2,639
Fuel oil	Gallon	14,751	4,613	29,032	8,347
Gasoline	"	2,123,230	198,625	3,610,768	325,671
Gas	M. cu. ft.	431,027	275,112	280,114	199,973
Wood	Cord	12	148	12	156
Other fuel			19,180		
Electric power	K.W.H.		122,040	14,915,018	183,936
Total			1,487,943		1,255,190

Table 72.—Power Employed in the Glass Industry in Canada, 1923 and 1924

Description	1923	1924	
	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Boilers	1,140	25	2,043
Engines—			
(a) Steam	235		
(b) Oil and gasoline	300		
(c) Gas engines	127	3	427
Electric motors—			
(a) operated by purchased power	6,221	391	6,243
(b) operated by power generated by the establishment	175	48	523

Materials Used.—Materials used in the manufacture of pressed and blown glass include silica sand, soda ash, nitrate of soda, burnt lime, white arsenic and various other materials. A large amount of sand is imported; in 1924 the imports amounted to 131,778 tons valued at $324,279. The chief sources of supply are the United States and Belgium, sand from the latter country being brought in as ballast by returning vessels.

In the plate, cut and ornamental glass industry the materials used include glass blanks, sheet and window glass, figured, coloured and cathedral glass, and such materials as lead, solder, zinc, copper, silver, silver nitrate and carborundum.

Table 73.—Materials Used in the Glass Industry in Canada, 1923 and 1924

Materials	Unit of measure	1923	1924	
		Cost at works	Quantity	Cost at works
		$		$
PLATE, CUT AND ORNAMENTAL GLASS INDUSTRY—				
Carborundum	lb.	.....	12,900	2,168
Glass blanks		.....	.....	161,688
Glass, figured, coloured and cathedral	sq. ft.	.....	274,825	36,340
Glass, sheet and window	"	.....	935,687	274,455
Glass, plate	"	.....	63,294	368,882
Lead, solder, zinc and copper	lb.	.....	151,507	20,977
Silks, fringes, etc		.....	.....	7,023
Silver	lb.	.....	360	2,877
Silver nitrate	"	.....	773	5,878
Stands and frames	.....	.....	.....	4,581
Containers, boxes, etc	.....	.....	.....	4,453
All other materials	.....	.....	.....	68,116
Total	.....	910,405	.....	957,438
PRESSED AND BLOWN GLASS INDUSTRY—				
Manufacturing materials used	.....	2,345,041	.....	2,150,417
Boxes, cases, lumber, etc	.....	459,069	.....	559,805
Total	.....	2,804,110	.....	2,710,222
Total	.....	**3,714,515**	.....	**3,667,660**

Products.—Glass in its various forms produced in Canada had a total selling value of $10,776,816 in 1924 as compared with $11,098,026 in the previous year.

Table 74.—Products of the Glass Industry in Canada, 1923 and 1924

Product	Unit of measure	1923	1924	
		Selling value	Quantity	Selling value
		$		$
PLATE, CUT AND ORNAMENTAL GLASS INDUSTRY—				
Bent glass	sq. ft.	.....	5,002	3,419
Cut glass	.....	.....	.....	500,563
Cut plates	sq. ft.	.....	29,750	32,947
Church and memorial windows	.....	.....	.....	85,361
Leaded glass and leaded lights	.....	.....	.....	169,578
Mirrors and bevelled plates	.....	.....	.....	699,805
Ornamental and art glass	.....	.....	.....	34,809
Window, showcase, windshield glass	sq. ft.	.....	502,502	355,678
Amount received for custom work or repairs	.....	.....	.....	11,974
All other products	.....	.....	.....	83,262
Total	.....	1,896,466	.....	1,977,396
PRESSED AND BLOWN GLASS INDUSTRY—				
Building glass	.....	.....	.....	321,561
Pressed and blown glass	.....	.....	.....	8,467,875
All other products	.....	.....	.....	9,984
Total	.....	9,201,560	.....	8,799,420
Total	.....	**11,098,026**	.....	**10,776,816**

CHAPTER EIGHT

THE ILLUMINATING AND FUEL GAS INDUSTRY

General.—The illuminating and fuel gas industry in Canada includes the manufacture of coal gas, carburetted water gas, Pintsch gas—for the illumination of railway coaches—and acetylene gas. Gas is also recovered as a by-product in the manufacture of coke and in the refining of petroleum but the outputs of these industries are not included in this review.

In 1924 there were 44 gas plants in operation in Canada, distributed as follows: 1 in Nova Scotia, 2 in New Brunswick, 4 in Quebec, 21 in Ontario, 8 in Manitoba, 2 in Saskatchewan, 1 in Alberta and 5 in British Columbia. Of these plants 11 made carburetted water gas only; 12 produced straight coal gas only; 6 made both water gas and coal gas; 6 produced acetylene gas only; and 9 others made Pintsch gas only. As illuminating and fuel gas may be made by several different methods and as the manufacture of straight coal gas and carburetted water gas are the most important, a short description of their manufacture is given here.

Coal gas is prepared by the destructive distillation of bituminous coal, and water gas is made by the action of steam on incandescent coke or anthracite coal. Straight water gas, being non-luminous, is mixed or rather carburetted with gases derived from oils which are rich in hyrdocarbons. This enhances both the heating values and lighting properties of the gas. Many straight coal gas plants are also equipped to make carburetted water gas, in which process the by-product coke from the coal gas process can be utilized.

Straight Coal Gas.—In the manufacture of coal gas, a coal with a high volatile content is charged into fireclay retorts heated externally by direct fire or by producer gas made from by-product coke. There are three types of retorts in use—the horizontal, the inclined and the vertical. The inclined and vertical retorts may be operated continuously, but the horizontal retorts are intermittent in operation.

In the operation of the vertical retort, the coal is charged from a hopper at the top and is distilled by the heat from the burning producer gas which surrounds it. The coke is drawn off from a hopper at the bottom. The products of distillation, gases, ammonia, tars, etc., are led off by a vertical pipe from the top of the retorts. Thence it is led to the foul main, and from the foul main to the primary condenser, and then to the exhauster.

The exhauster is the controlling factor and its function is to draw the gases from the retorts through the different mains and primary condensers and then act as a pump to force them through the remaining parts of the plant.

The gases are forced from the exhauster to a secondary condenser and then through the tar exhauster, after which they are led to a scrubber and a washer machine, for the removal of the ammonia.

From the scrubbers and the washers the gas passes through purifying boxes containing hydrated ferric oxide, which absorbs the sulphur compounds. It then goes through the plant meter to the gas holder, from which it is delivered through the main to the users.

Carburetted Water Gas.—In the manufacture of water gas, anthracite coal or by-product coke is charged into a large cylindrical holder called a generator and is heated up to white heat by means of an air blast.

The gases given off while this operation is carried on are led in at the top of an adjoining circular chamber called a carburettor which is filled with firebrick staggered to allow the free passage of the gas. By means of another blast of air entering also at the top of these chambers, partial combustion of the gases is effected and the small pieces of firebrick are raised to a white heat. The remaining gases are led to another similar chamber called a super-heater, which is also loosely filled with firebrick. Another air blast led in at the bottom promotes the combustion of the remaining gases and these heat the firebrick to a red heat; any gases not burned are led off at the top of the superheater to the open air. When the carburettor and superheater have reached the necessary temperature the air blast is cut off and steam is forced into the generator where it is decomposed and with the aid of carbon, forms hydrogen and carbon monoxide. While this non-illuminating gas is passing into the carburettor, oil in an atomized form is forced in against the white hot firebrick and is broken up into a gas rich in hydrocarbons.

The oil gases and the water gas mix, and pass through the superheater where they are fixed and made non-condensable. The gas thus formed is passed into a storage tank, and from there it is drawn through the purifying apparatus.

In 1924, gas rates in the different towns were as follows: Montreal, $1.10 per M; Halifax, $2.00 per M less 5 per cent; St. John, $2.25 per M plus meter rental; Brandon, $2.10 per M; Winnipeg, $1.30 per M; Westminster, $2.75 per M less 10 per cent; Nelson, B.C., $2.20 per M; Vancouver, $1.50 less 10 cents per M; Belleville, $1.30 per M; Guelph, $1.20 per M less 10 cents per M; London, $1.15 per M; Toronto, $0.85 per M plus 50 cents service charge; Cobourg, $2.50 per M; Owen Sound, $1.50 per M less 10 per cent; Port Hope, $2.50 per M with $6.00 per year service charge; Ottawa, $1.60 per M less 10 cents per M with 18 cents per month service charge; Kitchener, $1.60 per M less 10 cents per M with 10 cents per month meter rent; Stratford, $2.00 per M plus 25 cents meter rent; Cornwall, $2.20 per M less 20 cents per M; Waterloo, $2.00 per M; Oshawa, $1.90 per M; St. Thomas, $1.70 per M less 10 cents; Kingston, $1.70 per M plus 17 cents per month meter rent; Brockville, $1.80 per M; Barrie, $2.00 per M plus 75 cents service charge; Quebec, $2.00 per M less 25 per cent; and Sherbrooke, P.Q., $1.75 per M less 15 per cent. Acetylene gas was worth about $2.00 per C. cubic feet, and Pintsch gas cost $1.50 per receiver of 167 cubic feet.

Table 75.—Summary Statistics of the Illuminating and Fuel Gas Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$
1920	52	35,386,691	3,114	827,564	2,851,671	9,851,981	17,758,401	7,906,420
1921	50	37,097,280	2,818	904,942	3,080,034	9,279,697	18,772,285	9,492,588
1922	48	39,615,765	3,107	943,434	3,031,271	8,580,208	19,089,170	10,508,962
1923	45	45,526,495	3,021	1,094,241	2,707,591	9,024,084	19,605,340	10,581,256
1924	44	42,818,276	3,648	1,231,512	3,603,839	6,772,576	18,101,724	11,329,148

Capital Employed.—Capital employed in the gas industry amounted to $42,818,276 a decline of 2·7 million dollars from the 1923 figure. Previous to this there had been a substantial increase in each year since 1919 when the first returns on this industry were compiled. Ontario's plants represented a capital investment of 23·5 million dollars or 55 per cent of the total for Canada.

Table 76.—Capital Employed in the Illuminating and Fuel Gas Industry in Canada, by Classes and by Provinces, 1923 and 1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
Quebec	4,880,867	731,682	1,415,589	7,028,138	4,839,859	716,246	1,421,986	6,978,091
Ontario	22,860,780	1,343,714	3,097,865	27,302,359	19,920,741	1,284,480	2,298,923	23,504,144
Manitoba	4,550,474	142,982	119,584	4,813,040	5,229,141	124,895	112,895	5,466,931
British Columbia	4,013,957	293,890	82,336	4,990,183	4,758,657	350,016	357,551	5,466,224
*Canada	38,294,389	2,516,210	4,715,996	45,525,495	36,150,591	2,476,632	4,191,650	42,818,276

* Totals for Canada include data for 1 plant in Nova Scotia, 2 in New Brunswick, 2 in Saskatchewan and 1 in Alberta

Employment.—In spite of the decline in value of production in 1924 the gas industry afforded employment to 3,648 persons as compared with 3,021 in 1923. Salaries and wages also increased to $4,835,351 from $3,801,832 in 1923. Each wage earner received an average yearly wage of $1,262. Plants in this industry operated continuously throughout the year.

Table 77.—Employment, Salaries and Wages Paid in the Illuminating and Fuel Gas Industry in Canada, 1923 and 1924

	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees:						
Salaried employees	554	306	860	423	369	792
Wage-earners, by months:						
January	1,893	.....	1,893	2,260	3	2,263
February	1,846	.....	1,846	2,200	3	2,203
March	1,899	.....	1,899	2,246	3	2,249
April	2,128	.....	2,128	2,547	3	2,550
May	2,293	.....	2,293	3,062	3	3,065
June	2,314	.....	2,314	3,177	3	3,180
July	2,311	.....	2,311	3,217	3	3,220
August	2,297	.....	2,297	3,233	3	3,236
September	2,269	.....	2,269	3,326	3	3,329
October	2,245	.....	2,245	3,220	3	3,223
November	2,249	.....	2,249	3,036	3	3,039
December	2,225	.....	2,225	2,742	3	2,745
Average	2,161	.....	2,161	2,853	3	2,856
Total employees	2,715	306	3,021	3,276	372	3,648
(b) Salaries and wages:						
Salaries $	.....	.....	1,094,241	.....	.....	1,231,512
Wages $	.....	.....	2,707,591	.....	.....	3,603,839
Total $	.....	.....	3,801,832	.....	.....	4,835,351
(c) Average yearly earnings of each wage-earner $	.....	.....	1,253	.....	.....	1,262
(d) Average number of days on which plants in this industry operated during the year	.....	.....	365	.....	.....	365
(e) Labour turnover:						
Total number of different wage-earners employed during the year	.....	.....	.....	.....	.....	5,380
Average number of wage-earners employed within the year	.....	.....	2,161	.....	.....	2,856
Difference	.....	.....	.....	.....	.....	2,524
Apparent labour turnover ... (per cent)	.....	.....	.....	.....	.....	88

Table 78.—Fuel and Electricity Used in the Illuminating and Fuel Gas Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Anthracite coal	Short ton	.....	.....	759	3,643
Bituminous coal	"	*	*	37,183	261,436
Coke	"	*	*	141,826	841,224
Gas	M cu. ft.	.....	.....	1,339,350	1,509,327
Other fuel		.....	.....	.....	42,384
Electric power	K.W.H.	.....	.....	2,945,329	48,168
Total	.....	*	*	.....	2,706,182

* Included in table on materials used.

Table 79.—Power Employed in the Illuminating and Fuel Gas Industry in Canada, 1923 and 1924

Description	1923	1924	
	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Boilers	9,705	166	8,875
Engines:			
(a) Steam	1,244	54	808
(b) Oil and gasoline	8	3	150
(c) Gas	218	14	843
Electric motors:			
(a) operated by purchased power	1,871	136	2,153
(b) operated by power generated by the establishment	52	12	196

Materials Used.—Bituminous coal having good gas-making qualities is the principal raw material used in this industry. In 1924 more than 4·7 million dollars was paid for 681,480 tons of bituminous coal for this purpose. Gas oil is also an important raw material; in 1924 over a million dollars was paid for this commodity for use in gas making. Materials that were used as boiler or retort fuel are shown in the fuel consumption table.

Table 80.—Materials Used in the Illuminating and Fuel Gas Industry in Canada, 1923 and 1924

Materials	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
Bituminous coal for gas making (not for fuel)	Short tons	728,011	5,660,184	681,480	4,723,734
Anthracite coal for gas making (not for fuel)	"	22,760	284,988	20,064	251,899
Coke for gas making (not for fuel)	"	195,096	562,615	100,627	591,314
Oil (gas oil) for gas making (not for fuel)	Imp. gal.	10,847,666	1,029,634	10,515,178	1,146,053
Calcium carbide	lb.	348,950	15,708	215,195	16,454
Lime	lb.	1,106,450	5,565	921,157	4,544
Water			11,318		8,630
Oxide or purifying materials			33,303		29,374
Boiler fuel—					
Bituminous coal	Short tons	58,025	435,585	*	*
Coke	"	83,075	174,380	*	*
Retort or bench fuel—coke	"	117,234	804,609	*	*
All other materials used			6,195		574
Total			**9,024,084**		**6,772,576**
Intermediate products used as materials (included in above)			1,372,916		468,724

* Included in fuel table.

Table 81.—Consumption of Intermediate Products in the Manufacture of Illuminating and Fuel Gas, 1923 and 1924

—	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
Coke for gas making (not for fuel)	Short tons	70,480	411,218	73,097	460,354
Boiler fuel—					
Coke	"	31,521	159,569		
Coke breeze	"			*	*
Retort or bench fuel—					
Coke	Short tons	116,834	798,248	*	*
Oil ("gas oil") for gas making (not for fuel)	Imp. gal.			85,645	8,370
All other materials used			3,881		
Total			**1,372,916**		**468,724**

* Included in fuel table.

Products.—The output of the gas industry includes the primary products such as coal gas, water gas, etc., made for sale and also certain by-products such as coke, tar, ammonium sulphate, etc., part of which are sold and part used as fuel in the gas producing plants.

In 1924, the total gas made available for distribution was 13,227,402 thousand cubic-feet; of this amount 110,810 thousand cubic feet was used in the gas plants, and 11,879,111 thousand cubic feet was sold for industrial or domestic purposes bringing a gross revenue of $14,268,315, and 1,237,481 thousand cubic feet was not accounted for. In addition, the by-products were worth $3,833,409 thus bringing the total value of production in the gas industry in 1924 to $18,101,724 as compared with $19,605,340 in the previous year.

Table 82.—Products of the Illuminating and Fuel Gas Industry in Canada, 1923 and 1924

Product	Unit of measure	1923		1924	
		Quantity	Selling value	Quantity	Selling value
			$		$
GAS PRODUCTION—					
Straight coal gas	M cu. ft.	8,140,611	.....	7,991,915	.....
Straight water gas (blue gas)	"	.....	.....	33,733	.....
Carburetted water gas (blue gas)	"	5,276,101	.....	5,027,331	.....
Mixed coal and water gas, not separately metered or reported above	"	106,575	.....	103,218	.....
Oil gas by vaporizing distillate	"	70,608	.....	69,621	.....
Acetylene gas	"	1,534	.....	1,584	.....
Total gas made	"	13,595,429	.....	13,227,402	.....
Total gas purchased (natural)	"	585,848	.....	.....	.....
Total gas available for distribution	"	**14,181,277**	.....	**13,227,402**	.....
GAS DISTRIBUTION—					
Gas used in heating ovens or retorts	"	.....	.....	10,926	.....
Gas otherwise used in plant or otherwise accounted for but not sold	"	85,539	.....	99,884	.....
Gas not accounted for	"	1,311,673	.....	1,237,481	.....
Gas sold	"	12,784,065	15,260,683	11,879,111	14,268,315
BY-PRODUCTS—					
Coke	Tons	492,946	3,670,049	451,607	3,164,234
Tar and tar products:					
(a) From coal gas	Gals.	6,968,444	342,366	7,242,487	366,844
(b) From water gas	"	1,036,695	46,811	936,422	42,158
Ammonia in liquor and as sulphate	lb. NH_3	2,155,789	254,498	1,657,928	230,881
Light oils (toluol, benzol, drip oil, etc.)	Gals.	2,006	501	8,465	2,116
Breeze	Tons	5,367	25,911	.....	.....
All other by-products	.....	.....	4,521	.....	27,176
Total	.....	.....	4,344,657	.....	3,833,409
Total value of gas sold and by-products made	.....	.....	**19,605,340**	.....	**18,101,724**

Primary Production—Natural Gas (From the *"Annual Report on the Mineral Production of Canada, 1924)"*.—The production of natural gas in Canada in 1924 amounted to 14,881,336 thousand cubic feet valued at $5,708,636 as compared with 15,960,583 thousand cubic feet valued at $5,884,618 in 1923. Ontario and Alberta are the two principal areas where this natural resource occurs and in 1924 these provinces produced about equal amounts. The unit value received for natural gas in Ontario is twice as much as that received in Alberta. New Brunswick is the next greatest producer and Manitoba usually reports a small production.

In Alberta and Ontario the manufacture of carbon black from natural gas is a promising new industry and the Dominion Government has already published regulations covering the manufacture of this product from natural gas.

Table 83.—Production of Natural Gas in Canada, 1923 and 1924

Province	1923		1924	
	M cu. ft.	Value	M cu. ft.	Value
		$		$
New Brunswick	640,300	126,068	599,972	113,577
Ontario	8,128,413	4,066,244	7,150,078	3,798,381
Alberta	7,191,670	1,692,246	7,131,086	1,796,618
Manitoba	200	60	200	60
Total	**15,960,583**	**5,884,618**	**14,881,336**	**5,708,636**

CHAPTER NINE

THE IMPORTED-CLAY PRODUCTS INDUSTRY

General.—This industry includes all plants in Canada that manufacture clay products, such as porcelain insulators, fireclay goods, and earthenware, from special clay imported for the purpose. Most of this clay comes from the United States but considerable quantities are also obtained from the United Kingdom.

In 1924, there were 12 plants in Canada manufacturing products from imported clay. These were distributed as follows: 6 in Ontario, 5 in Quebec, and 1 in New Brunswick. Of these plants, 3 produced fireclay goods only; 3 others made porcelain insulators only; and the remainder manufactured sanitary earthenware, pottery and building tile. The total production amounted in value to $1,879,769.

Table 84.—Summary Statistics of the Imported-Clay Products Industry in Canada, 1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost fuel and electricity	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1924	12	1,677,533	489	104,277	462,866	141,491	535,793	1,879,769	1,343,976

Capital Employed.—Capital employed as represented by lands, plant and equipment, stocks on hand and in process, and cash and trading accounts totalled $1,677,533. Lands buildings and plant equipment were valued at nearly a million dollars. Ontario accounted for about 60 per cent of the total capital employed.

Table 85.—Capital Employed in the Imported-Clay Products Industry in Canada, by Classes and by Provinces, 1924

Province	1924			
	Capital employed as represented by			
	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$
Quebec	353,484	300,512	28,875	682,871
Ontario	608,443	115,023	271,196	994,662
Canada	**961,927**	**415,535**	**300,071**	**1,677,533**

Employment.—The imported-clay products industry in 1924 afforded employment to 45 salaried employees and 444 wage-earners, a total of 489 persons to whom $567,143 were paid in wages and salaries. The year opened with 520 wage-earners on the roll; by July the number had declined to 410, after which there was a slight recovery until in November 440 wage-earners were employed.

Plants in this industry operated on an average of 279 days during the year. Each wage-earner received an average yearly wage of $1,043.

Table 86.—Employment, Salaries and Wages Paid in the Imported-Clay Products Industry in Canada, 1924

	1924		
	Male	Female	Total
(a) Number of employees:			
Salaried employees	36	9	45
Wage-earners, by months—			
January	499	21	520
February	491	22	513
March	456	23	479
April	449	22	471
May	424	20	444
June	390	21	411
July	390	20	410
August	399	16	415
September	407	15	422
October	404	16	420
November	425	15	440
December	344	20	364
Average	424	20	444
Total employees	**460**	**29**	**489**
(b) Salaries and wages—			
Salaries $			104,277
Wages $			462,866
Total $			567,143
(c) Average yearly earnings of each wage-earner $			1,043
(d) Average number of days on which plants in this industry operated during the year			279
(e) Labour turnover:			
Total number of different wage-earners employed during the year			717
Average number of wage-earners employed within the year			444
Difference			273
Apparent labour turnover (per cent)			61

Table 87.—Fuel and Electricity Used in the Imported-Clay Products Industry in Canada, 1924

Kind	Unit of measure	1924	
		Quantity	Value
		No.	$
Anthracite coal	Short ton	3,167	40,296
Bituminous coal	"	11,291	84,552
Coke	"	201	2,156
Fuel oil	Gallon	48,191	3,353
Gas	M. cu. ft.	699	489
Wood	cord	262	1,499
Other fuel			130
Electric power	K.W.H.	847,732	9,016
Total			141,491

Table 88.—Power Employed in the Imported-Clay Products Industry in Canada, 1924

Description	1924	
	Number of units	Total h.p. according to manufacturers' rating
Boilers	6	360
Steam engines	1	35
Electric motors—		
(a) operated by purchased power	60	402

Materials Used.—Fireclay, china clay, porcelain clay, sagger clay, and glazing materials, such as white lead, sodium silicate, zinc oxide, and oxide of tin were the principal materials used in this industry. In 1924, the total cost of materials was $535,793.

Table 89.—**Materials Used in the Imported-Clay Products Industry in Canada, 1924**

Materials	Cost at works
	$
Fireclay	91,306
Clay, all other	228,522
Glazing materials (including white lead, oxide of tin, oxide of zinc, sodium silicate, borocalcite, etc.)	5,080
Containers, boxes, bags, etc.	36,749
All other materials	173,236
Total	**535,793**

Products.—Porcelain insulators was the main product of this industry, the output of these articles being valued at $1,332,679 in 1924. Fireclay boxes and shapes, sanitary earthenware, and other clay products brought the total production value of the industry to $1,879,769

Table 90.—Products of the Imported-Clay Products Industry in Canada, 1924

Product	Selling value at works
	$
Fireclay blocks and shapes	146,016
Porcelain insulators	1,332,679
Pottery, glazed and unglazed	53,678
Sanitary earthenware	254,752
All other products (includes, floor and wall tile, sewer pipe, etc)	92,644
Total	**1,879,769**

Primary Production of Clay and Clay Products (From the *Annual Report on the Mineral Production of Canada, 1924*). Clay and Clay Products.—The total value of domestic clay products sold in Canada during 1924 was $9,215,077, as compared with $10,483,016 in 1923 and $11,438,456 in 1922.

Table 91.—**Production of Clay Products in Canada from Domestic Clays, 1924**

Kind		Quantity	Total selling value
			$
Brick: soft mud process—Face	M	10,831	185,248
Common	"	50,079	746,044
stiff mud process (wire cut)—Face	"	80,565	1,842,224
Common	"	124,556	1,880,631
dry press—Face	"	35,203	761,572
Common	"	12,794	168,043
fancy or ornamental brick (including special shapes, embossed and enamelled brick)	"	755	98,460
sewer brick	"	2,690	40,775
firebrick (from domestic clay)	"	4,327	209,256
Fireclay	ton	3,645	26,258
Fireclay blocks and shapes			51,273
Structural tile: hollow blocks (including fire proofing and load-bearing tile)	ton	96,818	926,777
roofing tile	No.	7,377	917
floor tile (quarries)	sq. ft.	444,601	35,608
Drain tile	M	15,137	409,369
Sewer pipe (including copings, flue linings, etc.)	ton	70,355	1,594,280
Pottery, glazed or unglazed			338,342
Total			**9,215,077**

Table 92.—Imports into Canada and Exports of Clay and Clay Products, 1923 and 1924

		1923		1924	
		Quantity	Value	Quantity	Value
			$		$
IMPORTS—					
Bath brick			1,938		1,799
Building brick	M	5,381	140,441	5,425	134,983
Building blocks			77,972		63,509
Clays—					
China	cwt.	342,408	242,860	390,613	250,113
Fire	"	1,070,122	223,628	886,091	186,699
Pipe			1,161		847
Other clays			99,515		56,590
Drain tile, unglazed			2,041		3,014
Drain and sewer pipe			61,868		68,442
Earthenware and chinaware			5,067,489		4,124,607
Brick, fire, other, valued at not less than $100 per M, rectangular shaped the dimensions of each not to exceed 125 cubic inches for use exclusively in the construction or repair of a furnace, kiln, etc.			970,324		28,413
Brick, fire, n.o.p., for use exclusively in the construction or repair of a furnace, kiln or other equipment of a manufacturing establishment (from May 12, 1923)					812,030
Fire brick, n.o.p.			610,243		284,288
Fire brick, chrome—From May 12, 1923			4,000		
Magnesite brick			120,453		91,563
Silica brick			216,642		154,551
Paving brick	M	3,243	90,767	2,559	69,463
Other clay manufactures			241,320		842,377
Total			**8,172,662**		**7,158,371**
EXPORTS—					
Building brick	M	4,069	42,742	2,988	38,109
Clay—					
Unmanufactured	cwt.	12	52	1,346	1,127
Manufactures			109,957		109,295
Earthenware			432,092		72,839
Porcelain insulators*					322,206
Total			**584,843**		**543,572**

*Prior to April, 1924, porcelain insulators included with earthenware.

Table 93.—Production of Clay Products in Canada, from Domestic Clays, by Provinces, 1923 and 1924

Province	1923		1924	
	Sold or used	Per cent of total value	Sold or used	Per cent of total value
	$		$	
Prince Edward Island			3,340	0·04
Nova Scotia	413,974	3·95	355,948	3·98
New Brunswick	62,587	0·60	74,994	0·81
Quebec	2,439,598	23·28	2,435,695	26·44
Ontario	6,270,615	59·82	5,089,299	55·24
Manitoba	160,134	1·53	117,450	1·27
Saskatchewan	119,405	1·13	137,280	1·49
Alberta	590,565	5·63	540,477	5·86
British Columbia	426,138	4·06	460,594	4·99
Canada	**10,483,016**	**100·00**	**9,215,077**	**100·00**

Table 94.—Value of Clay Products Produced in Canada from Domestic and Imported Clays, 1923 and 1924

Item	From domestic clays		From imported clays		Total	
	1923	1924	1923	1924	1923	1924
	$	$	$	$	$	$
Fireclay blocks and shapes	81,345	51,273	271,227	146,016	352,572	197,289
Sanitary ware	.....	.....	417,454	254,752	417,454	254,752
Pottery, glazed and unglazed	229,547	238,342	78,453	53,678	308,000	292,020
Electrical porcelain insulators	.....	.....	1,310,899	1,332,679	1,310,899	1,332,679
Other clay products (brick, tile, sewer pipe, etc.)	10,172,124	8,925,462	.....	92,644	10,172,124	9,018,106
Total	**10,483,016**	**9,215,077**	**2,078,033**	**1,879,769**	**12,561,049**	**11,094,846**

Structural Tile.—Records of the production of structural tile in Canada include such items as hollow blocks, fire-proofing and load-bearing tile, roofing tile, and floor tile. Sales of these products amounted in value to $963,302 in 1924. Hollow blocks are manufactured in every province except New Brunswick and Prince Edward Island. Roofing tile is made in Ontario only. Floor tile is made in Ontario and also in small quantities in British Columbia.

Table 95.—Production of Structural Tile in Canada, by Provinces, 1924

Province	Hollow blocks (including fire proofing and load-bearing tile)		Roofing tile		Floor tile (quarries)	
	Tons	Value	No.	Value	Sq. ft.	Value
		$		$		$
Nova Scotia	4,695	54,410	.....	.....	.....	.....
Quebec	29,366	277,940	.....	.....	.....	.....
Ontario	48,134	428,894	7,377	917	441,301	35,211
Manitoba	969	11,726	.....	.....	.....	.....
Saskatchewan	1,795	35,892	.....	.....	.....	.....
Alberta	5,511	51,518	.....	.....	.....	.....
British Columbia	6,348	66,397	.....	.....	3,300	397
Canada	**96,818**	**926,777**	**7,377**	**917**	**444,601**	**35,608**

Sewer Pipe.—Production of sewer pipe in Canada in 1924 amounted to 76,355 tons valued at $1,594,280 as against 70,252 tons valued at $1,616,324 in 1923. During the year under review, sales of drain tile made in Canada reached a total value of $409,369 as against $323,314 for the year 1923, an increase of $86,055. Ontario accounted for more than 50 per cent. of the total production of drain pipe and sewer pipe in Canada,

Table 96.—Production of Drain Tile and Sewer Pipe, in Canada, by Provinces, 1923 and 1924

Province	1923				1924			
	Drain tile		Sewer pipe		Drain tile		Sewer pipe	
	M	$	Tons	$	M	$	Tons	$
Prince Edward Island	.....	.....	.....	.....	76	1,750	.....	.....
Nova Scotia	62	2,423	10,733	200,707	71	2,515	12,910	214,783
Quebec	170	10,312	12,268	294,437	65	2,550	12,939	310,525
Ontario	9,661	283,662	40,562	925,858	14,096	373,979	42,449	848,398
Manitoba	30	1,760	.....	.....	167	5,845	.....	.....
Saskatchewan	65	4,550	.....	.....	200	8,000	.....	.....
Alberta	103	5,414	6,035	175,168	38	1,831	6,345	168,016
British Columbia	508	15,193	654	20,154	424	12,899	1,712	52,558
Canada	**10,599**	**323,314**	**70,252**	**1,616,324**	**15,137**	**409,369**	**76,355**	**1,594,280**

REFRACTORIES.—*Fireclay*—Sales of fireclay or refractory clay sold as such, in Canada, during 1924 were valued at $26,258. Shipments of this commodity were made from deposits in the provinces of British Columbia, Saskatchewan, New Brunswick and Nova Scotia during the year.

Firebrick—Firebrick produced from domestic clays totalled 4,327 thousand valued at $209,256, as against 6,122 thousand valued at $295,037 in the previous year. British Columbia was the principal producer, accounting for 68 per cent of the total Dominion sales.

Imports of firebrick into Canada during 1924, consisting of magnesite brick, silica brick, firebrick of a kind not made in Canada, and fire brick, n.o.p., were appraised at $1,365,644.

Table 97.—Production of Refractories, in Canada, from Domestic Clays, by Provinces, 1924

Province	Fire clay		Fire brick		Fire clay blocks and shapes
	Sold or used		Sold or used		Sold or used
	Quantity	Value	Quantity	Value	
	Tons	$	M	$	$
Nova Scotia	1,967	5,258	176	8,269	930
New Brunswick	50	2,005	23	640	.....
Ontario	.....	.....	718	38,509	.....
Saskatchewan	315	2,436	436	19,936	3,818
Alberta	.....	.....	.....	.....	12,977
British Columbia	1,313	16,559	2,974	141,902	33,548
Canada	**3,645**	**26,258**	**4,327**	**209,256**	**51,273**

SANITARY WARE AND POTTERY FROM DOMESTIC CLAYS.—Pottery from domestic clays sold during 1924 amounted in value to $238,342 as against $229,547 in the preceding year. Pottery produced from imported clays was valued at $53,678, making the total production worth $292,020.

CHAPTER TEN

THE MONUMENTAL AND ORNAMENTAL STONE INDUSTRY

General.—The cutting of ornamental and building stone is an industry that is well distributed throughout the whole Dominion. In 1924 reports were received from 210 plants located as follows: 1 in Prince Edward Island; 13 in Nova Scotia; 9 in New Brunswick; 42 in Quebec; 113 in Ontario; 12 in Manitoba; 7 in Saskatchewan; 6 in Alberta and 7 in British Columbia. The majority of these plants are small concerns employing only 2 or 3 men, but there are also quite a number operating on a large scale with productions in excess of $100,000. In 1924, plants in this industry afforded employment to an average of 1,344 persons during the year and had a combined output valued at $4,730,572.

In some sections of Canada, suitable stone is not available locally and must be imported from other countries. There are sections of the province of Ontario where a very good grade of granite is obtainable but the quarrying of this material is an expensive operation and unless the demand is great near the quarry the return on the required investment in many cases is hardly enough to recompense the operator. In foreign countries, where this industry has been developed to a greater extent and where the demand for the product is much larger, the cost of quarrying has been reduced to a minimum so that the surplus stock can be exported to other countries and sold there at a price that competes with the domestic quarried stone. Granite and marble, rough and dressed, are regularly brought into Canada. In 1924 imports of stone totalled $910,157.

The importation of stone and quarry products into Canada from certain parts of the United States in recent years has been the subject of much concern on the part of government authorities in both countries; some stone was found to be infested with the brown-tail or gypsy moth which is particularly destructive. Now, all the stone for export from these areas is examined by officials of the United States' Department of Agriculture; if the stone is free from traces of the objectionable moths the officer signs a clearance certificate without which the stone cannot be brought into Canada.

Table 98.—Summary Statistics of the Monumental and Ornamental Stone Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1920	176	4,181,670	1,166	351,873	1,333,369	18,571	1,781,031	5,205,886	3,424,855
1921	173	3,971,172	1,207	369,190	1,283,647	15,857	1,478,007	4,540,028	3,061,931
1922	208	5,027,935	1,273	459,896	1,349,548	19,532	1,844,548	4,968,487	3,123,939
1923	210	5,073,018	1,278	464,823	1,378,140	20,170	1,683,126	5,025,003	3,341,877
1924	210	4,944,269	1,344	409,084	1,478,378	*95,791	1,441,753	4,730,572	3,288,819

*Includes cost of electricity.

Capital Employed.—Capital employed in this industry in 1924 amounted to $4,944,269, only slightly below the corresponding figure for 1923. Lands, buildings, machinery and tools were valued at $2,214,307 or 45 per cent of the total investment. Ontario led with $2,674,090 or 54 per cent of the total, while Quebec accounted for $1,080,515 or 22 per cent of the total capital employed in the industry.

Table 99.—Capital Employed in the Monumental and Ornamental Stone Industry in Canada, by Classes and by Provinces, 1923 and 1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash trading and operating accounts	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
New Brunswick	64,289	41,404	28,656	134,349	60,876	48,943	22,259	132,078
Quebec	610,335	214,015	335,433	1,159,783	468,977	201,133	410,405	1,080,515
Ontario	1,224,501	667,056	807,745	2,699,302	1,311,907	639,545	722,638	2,674,090
Manitoba	220,229	107,215	173,471	500,915	188,037	106,946	154,301	449,284
Saskatchewan	61,101	61,061	93,921	216,083	56,984	65,845	94,116	216,945
Alberta	40,768	97,294	66,106	204,168	48,633	101,166	76,013	225,812
British Columbia	42,539	16,449	20,884	79,872	51,353	14,175	23,298	88,826
*Canada	2,299,552	1,227,392	1,546,674	5,073,618	2,214,307	1,215,417	1,514,545	4,944,269

*Totals for Canada includes data for Prince Edward Island and Nova Scotia.

Employment.—In 1924 this industry afforded employment to 209 salaried employees and 1,135 wage-earners, a total of 1,344 persons to whom $1,887,462 was paid in salaries and wages. There is a slight seasonal trend to the industry as indicated by the monthly employment records. Employment drops off during the winter months when there is less activity in the building trade. In January there were 819 wage-earners on the rolls and this number gradually increased until a maximum of 1,252 was reached in August. By the end of the year the number had declined to 978 making an average for the year of 1,135 wage-earners as against 1,054 in 1923.

Table 100.—Employment, Salaries and Wages Paid in the Monumental and Ornamental Stone Industry in Canada, 1923 and 1924

	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees:						
Salaried employees	198	26	224	184	25	209
Wage-earners, by months:						
January	771		771	816	3	819
February	779		779	851	3	854
March	917		917	942	3	945
April	1,005		1,005	1,004	3	1,007
May	1,077		1,077	1,086	3	1,089
June	1,070		1,070	1,167	3	1,170
July	1,135		1,135	1,235	3	1,238
August	1,154		1,154	1,249	3	1,252
September	1,138		1,138	1,231	3	1,234
October	1,136		1,136	1,193	3	1,196
November	1,060		1,060	1,076	3	1,079
December	986		986	975	3	978
Average	1,054		1,054	1,132	3	1,135
Total employees	**1,252**	**26**	**1,278**	**1,316**	**28**	**1,344**
(b) Salaries and wages:						
Salaries $			464,822			489,084
Wages $			1,378,140			1,398,378
Total			1,842,963			1,887,462
(c) Average yearly earnings of each wage-earner $			1,308			1,385
(d) Average number of days on which plants in this industry operated during the year			243			255
(e) Labour turnover:						
Total number of different wage-earners employed during the year						1,748
Average number of wage-earners employed within the year			1,054			1,135
Difference						803
Apparent labour turnover (per cent)						71

Table 101.—Fuel and Electricity Used in the Monumental and Ornamental Stone Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No	$
Anthracite coal	Short ton	259	4,211	291	4,168
Bituminous coal	"	1,388	8,138	795	6,077
Lignite coal	"			36	299
Coke	"	68	999	119	1,406
Fuel oil	Gallon	2,018	571	4,309	1,135
Gasoline	"	5,454	2,270	14,824	4,159
Gas	M cu. ft.	280	861	638	895
Wood	Cord	487	3,120	372	2,725
Other fuel					181
Electric power	K.W.H.		52,286	4,202,106	74,746
Total			**72,456**		**95,791**

Table 102.—Power Employed in the Monumental and Ornamental Stone Industry in Canada, 1923 and 1924

Description	1923	1924	
	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Boilers	185	5	130
Engines:			
(a) Steam	162	1	46
(b) Oil and gasoline	64	20	96
(c) Gas	109	4	68
Hydraulic turbines or water wheels	32		
Electric motors:			
(a) Operated by purchased power	4,899	354	4,998
(b) Operated by power generated in the establishment		7	122

Materials Used.—The total cost of materials used amounted to $1,441,753 as against $1,683,126 in 1923. This included the cost of imported stone as well as domestic marble and granite, limestone and other materials.

Table 103.—Materials Used in the Monumental and Ornamental Stone Industry in Canada, 1923 and 1924

Materials	1923	1924
	Cost at works	Cost at works
	$	$
Cost of all stone used	1,683,126	1,441,753

Products.—The products of this industry find their market either as monuments or stone for building purposes. More granite and marble, cut and polished, was used for building purposes than in 1923 but the use of limestone for the same purpose fell off slightly. The total production in 1924 was valued at $4,730,572 as compared with $5,025,003 in the previous year.

Table 104.—Products of the Monumental and Ornamental Stone Industry in Canada, 1923 and 1924

Product	1923	1924
	Selling value	Selling value
	$	$
Granite, cut and polished:		
(a) Monuments	1,538,354	1,223,417
(b) For building purposes	341,072	465,539
Marble, cut and polished:		
(a) Monuments	353,792	298,482
(b) For building purposes	545,853	633,356
Marble chips and dust	14,549	46,530
Limestone:		
(a) Monuments and bases	37,125	42,577
(b) For building purposes	1,383,464	1,041,485
Finished monuments, lettered only	646,824	822,661
Other products	163,970	156,525
Total	**5,025,003**	**4,730,572**

Primary Production—Stone (Abstracted from the "*Annual Report on the Mineral Production of Canada, 1924*").—Sales of stone quarried in Canada during 1924 totalled 4,768,014 tons valued at $6,407,757 as against 4,111,334 tons valued at $5,903,289 in 1923. This was an increase of 16 per cent in quantity and 8·5 per cent in value. In point of value, Quebec was the largest producer, but having regard to quantity, Ontario had the greater output; British Columbia was next in importance and Nova Scotia, Manitoba, New Brunswick and Alberta followed in the order named.

Ontario produced more crushed stone than any other province but Quebec, had a greater production of monumental and ornamental stone, and also led all the other provinces in the production of rough and dressed building stone.

Limestone quarried and used by the operator in the manufacture of lime has not been included in this record. In order to avoid duplication of entries only the quantity and value of lime made are recorded.

Table 105.—Production of Stone in Canada, by Provinces, Showing Purposes for Which Used, 1924

Item		Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
Building—									
Rough	Ton	1,738	.....	33,037	15,752	815	.....	6,[illegible]	[illegible]
	$	19,740	.....	207,082	44,539	9,498	.....	40,[illegible]	[illegible]
Dressed	Ton	.....	30	20,644	1,149	1,200	80	650	[illegible]
	$	.....	1,500	711,651	36,545	30,570	2,455	83,500	[illegible]
Monumental and ornamental—									
Rough	Ton	193	1,141	9,446	1,609	2	.....	.....	[illegible]
	$	2,338	16,384	127,143	10,312	38	.....	.....	[illegible]
Dressed	Ton	201	481	636	65	.....	.....	950	[illegible]
	$	17,059	45,325	27,668	3,696	.....	.....	67,098	[illegible]
Flagstone	Ton	.....	.....	.....	719	.....	.....	.....	719
	$	.....	.....	.....	5,764	.....	.....	.....	5,764
Curbstone	Ton	.....	702	11,383	6	.....	.....	200	[illegible]
	$	.....	8,043	56,381	71	.....	.....	3,000	[illegible]
Paving blocks	Ton	.....	292	6,558	7,642	.....	.....	.....	[illegible]
	$	.....	4,171	96,957	61,184	.....	.....	.....	162,312
Limestone, for flux	Ton	54,899	.....	7,373	218,429	.....	.....	24,421	305,122
	$	49,789	.....	7,843	197,308	.....	.....	14,[illegible]	269,592
Limestone for sugar factories, chemical works, etc.	Ton	.....	11,732	68,931	104,207	.....	.....	2,[illegible]	[illegible]
	$	.....	24,556	66,880	69,165	.....	.....	7,229	167,830
Rubble and riprap	Ton	8,334	.....	15,205	90,888	5,945	200	48,036	168,608
	$	16,364	.....	10,692	67,182	7,415	100	39,920	141,673
Crushed	Ton	2,170	4,851	1,417,676	2,399,707	46,103	16,418	94,551	[illegible]
	$	6,534	14,132	1,612,523	2,293,602	46,354	16,762	97,629	[illegible]
Total	**Ton**	**67,535**	**19,229**	**1,592,089**	**2,849,173**	**54,065**	**16,698**	**178,225**	**4,768,014**
	$	**111,824**	**114,111**	**2,925,520**	**2,789,368**	**93,876**	**19,317**	**354,741**	**6,407,757**

Table 106.—Production of Stone in Canada by Kinds and by Provinces, 1924

Province	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		$		$		$		$
Nova Scotia	7,554	33,021	57,069	56,323	.....	.....	2,012	22,480
New Brunswick	4,921	80,812	14,308	33,299	.....	.....	.....	.....
Quebec	42,283	442,933	1,465,237	2,058,432	4,379	322,455	80,190	101,700
Ontario	214,691	208,219	2,614,911	2,551,111	.....	.....	10,571	30,038
Manitoba	.....	.....	54,065	93,876	.....	.....	.....	.....
Alberta	.....	.....	16,418	16,762	.....	.....	280	2,555
British Columbia	150,522	248,360	27,053	21,881	.....	.....	650	83,500
Canada	**419,971**	**1,013,345**	**4,249,061**	**4,831,684**	**4,379**	**322,455**	**91,603**	**240,273**

Table 107.—Production of Stone in Canada by Kinds, Showing Purposes for Which Used, 1924

Item	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		$		$		$		$
Building—								
Rough	11,905	85,175	40,875	163,825	912	36,471	5,335	36,701
Dressed	3,810	81,826	16,575	416,760	2,588	280,280	780	87,355
Monumental and ornamental—								
Rough	12,223	154,184	97	1,194			71	838
Dressed	2,298	159,706	35	1,140				
Flagstone			5	52			714	5,712
Curbstone	12,275	67,331	16	164				
Paving blocks	14,602	160,612					190	1,700
Limestone, for flux			305,122	269,592				
Limestone for sugar factories, chemical works, etc.			187,502	167,830				
Rubble and riprap	56,650	55,593	104,445	78,113			7,513	7,967
Crushed	306,208	248,918	3,594,389	3,733,014	879	5,704	80,000	100,000
Total	**419,971**	**1,013,345**	**4,249,061**	**4,831,684**	**4,379**	**322,455**	**94,603**	**240,273**

Table 108.—Production in Canada, by Kinds and by Provinces, and Imports and Exports of Stone, 1923 and 1924

	1923		1924	
	Tons	Value	Tons	Value
		$		$
PRODUCTION, BY KINDS—				
Granite	398,432	1,159,303	419,971	1,013,345
Limestone	3,687,663	4,475,921	4,249,061	4,831,684
Marble	2,473	201,518	4,379	322,455
Sandstone	22,766	66,547	94,603	240,273
Total	**4,111,334**	**5,903,289**	**4,768,014**	**6,407,757**
PRODUCTION, BY PROVINCES—				
Nova Scotia	138,682	177,009	67,535	111,824
New Brunswick	22,448	106,083	19,259	114,111
Quebec	1,102,876	2,332,821	1,592,089	2,025,520
Ontario	2,630,924	2,859,152	2,840,173	2,789,368
Manitoba	51,304	118,277	54,065	93,876
Alberta			16,698	19,317
British Columbia	165,100	249,866	178,225	353,741
Canada	**4,111,334**	**5,903,289**	**4,768,014**	**6,407,757**
IMPORTS—				
Building stone		403,550		267,699
Granite		158,861		140,237
Marble		293,806		291,380
Refuse stone	392,819	225,565	281,824	174,738
Manufactures of stone n.o.p.		52,048		36,103
Total		**1,133,833**		**910,157**
EXPORTS—				
Crushed	89,434	159,088	59,984	100,873
Ornamental, rough*	3,165	30,350	3,390	45,195
Building, rough†	1,302	12,575	2,059	18,680
Dressed		20,227		5,365
Total		**222,240**		**170,113**

* Granite, marble, etc., unwrought.
† Freestone, limestone, etc., unwrought.

CHAPTER ELEVEN

THE PETROLEUM PRODUCTS INDUSTRY

General.—The petroleum products industry in Canada includes those plants engaged in (a) the refining of crude oil from the production of gasoline, kerosene, lubricating oils, waxes and petroleum coke; (b) the manufacture of commercial lubricants consisting wholly or in part of mineral oils. Because the output of the latter section is small as compared to the former and because some companies distilling crude oil also produce lubricating compounds there has been little attempt to separate the data between these two sections.

In the petroleum refining section there were 17 plants in operation during 1924. Of these, 2 were located in Quebec, 3 in Ontario, 7 in Alberta, 2 in British Columbia and 1 in each of the provinces of Nova Scotia, Manitoba and Saskatchewan. These plants represented a capital investment of $53,095,784, afforded employment to 3,603 persons and had a production valued at $48,677,347. Eight other plants reporting to the Bureau made lubricating oils and greases as their principal product; 2 of these were located in Quebec, 5 in Ontario and 1 in Alberta. These plants employed a capital of only $700,010, gave employment to 66 persons throughout the year and made $733,720 worth of commodities for sale.

As compared with 1923 the value of production for the industry as a whole was higher by 3 million dollars although fewer persons were employed and the capital employed was less by 7 million dollars. There were 5 more plants reporting in 1924 of which 2 compounded lubricating oils and greases, 2 refined imported oils on a small scale and 1 extracted gasoline from natrual gas.

Owing to the increase in the consumption of gasoline in the internal combustion engine, the petroleum refining industry has become one of great industrial importance. For this reason a brief descrpition of the processes used has been included for the information of the general reader.

Petroleum Refining.—Petroleum is an oily liquid, which is found widely distributed throughout the earth's crust. The origin of this remarkable and useful substance has been the subject of controversy among scientists for a long time. Some believe that petroleum was formed as the product of chemical reactions among inorganic substances, while others contend that it has resulted from the decomposition of animal and vegetable matter.

Petroleum as it comes from the earth is generally spoken of as "crude" and it is divided into two main classes, (a) paraffin base oil and (b) asphlatic base oil. There is no sharp line of demarcation, as oils from some districts contain both asphalt and paraffin.

The Canadian oils from the Petrolia field are paraffin base oils having a high sulphur content.

The refining of petroleum means the breaking-up of the crude oil into its marketable products, which are gasoline, kerosene, fuel and gas oils, lubricating oils, tar, petroleum jelly and wax, and petroleum coke. This breaking-up is done by what is known as "fractional distillation." The crude oil is led into large horizontal cylindrical stills set in brick-work and properly insulated. Heat is supplied by burning gas, oil or coal. On the top of the still is a dome connected with the condensers by a large pipe 12 to 16 inches in diameter. The condenser pipes from the still are immersed in cooling tanks through which cold water is continually circulated so that the vapours in the mines are condensed to a liquid which is then drawn off for further treatment.

The products from the crude still are naphtha, kerosene, gas oil, wax distillates and residual coke. The naphtha is led to a steam still where gasoline and benzenes are separated, the gasoline being run into an agitator where it is washed with sulphuric acid and the benzenes being treated in a similar way in another agitator. The gas oils are either sold for the enrich-

ment of coal or water gas or are cracked into fuel oil and gasoline. The wax distillates are put through a refrigerating and pressing process for the extraction of crystalline waxes. The remaining oil is further fractionated for the production of various grades of lubricants.

Table 109.—Summary Statistics of the Petroleum Products Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1920	19	52,709,887	4,153	972,952	5,578,874	4,712,189	39,168,692	59,573,448	20,404,756
1921	16	57,564,588	4,014	836,870	5,345,644	4,439,651	30,629,576	52,932,415	16,302,839
1922	19	62,054,020	3,555	832,935	4,650,748	4,231,787	38,413,191	57,035,563	18,622,372
1923	20	61,027,704	4,257	910,379	4,737,941	3,897,272	36,816,696	46,280,534	9,463,838
1924	25	53,795,794	3,669	961,281	4,788,424	*3,586,532	37,092,711	49,411,067	12,318,356

*Includes cost of electricity.

Capital Employed.—The total capital employed in petroleum refining and in the manufacture of greases, etc., in 1924 amounted to $53,795,794 a decline of over 7 million dollars from that reported in 1923. Lands, buildings and plant equipment were valued at $34,613,268 in 1924 as compared with $47,955,301 in the previous year; materials on hand and in process increased in value by 6 million dollars and the cash and open accounts showed a slight increase in value over 1923.

Table 110.—Capital Employed in the Petroleum Products Industry in Canada, by Classes and by Provinces, 1923 and 1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
Quebec	8,190,537	1,994,107	57,955	10,242,599	5,605,054	3,015,262	92,634	8,712,950
Ontario	12,929,239	4,727,722	385,723	18,042,684	9,187,923	5,288,910	567,427	15,044,260
Alberta	7,979,085	701,552	53,921	8,734,558	7,942,113	1,735,808	230,989	9,908,910
*Canada	47,955,301	12,338,670	743,733	61,027,704	34,613,268	18,264,767	917,759	53,795,794

*Totals for Canada include data for 1 plant in Nova Scotia, 1 in Manitoba, 1 in Saskatchewan and 2 in British Columbia

Employment.—In 1924, salaried employees numbered 448 and wage-earners 3,221 as compared with 432 and 3,824 respectively in 1923. However salaries and wages were slightly higher in 1924 at $5,749,705 as compared with $5,648,320 in the previous year. There is a slight seasonal trend to the industry, employment being greatest in the summer months. In January there were 3,116 wage-earners employed and in February a minimum of 2,976. Then there was a gradual increase until a maximum of 3,395 was reached in August, after which the number gradually declined to 3,023 at the end of the year.

The larger refineries operated continuously during the year but many of the smaller plants operated only part of the time; the average number of days on which plants in this industry operated during the year stood at 288.

Table 111.—Employment, Salaries and Wages Paid in the Petroleum Products Industry in Canada, 1923 and 1924

	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees:						
Salaried employees	363	69	432	384	64	448
Wage-earners, by months:						
January	3,393	27	3,420	3,095	21	3,116
February	3,388	22	3,410	2,955	21	2,976
March	2,777	24	2,801	2,977	24	3,001
April	3,564	21	3,585	3,162	24	3,186
May	4,328	18	4,346	3,291	25	3,316
June	4,437	19	4,456	3,257	27	3,284
July	4,836	17	4,853	3,281	21	3,302
August	4,442	18	4,460	3,372	23	3,395
September	4,061	23	4,084	3,321	24	3,345
October	3,595	33	3,628	3,217	30	3,247
November	3,491	33	3,524	3,113	29	3,142
December	3,293	33	3,326	2,995	28	3,023
Average	3,800	24	3,824	3,195	26	3,221
Total employees	**4,163**	**93**	**4,256**	**3,579**	**99**	**3,669**
(b) Salaries and wages:						
Salaries $			910,379			961,281
Wages $			4,737,941			4,788,124
Total $			**5,648,320**			**5,749,705**
(c) Average yearly earnings of each wage-earner $			1,239			1,486
(d) Average number of days on which plants in this industry operated during the year			281			288
(e) Labour turnover:						
Total number of different wage-earners employed during the year						4,336
Average number of wage-earners employed within the year			3,824			3,221
Difference						1,115
Apparent labour turnover (per cent)						35

Fuel.—The principal fuels used in this industry are bituminous coal and fuel oil. A large amount of heat is required for distillation purposes and the location of the plant determines the type of fuel to be used. In 1924, more money was spent for fuel oil than for coal; fuel oil cost $1,901,128 as compared with $978,076 for coal. The total cost of fuel amounted to nearly 3·6 million dollars.

Table 112.—Fuel and Electricity Used in the Petroleum Products Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
	No.	No.	$	No.	$
Anthracite coal	Short ton	9	148	18,692	100,225
Bituminous coal	"	172,905	1,021,495	189,571	877,851
Coke	"	16,361	101,774	18,769	90,852
Fuel oil	Gallon	46,368,490	2,323,633	42,181,592	1,901,128
Gasoline	"	1,461	259	642,825	30,084
Gas	M cu. ft.	1,780,039	318,196	1,372,675	326,562
Wood	cord	4	28	35	92
Other fuel			31,748		86,677
Electric power	K.W.H.		163,080	15,506,873	173,133
Total			**4,060,352**		**3,586,532**

Table 113.—Power Employed in the Petroleum Products Industry in Canada, 1923 and 1924

Description	1923	1924	
	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Boilers	19,909	98	18,961
Engines:			
(a) Steam	9,619	273	9,072
(b) Gas	967	15	970
(c) Oil and gasoline	1,050	9	1,040
Electric motors:—			
(a) Operated by purchased power	4,620	225	5,859
(b) Operated by power generated by the establishment	2,925	105	2,512

Materials Used.—To date Canada has had to depend on foreign countries for her supply of crude oils. Most of the oil refined in Canada is obtained from the United States but large quantities are also brought from Mexico and Peru. In 1924, the value of Canadian crude oil used was less than one-half million dollars whereas imported oil was valued at more than 33 million dollars. This feature is very important as it emphasizes the fact that the discovery of crude oil in Canada in large quantities is necessary to put the country in an independent position. Other principal materials are listed in the accompanying table. In an industry such as this the consumption of containers, cooperage stock, etc., is of considerable importance and in 1924 amounted to nearly 1·5 million dollars in value; the practice in the trade is to charge the consumer for the containers and to allow a rebate when the containers are returned. In 1924 the total amount spent for materials was $37,092,711 as compared with $36,816,696 in 1923.

Table 114.—Materials Used in the Petroleum Products Industry in Canada, 1923 and 1924

Materials	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
Crude oil (Canadian)	Imp. gal.	5,906,028	458,609	5,172,903	403,099
Crude oil (imported)	"	402,904,711	33,184,017	361,974,302	33,018,885
Sulphuric acid	Pound	65,922,858	690,152	57,693,733	605,383
Sulphur (not used in acid manufacture)	"	61,814	1,733	90,955	2,625
Caustic soda	"	3,084,651	128,421	3,796,826	146,842
Litharge	"	328,185	28,794	315,723	30,197
Clay	"	480,375	7,929	.....	.....
Rapeseed oil	Gal.	5,439	8,373	.....	.....
Soda ash	Pound	661,089	14,911	.....	.....
Vegetable pulp	"	38,328	28,908	.....	.....
Fatty acid	"	512,191	58,741	.....	.....
Candle material	.....	.....	17,135	.....	.....
Animal oils	Gal.	.....	117,521	26,183	25,779
Oil for further refining and blending	.....	.....	836,108	.....	.....
Fuller's earth	Pound	341,014	4,286	954,623	13,495
Cooperage stock	.....	.....	171,745	.....	.....
Compounding material	.....	.....	.....	.....	736,516
Mineral oils	Gal.	.....	.....	1,048,826	272,205
Other oils and greases	.....	.....	.....	.....	132,025
All other materials	.....	.....	173,413	.....	252,268
Shipping containers, boxes, barrels, etc.	.....	.....	885,900	.....	1,403,302
Total	.....	.....	**36,816,696**	.....	**37,092,711**

Products.—The total production of the petroleum industry in 1924 was valued at $49,411,067 an increase of 3 million dollars over the output value of 1923. Of this amount 2·4 million dollars represented the value of intermediate products used chiefly as a fuel in the reporting plants.

The production of gasoline has been almost doubled in the past six years; in 1919 only 86 million gallons were made as compared to the record production of 160 million gallons in 1924. The value of production, however, has increased only from 22·9 million dollars in 1919 to 25·8 million in 1924. The drop in price of gasoline during the last few years was due largely to the great increase in the available supply of crude oil resulting from the discovery of new fields in the United States.

The output of kerozene in 1924 amounted to 61 million gallons, a decrease of 6 million gallons from 1923; the production of lubricating oils declined nearly 2 million gallons to 15 million gallons; asphalt remained about the same as in the previous year at 20 million gallons; and fuel and gas oils were produced in much larger quantities than in 1923.

Table 115.—Products of the Petroleum Products Industry in Canada, 1923 and 1924

Product	Unit of Measure	1923		1924	
		Quantity	Selling value	Quantity	Selling value
			$		$
MADE FOR SALE—					
Gasoline	Imp. gals.	124,139,966	22,150,183	160,222,541	25,844,047
Petroleum spirits	"	1,038,625	144,481	788,529	132,087
Kerosene	"	67,383,335	8,772,812	61,296,285	7,487,457
Fuel and gas oils	"	95,270,835	5,656,498	134,941,640	7,169,187
Lubricating oils	"	17,121,896	3,237,526	15,467,084	3,058,199
Grease	Pounds	13,999,391	289,420	10,424,621	260,591
Tar	"	112,924	12,144	.....	.....
Petroleum coke	Short ton	27,738	243,277	30,566	221,668
Wax and candles	Pound	10,484,436	484,416	9,112,041	551,422
Naphtha	Gal.	42,493	13,447	22,480	8,318
Asphalt	"	20,498,386	1,593,863	20,170,503	1,816,772
Other products	.....	.....	860,674	.....	442,303
Total	.....	.....	43,458,744	.....	46,992,051
INTERMEDIATE PRODUCTS MADE FOR USE (CHIEFLY AS FUEL) IN THE MANUFACTURE OF PETROLEUM PRODUCTS IN CANADA—					
Gasoline	Imp. gals.	16,414	3,071	23,198	3,172
Kerosene	"	13,339	1,559	32,182	2,985
Fuel and gas oil	"	44,411,735	2,317,268	42,181,592	1,907,559
Lubricating oils	"	.....	.....	12,381	2,917
Petroleum coke	Short tons	6,282	57,247	7,536	48,735
Acid coke	"	10,079	44,527	11,223	42,118
Acid oil	Imp. gals.	.....	.....	1,568,094	71,672
Still gas	M. cu ft.	605,249	297,207	1,186,787	302,946
Other products	.....	.....	100,911	.....	36,912
Total	.....	.....	2,821,790	.....	2,419,016
Total	.....	.....	**46,280,534**	.....	**49,411,067**

Primary Production—Crude Petroleum (From the *"Annual Report on the Mineral Production of Canada, 1924"*).—Production of crude petroleum in Canada in 1924 amounted to 160,773 barrels valued at $467,400 as compared with 170,169 barrels valued at $522,018 in 1923, a decrease of approximately 9,000 barrels.

The average values received, per barrel, in the producing provinces in 1924 were as follows: New Brunswick, $3.83; Ontario, $2.86; and Alberta, $4.90.

The value of importations of petroleum and its products into Canada during 1924 increased approximately $5,000,000 over the total in the preceding year.

Table 116.—Production of Crude Petroleum in Canada by Provinces, 1923 and 1924

Province	1923				1924			
	Barrels	Value less bounty	Bounty paid	Total value	Barrels	Value less bounty	Bounty paid	Total value
		$	$	$		$	$	$
New Brunswick	8,826	31,992	3,650	35,642	5,561	18,520	2,793	21,313
Ontario—								
Petrolia and Enniskillen	64,159	157,830	33,683	191,513	60,916	149,427	24,327	173,754
Oil Springs	39,090	98,898	20,522	119,420	41,320	104,250	16,816	121,066
Moore Township	4,790	11,783	2,515	14,298	4,483	10,997	2,069	13,066
Sarnia Township	2,387	5,871	1,253	7,124	2,068	5,073	1,033	6,106
Plympton Township	872	2,146	458	2,604	525	1,288	234	1,522
Bothwell	27,665	68,056	14,524	82,580	26,700	65,655	10,728	76,383
Tilbury East	1,263	3,106	663	3,769	.....	.....	.....	.....
West Dover	6,306	15,513	3,311	18,824	3,898	9,585	1,740	11,325
Raleigh Township	302	744	159	902	834	2,047	299	2,346
Dutton	315	775	165	941	.....	.....	.....	.....
Onondaga	237	583	124	708	456	1,109	213	1,322
Moza Township	10,319	25,386	5,418	30,803	8,862	21,074	3,605	24,679
Thamesville	567	1,396	298	1,694	.....	.....	.....	.....
Dunwich	.....	.....	.....	.....	1,351	3,309	.....	3,309
Elgin Township	279	685	146	831	.....	.....	.....	.....
Romney Township	849	2,138	.....	2,138	2,955	7,074	.....	7,074
Total for Ontario	159,400	394,910	83,239	478,149	154,368	380,888	61,064	441,952
Alberta	1,943	8,126	101	8,227	844	4,135	.....	4,135
Total for Canada	**170,169**	**435,028**	**86,990**	**522,018**	**160,773**	**403,543**	**63,857**	**467,400**

Table 117.—Imports into Canada and Exports of Petroleum and its Products, 1923 and 1924

Item		1923		1924	
		Quantity	Value	Quantity	Value
			$		$
IMPORTS—					
Crude petroleum in its natural state, ·7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners to be refined in their own factories	Gals.	392,185,557	17,449,032	465,958,500	20,260,488
Crude petroleum, gas oils other than naphtha, benzine and gasoline lighter than ·8235 but not less than ·775 specific gravity at 60 degrees	"	475,842	38,908	139,745	10,875
Petroleum, crude, not in its natural state, ·7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners to be refined in their own factories—(From May 12, 1923)	"	15,922	960	55,758	3,953
Petroleum (not including crude petroleum imported to be refined or illuminating or lubricating oils) ·8235 specific gravity or heavier at 60 degrees temperature	"	108,506,938	4,206,193	94,104,526	4,122,333
Petroleum, imported by miners or mining companies or concerns, for use in the concentration of ores of metals in their own concentrating establishments	"	32,960	5,913	139,473	35,880
KEROSENE AND ILLUMINATING OILS					
Coal oil and Kerosene, distilled, purified or refined	"	4,118,943	322,434	5,410,973	444,646
Illuminating oils, composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon	"	42,474	16,296	10,655	4,215
Coal oil and kerosene, distilled, known as "engine distillates", ·725 specific gravity and heavier, but not heavier than ·770 specific gravity at 60 degrees temperature	"	8,203	962	20,420	2,942
LUBRICATING OILS					
Lubricating oils, composed wholly or in part of petroleum, and costing less than 20 cents per gallon	"	4,295,635	737,053	3,975,337	728,250
Lubricating oils, n.o.p.	"	3,901,048	1,573,897	4,521,086	1,714,403

Table 117.—Imports into Canada and Exports of Petroleum and its Products, 1923 and 1924—*Concluded*

Item		1923		1924	
		Quantity	Value	Quantity	Value
			$		$
IMPORTS—*Concluded*					
OTHER OILS					
Gasoline under ·725 specific gravity at 60 degrees temperature	"	35,845,251	5,134,286	56,389,078	7,138,561
Gasoline ·725 specific gravity but not heavier than ·770 specific gravity at 60 degrees temperature	"	13,927,843	1,993,596	17,084,248	2,166,847
Gasoline, n.o.p.	"	177,566	32,750	284,115	38,745
All other oils, n.o.p.	"	248,888	86,958	260,901	119,088
OTHER PRODUCTS OF PETROLEUM					
Grease, axle	Lb.	2,981,849	176,216	2,853,720	165,694
Parraffine wax	"	1,034,921	63,695	837,317	65,782
Paraffine wax candles	"	176,487	32,516	202,565	36,884
Vaseline and all similar preparations of petroleum for toilet, medicinal or other purposes			268,267		195,457
Petroleum, products of, n.o.p.	Gals.	1,712,665	299,388	1,298,590	242,996
Total			**32,139,326**		**37,498,039**
EXPORTS—					
Oil, coal and kerosene, crude	Gals.	2,384,899	138,381	18,263,236	529,497
Oil, coal and kerosene, refined	"	1,450,051	139,924	1,525,427	165,520
Oil, gasoline and naphtha	"	1,217,298	263,326	1,403,716	256,906
Oil, mineral, n.o.p.	"	1,200,347	223,511	627,671	161,259
Wax, mineral	Cwt.	66,274	206,575	33,171	147,810
Total			**971,717**		**1,261,052**

CHAPTER TWELVE

MISCELLANEOUS NON-METALLIC MINERAL PRODUCTS INDUSTRY

General.—Under this heading are included the industries making (a) artificial abrasives and abrasive products; (b) graphite products such as artificial graphite and graphite and carbon electrodes; (c) plaster, castings and models; (d) gypsum products; (e) products of the mica trimming shops; (f) miscellaneous products such as foundry supplies, facings, etc. In 1924, this group included 36 plants, gave employment to 1,767 persons and had a combined production valued at $6,991,904. The abrasives industry is by far the most important of this group with a production worth $5,628,653; gypsum products were worth $791,363; mica products were valued at $419,877; and graphite products were worth $99,316. Short descriptive notes of the manufacturing processes have been included after the general tables relating to the group as a whole.

Table 118.—Summary Statistics of the Miscellaneous Non-Metallic Mineral Products Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1920	44	5,464,978	3,302	241,570	1,391,609	232,864	1,533,065	4,579,216	3,046,151
1921	23	2,253,322	902	123,365	287,679	46,795	553,517	1,250,938	703,421
1922	26	6,354,115	1,371	175,973	546,107	73,960	1,318,652	3,015,539	1,696,887
1923	38	7,262,403	2,917	250,218	1,242,628	90,596	2,879,015	8,147,331	5,268,316
1924	36	6,659,059	1,767	262,573	1,066,403	*564,220	2,427,145	6,991,904	4,564,759

* Includes cost of electricity.

Capital Employed.—Capital employed by firms included under this classification amounted to $6,659,059, of which $4,100,494 was tied up in lands, buildings and plant equipment. Ontario accounted for over 70 per cent of the total capital invested in this industry.

Table 119.—Capital Employed in the Miscellaneous Non-Metallic Mineral Products Industry in Canada, by Classes and by Provinces, 1923 and 1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
Quebec	1,238,286	499,711	306,695	2,044,692	1,246,191	478,658	216,684	1,941,533
Ontario	2,953,413	1,130,983	1,133,315	5,217,711	2,854,303	1,162,188	701,035	4,717,526
Canada	4,191,699	1,630,694	1,440,010	7,262,403	4,100,494	1,640,846	917,719	6,659,059

Employment.—The number of persons employed in these industries in 1924 was 1,767, comprising 110 male and 43 female employees on salaries; 748 male and 866 female employees on wages. In the mica trimming shops the work is not heavy; girls are employed to split the mica in preparation for its marketing. Expenditures for salaries and wages totalled $1,328,976 in 1924.

Table 120.—Employment, Salaries and Wages Paid in the Miscellaneous Non-Metallic Mineral Products Industry in Canada, 1923 and 1924

	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees:						
Salaries employees	118	44	162	110	43	153
Wage-earners, by months:						
January	728	1,505	2,233	789	975	1,764
February	755	1,697	2,452	764	1,156	1,920
March	808	1,772	2,580	768	674	1,442
April	893	1,711	2,604	782	596	1,378
May	941	1,798	2,739	795	485	1,280
June	946	1,901	2,847	756	503	1,259
July	955	2,016	2,971	747	447	1,194
August	947	2,040	2,987	727	456	1,183
September	924	1,869	2,793	712	419	1,131
October	864	1,842	2,706	699	446	1,145
November	852	2,013	2,865	677	418	1,095
December	825	2,040	2,865	670	354	1,024
Average	874	1,881	2,755	748	866	1,614
Total employees	**992**	**1,925**	**2,917**	**858**	**909**	**1,767**
(b) Salaries and wages:						
Salaries $			250,218			262,573
Wages $			1,242,628			1,066,403
Total $			1,492,846			1,328,976
(c) Average yearly earnings of each wage-earner $			451			661
(d) Average number of days on which plants in this industry operated during the year			253			279
(e) Labour turnover:						
Total number of different wage-earners employed during the year						2,755
Average number of wage-earners employed within the year			2,755			1,614
Difference						1,141
Apparent labour turnover (per cent)						71

Table 121.—Fuel and Electricity Used in the Miscellaneous Non-Metallic Mineral Products Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Anthracite coal	Short ton	385	5,170	295	4,122
Bituminous coal	"	10,497	78,967	6,587	44,231
Coke	"	176	1,551	3	31
Fuel oil	Gallon	41,540	3,941	4,197	365
Gas	M cu. ft.	723	582	1,896	1,527
Wood	Cord	182	385	158	578
Electric power	K.W.H.		548,729	86,112,355	513,366
Total			639,325		564,220

Table 122.—Power Employed in the Miscellaneous Non-Metallic Mineral Products Industry in Canada, 1923 and 1924

Description	1923	1924	
	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Boilers	70	10	820
Steam engines		1	50
Electric motors:			
(a) operated by purchased power	4,037	220	159,166
(b) operated by power generated by the establishment		63	401

The Artificial Abrasives and Abrasive Products Industry.—Natural abrasives, such as corundum, which were used extensively at one time have now been displaced to a large extent by artificial carborundum and other products of the electric furnace.

Carborundum is a silicon carbide, SiC, made as the result of reaction at high temperatures between silica and carbon. A charge is made up of the required amount of silica, and carbon in the form of coke, and a small amount of sawdust and salt. The sawdust tends to make the charge porous, thus allowing the gases to escape; the salt reacts with the iron and aluminium oxides forming volatile chlorides. The ingredients are thoroughly mixed and are charged to an especially constructed electric resistance furnace made up of fire brick and so built that the bottom of the furnace and the end walls holding the electrodes are permanent; the sides are loosely built to permit the escape of the gases. After the charge has been placed in the furnace up to the level of the electrodes, a core of graphite is laid through from one end of the furnace to the other; this acts as the current carrier and also as the resistor or heating element. The remainder of the charge is then laid on top and the current is turned on. At the end of the operation the carborundum in crystal form is found surrounding the core. Around this is a layer of unerystallized carbide which is known as fire sand and is used as a low grade refractory for some furnace linings. The outside layer is made up of silicous material and part of the unreduced charge. The carborundum is broken up and sent to the crushers, where it is ground to the required sizes. Any impurities are then removed and the material is sized, preparatory to being made into grinding wheels, sharpening stones, etc.

The making of abrasive wheels has reached a high degree of perfection. The composition of a wheel, depends on the purpose for which it is to be used and the selection and composition of the proper materials to ensure good results are often subjects of considerable research, particularly when the new applications of the artificial abrasive are contemplated. After the wheel is moulded it is burnt in a specially built kiln. The kiln is coal fired and the hot gases pass down through the piles of wheels which have been previously placed in fire clay containers called "saggers." When the burning operation has been completed, the wheels are removed from the kiln and each is finished up ready for market. Each wheel is sized on a specially constructed lathe, steel dressing tools being used. The bushings are fitted and the testing begins. Perfect balance, soundness, proper size and exactness as to grade and composition are all ensured by a series of careful tests, before the completed wheel is passed for shipment. Failure to detect even minor flaws in an abrasive wheel might result in a very serious accident as the wheels, when in use, are rotated at high speeds; to understand why the greatest precautions are essential in the examination of these wheels, one has only to think what might happen if such a wheel were to fly to pieces while in use in a shop filled with workmen.

In the manufacture of abrasive cloth and sand paper, natural abrasives such as garnets, sand, emery and corundum are used as well as the artificial abrasives. The materials are carefully sized so that all ranges of abrasive papers can be obtained.

In 1924 there were 12 firms in Canada making artificial abrasives or abrasive products. Artificial abrasives were made by 5 firms, 4 in Ontario, and 1 in Quebec, while 7 plants in Ontario manufactured grinding wheels or similar abrasive products.

The total capital employed in the industry amounted to $5,550,930 of which 3·6 million dollars was invested in lands, buildings, and plant equipment. Employment was afforded to 91 salaried employees and 543 wage-earners, while payments for salaries and wages during the year amounted to $900,849.

The total cost of the materials used was $1,864,975, while the products made had a total selling value of $5,628,653. The following tables show the principal items of production and consumption.

Table 123.—Materials Used in the Artificial Abrasives and Abrasive Products Industry in Canada, 1923 and 1924

Material	1923	1924
	Cost at works	Cost at works
Bauxite, silica sand, coke, iron borings, mill scale, and electrodes		$ 1,495,780
Artificial abrasive grains, such as alundum, aloxite and silicon carbide		63,446
Natural abrasive grains, such as corundum, silica sand, flint and garnet	$ 2,074,656	28,970
Clays		6,503
Containers, boxes, etc		17,523
All other materials including unfinished wheels and specialties, lead for bushings, etc		252,741
Total	**2,074,656**	**1,864,975**

Table 124.—Products of the Artificial Abrasives and Abrasive Products Industry in Canada, 1923 and 1924

Product	1923	1924
	Selling value	Selling value
	$	$
Crude carborundum, fire sand, and aluminous abrasives such as aloxite, alundum, fused alumina, etc	5,930,830	4,990,441
Grinding wheels, abrasive wheels, razor hones and alundum tiles		432,161
All other products including ferrosilicon, abrasive paper, abrasive cloth, etc		206,051
Total	**5,930,830**	**5,628,653**

Primary Production—Corundum (From the *"Annual Report on the Mineral Production of Canada, 1924"*.)—No production of corundum in Canada was reported during the year 1924. Corundum is found in an area embracing several townships in Renfrew and Hastings counties in the province of Ontario. The industry made its appearance there in 1900, production reaching a maximum of 2,914 tons in 1906. From 1907 to 1913, although the yearly production was smaller, it remained fairly constant. In August, 1918, operations were indefinitely suspended, but during the years 1919, 1920 and 1921 old tailings were treated for the recovery of grain corundum. In 1921, grain corundum amounting to 403 tons valued at $55,965, was exported to the United States, but no shipments have been reported since that time.

Imports into Canada of grindstones, burrstones, emery and other abrasive materials amounted in value to $1,175,641 in 1924. Exports during the same year, were valued at $2,665,856; the greater part of this sum represented sales of the artificial abrasive, carborundum. Grindstones and stones for the manufacture of grindstones imported were valued at about $50,000; natural abrasives, $10,000; and artificial abrasives, made up into wheels, stones, etc., totalled $13,000 in value. There was also an item of 2 tons of corundum valued at $251 exported, but no report has been received advising as to whether this amount was mined or not.

Garnets.—The production of garnets during 1924 amounted to 360 tons, with a value of $7,200, as compared with a production of 1,250 tons valued at $100,000 in 1923. The product was shipped to Niagara Falls, N.Y., for use as an abrasive material.

Grindstones, Pulpstones and Scythestones.—The production of grindstones, pulpstones and scythestones in Canada in 1924 amounted to 2,691 tons valued at $130,824 as compared with the 1923 production of 2,014 tons valued at $80,083. Of the year's shipments, Nova Scotia contributed 338 tons valued at $12,525; the production in New Brunswick amounted to 2,113 tons valued at $99,299, and British Columbia reported 240 tons valued at $19,000.

Table 125.—Production of Grindstones, Pulpstones and Scythestones, in Canada, 1923 and 1924

Province	1923		1924	
	Tons	Value	Tons	Value
		$		$
Nova Scotia	256	7,906	338	12,525
New Brunswick	1,758	72,177	2,113	99,299
British Columbia	.....	.....	240	19,000
Total	**2,014**	**80,083**	**2,691**	**130,824**

Tripolite.—Shipments of tripolite in 1924 amounted to 33 tons valued at $838 as against the 1923 production of 130 tons valued at $3,250.

Tripolite is a siliceous material closely related to quartz and is used extensively as an abrasive. It is usually given a preliminary calcine in rotary furnaces before shipment. The entire Canadian production is derived from a deposit of this commodity at Silica Lake, Colchester County, Nova Scotia.

Volcanic Ash.—In 1924, for the first time, production of volcanic ash from the province of Saskatchewan was reported. This amounted to 245 tons valued at $1,103.

Table 126.—Imports into Canada and Exports of Abrasives, 1923 and 1924

Item		1923		1924	
		Quantity	Value	Quality	Value
			$		$
IMPORTS—					
Grindstones			482,340		593,670
Burrstones in blocks, etc.	No.	519	6,908	145	791
Emery in bulk, crushed or ground			57,267		53,208
Emery and carborundum wheels and manufactures			151,065		76,971
Pumice and pumice stone ground			28,222		28,127
Iron sand or globules for polishing and sawing			20,855		17,985
Sandpaper, emery paper, etc.			293,965		279,586
Artificial abrasives			243,408		125,303
Total			**1,284,030**		**1,175,641**
EXPORTS—					
Grindstones, manufactured			37,101		49,630
Stone for the manufacture of grindstones	Tons	170	1,190	129	1,080
Abrasives—					
Natural, n.o.p.	Cwt.	47,710	115,342	5,756	10,321
Artificial, crude, including carborundum	Cwt.	887,343	2,819,558	791,863	2,591,310
Artificial, made up into wheels, stones, etc.			27,127		13,264
Corundum	Tons	6	744	2	251
Total			**3,001,062**		**2,665,856**

The Graphite Products Industry.—Artificial graphite is made by subjecting amorphous carbon to the high temperature attainable in an electric furnace. It was while experiments with silicon carbide (carborundum) were being carried on that artificial graphite was disovered and it was found that at extremely high temperatures obtainable by means of an electric arc the silicon was volatilized leaving the graphite behind. Anthracite coal has been found to be the best form of carbonaceous material for this purpose because the impurities contained assist in making carbides, which is a transition stage between the carbon and the graphite. When a form of carbon other than anthracite coal, such as petroleum coke, is used as a raw material, oxide of iron or some other carbide-forming substance is added to the mix.

When it is desired to make electrodes or slabs (rectangular-sections) petroleum coke is generally used. Coke, iron oxide and a suitable binder, all finely ground, are mixed and put through an extruding machine which forms the required sizes. These are then baked and afterwards graphitized.

The furnace is similar to that used for making carborundum. The slabs or electrodes are placed at right angles to the longitudinal axis of the furnace; the piles are separated by ground coke or coal to increase the resistance sufficiently to ensure the heating of the furnace to the proper reaction temperature. When electrodes of circular section are made, it is not necessary to place coke around them as the point of contact between them is small and the resistance offered is sufficient. The charge is covered with a layer of sand and coke and the current is turned on. As the charge becomes graphitized the resistance falls; when minimum resistance is reached the operation is complete.

Graphite electrodes are used extensively in electric furnace work as their electrical conductivity is about four times that of amorphous carbon; the size required, therefore, for a given piece of work is proportionately smaller than if carbon electrodes were used. An economical feature of the graphite electrodes is the ease with which they can be machined. As an electrode is fed into the furnace and burns away, another is screwed on to the threaded end and the whole of the first electrode may then be used. Amorphous carbon electrodes cannot be machined and the waste is far greater than when graphite electrodes are used.

Because of the fact that graphite can be machined, sawed, drilled, etc., it is adaptable to a variety of uses. From it are made discs, bushings, washers and moulds for casting precious metals and high temperature alloys. Ground graphite is used as a lubricant. Only 1 plant in Canada making graphite products reported to the Bureau in 1924.

Primary Production—(From the *Annual Report of the Mineral Production of Canada, 1924*). **Graphite**—Shipments of graphite from Canadian mines in 1924 amounted to 1,334 tons valued at $76,117 as against 1,113 tons valued at $67,873 shipped in 1923.

The Black Donald Graphite Company, Limited, at Calabogie, Ontario, operating the mine at White Fish Lake, mined 3,290 tons of ore and milled 2,790 tons. Shipments of graphite from this property totalled 1,288 tons. The remaining 46 tons included in the Canada total were from the province of Quebec.

Table 127.—Production in Canada, Imports and Exports of Graphite, 1923 and 1924

	1923		1924	
	Tons	Value	Tons	Value
		$		$
Ore milled	1,400		3,590	
Production (shipments)—				
No. 1 Flake				
No. 2 Flake	1,113	67,873	1,334	76,117
No. 3 Flake and Dust				
Total	**1,113**	**67,873**	**1,334**	**76,117**
Imports—				
Crucibles, plumbago		57,322		42,740
Plumbago, not ground or otherwise manufactured		1,661		2,651
Plumbago, ground and manufactures of, n.o.p		70,704		50,924
Exports—				
Graphite or plumbago, crude or refined	799	36,980	1,148	59,992

Artificial Graphite.—Artificial graphite is manufactured in electric furnaces at Niagara Falls, Ontario, by the Acheson Graphite Company.

Table 128.—Artificial Graphite made in Canada, 1909-1924

Year	Pounds	Year	Pounds	Year	Pounds
1909	513,436	1914	1,234,239	1919	358,524
1910	2,442,166	1915	497,271	1920	207,180
1911	2,172,098	1916	525,048	1921	376,508
1912	2,302,625	1917	1,096,172	1922	724,524
1913	2,184,472	1918	1,808,698	1923	1,554,376
				1924	816,455

The Gypsum Products Industry.—Pure gypsum is a hydrous calcium sulphate ($CaSO_4 \cdot 2H_2O$). It is seldom found pure in nature; clay, limestone, silica, etc., are generally present in varying quantities. When pure the colour is white, but it may be grey, yellow or perhaps blue depending on the nature and the quantity of the impurities. Beds of gypsum occur in nearly every province in Canada and many deposits have been worked for a long time. Many companies quarry, crush and calcine right at the mine.

Crude gypsum is used as a fertilizer, as a retarder in portland cement, for crayon manufacture and in certain paints. When it is calcined or partly dehydrated it goes under the name of plaster of Paris for which there are many uses such as moulds for dental work, surgical casts and plaster ornaments. It is also used for wall plasters, but when used alone it sets so quickly that the workmen find it hard to handle; the addition of a retarder, or substance which temporarily absorbs the water required for the crystallization or setting, slows up the process so the work can be done properly. Another use is in the manufacture of gypsum board, which is made by mixing finely ground gypsum with sawdust, moulding it into boards and allowing it to dry. The boards can be cut and nailed to the walls as required.

The gypsum products industry in Canada is confined to the manufacture of wall coating, gypsum board, and plaster of Paris models and statues. In 1924 there were 6 plants in operation, 4 in Ontario and 2 in Quebec, with a total capital investment of half a million dollars. Employees numbered 192 and salaries and wages totalled $214,274. The cost of materials amounted to $315,556 and products made were valued at $791,363.

Table 129.—Materials Used and Products Made in the Manufacture of Gypsum Products in Canada, 1923 and 1924

Item	1923	1924
	Value	Value
	$	$
Materials used including glue, gypsum, clay, whiting, colours, plaster of Paris	292,641	315,556
Products made including wall-coating, gypsum board, wall board, plaster castings, statues, etc.	733,227	791,383

Primary Production—Gypsum (From the "*Annual Report on the Mineral Production of Canada, 1924*).—Increased production of gypsum raised the total for the year 1924, to 646,016 tons with a valuation of $2,208,108 as compared with 578,301 tons at $2,243,100 in 1923. Production included lump, crushed, fine ground and calcined gypsum, the last named item comprising sales and also the calcined gypsum used in the calcining plants, for the production of wall plaster, wall board, alabastine and other gypsum products. The average values received by the operators were as follows: lump, $1.81; crushed, $1.82; fine ground, $5.82; and calcined, $10.27 per ton. Compared with 1923, the imports remained constant, while the exports, principally crude gypsum, increased approximately 75,000 tons to a total of 477,462 tons. The total gypsum mined during 1924 was 703,733 tons and the crude gypsum calcined in Canada amounted to 144,744 tons.

Provincial quarry outputs were as follows: Nova Scotia, 478,184 tons; New Brunswick, 95,641 tons; Ontario, 98,324 tons; Manitoba, 31,554 tons and British Columbia, 30 tons.

For statistical purposes, as noted above, the production of gypsum is considered to be the sum of the quantities disposed of in the different marketable forms, care being taken to avoid duplication; the values used are those at point of shipment.

Exports of Canadian crude gypsum principally to the United States totalled 472,236 tons. Ground gypsum and prepared wall plaster exported during the year amounted to 5,226 tons; United States, Newfoundland, Australia and New Zealand were the principal importers of these materials.

Table 130.—Summary Statistics on Gypsum in Canada, 1923 and 1924

Item	1923		1924	
	Tons	Value	Tons	Value
		$		$
Crude gypsum mined	558,853		703,733	
Crude gypsum calcined	152,036		144,744	
PRODUCTION BY GRADES—				
Lump	217,414	394,217	139,618	253,191
Crushed	232,899	443,431	381,262	693,785
Fine ground	7,452	45,719	5,478	31,882
Calcined	120,536	1,359,733	119,658	1,229,250
Total	**578,301**	**2,243,100**	**646,016**	**2,208,108**
PRODUCTION BY PROVINCES—				
Nova Scotia	341,705	747,934	441,752	915,845
New Brunswick	104,740	564,080	86,738	476,804
Ontario	99,958	542,317	88,121	467,097
Manitoba	31,575	386,554	29,375	348,212
British Columbia	323	1,615	30	150
Total	**578,301**	**2,243,100**	**646,016**	**2,208,108**
IMPORTS—				
Crude	3,654	39,336	3,252	63,156
Ground	78	3,253	102	2,174
Plaster of Paris	3,617	54,591	3,969	62,770
Total	**7,349**	**97,180**	**7,323**	**128,100**
EXPORTS—				
Crude	397,329	578,850	472,236	747,829
Ground	4,654	92,478	5,226	83,927
Total	**491,983**	**671,337**	**477,462**	**831,756**

The Mica Trimming Industry.—The mica industry in Canada is centred in the provinces of Ontario and Quebec. Many mining companies operate their own trimming shops. Smaller operators sell the rough cobbed material to operators who do the trimming in shops located some distance from the mines but close to an abundant labour supply. As much of the work is not heavy, girls are employed who become expert in the work of trimming, splitting and sizing of mica.

The equipment necessary for the trimming and splitting of mica is not extensive. Much labour is saved by first running the rough material through a screen of about 2-in. mesh, to shake out the dirt and the small pieces of rock. The mica is then separated roughly into different grades for trimming and splitting. The larger sizes are the most expensive and at one time the smaller sizes 1 x 1 in. and 1 x 2 in. were discarded as scrap. It has since been found that thin sheets can be stuck together with shellac and built up into a mica board of any desired thickness. In this way small irregular pieces can be utilized and the scrap or waste from these shops is sold to operators of grinding mills who in turn sell their product to patent roofing companies, manufacturers of lubricants, and rubber companies.

There were only 16 plants in Canada engaged in the trimming and cutting of mica in 1924 as compared with 19 plants in 1923. The total capital invested in 1924 amounted to $423,028. Salaries amounting to $33,369 were paid to 23 persons, and $142,081 was paid out for wages. Among the wage-earners in this industry, female help predominates; in 1924 there were on the average 43 males and 847 females. Materials used cost $181,463 and the value of the resultant products was $419,877.

Table 131.—Materials Used in the Mica Trimming Industry in Canada, 1923 and 1924

Material	Unit of measure	1923	1924	
		Cost at works	Quantity	Cost at works
		$		$
Knife trimmed mica	Lb.		458,092	104,542
No. 8 Madagascar block mica	"		16,237	3,888
No. 7 Ceylon block mica	"		741	69
Thumb trimmed mica	"		79,879	22,606
India splittings	"		9,077	1,997
India and amber cut and uncut mica	"	334,295	3,357	7,207
Manufactured plate from U.S.A.	"		7,400	8,892
Mica	"		62,860	15,195
Rough mica	"		36,182	3,647
Thumb trimmed amber mica	"		40,243	8,774
Containers, boxes, etc.	.....		.....	577
All other materials	.....		.....	4,069
Total	.....	**334,295**	.....	**181,463**

Table 132.—Products of the Mica Trimming Industry in Canada, 1923 and 1924

Product	Unit of measure	1923	1924	
		Selling value	Quantity	Selling value
		$		$
Mica, knife trimmed and thumb trimmed	Lb.		95,420	22,689
Mica splittings	"		388,548	298,318
Mica plate, flexible, amber and commutator	"	862,230	13,270	24,063
Mica, n.e.s.	.....		.....	47,584
All other products	.....		.....	6,326
Amount received for custom work or repairs	.....		.....	20,897
Total	.....	**862,230**	.....	**419,877**

Primary Production—Mica (From the "*Annual Report on the Mineral Production of Canada, 1924*").—The total production of mica in 1924 amounted to 8,182,374 pounds valued at $357,272 or an average price of 0·04 cents per pound as against 7,049,039 pounds valued at $326,974 in 1923.

Shipments of rough-cobbed grades were nearly 100 per cent higher in 1924 than in the previous year. Thumb-trimmed production was also greater by approximately 240,000 pounds while splittings were less by about 46,000 pounds. Scrap material, which includes mica that is too small and irregular for splitting, and the refuse from the trimming shops, is ground and bolted into various sizes, grading from 20-mesh to 200-mesh. Grades ranging from 20 to 80-mesh are used in the manufacture of prepared roofings, the 40-mesh grade, if free from grit, is used as a lubricant in some axle greases, and the 200-mesh grade is used as a filler in rubber manufacture.

The deposits of phlogopite mica in the Lièvre-Gatineau district, Quebec, and in Frontenac County, Ontario, continued to be the source of practically the entire Canadian production. It will be noted that the stated value of the exports of Canadian mica exceeded by a considerable amount the value placed on shipments reported by operators. An explanation of this lies in the fact that the exportation consisted principally of mica splittings shipped from large trimming shops situated in Ontario and Quebec.

Under the United States "*New Tariff Act*" the duties on the different grades of mica are as follows: Mica, unmanufactured, valued at not above 15 cents per pound—4 cents per pound; mica, unmanufactured, valued at above 15 cents per pound—25 per centum ad valorem; mica, cut or trimmed and mica splittings—30 per centum ad valorem; mica plates, and built-up mica, and all manufactures of mica, of which mica is the component material of chief value—40 per centum ad valorm; ground mica—20 per centum ad valorem.

Table 133.—Production of Mica in Canada by Grades, 1923 and 1924

Item	1923			1924		
	Pounds	Value f. o. b. shipping point	Price per pound	Pounds	Value f. o. b. shipping point	Price per pound
		$	$		$	$
Rough cobbed	280,767	26,926	0·10	535,295	33,337	0·06
Thumb-trimmed	419,130	87,769	0·21	662,709	142,405	0·21
Splittings only	210,056	176,785	0·84	164,734	137,248	0·83
Scrap	6,139,076	35,494	0·005	6,819,636	44,282	0·006
Total	**7,049,029**	**326,974**	**0·047**	**8,182,374**	**357,272**	**0·04**

Table 134.—Production in Canada and Exports of Mica, 1923 and 1924

Item	1923		1924	
	Tons	Value	Tons	Value
		$		$
PRODUCTION—				
Quebec	1,545	216,684	1,677	185,020
Ontario	1,980	110,290	2,414	172,252
Total	**3,525**	**326,974**	**4,091**	**357,272**
EXPORTS—				
Cobbed	85	40,286	88	52,527
Splittings	502	624,110	285	424,503
Scrap and waste	4,855	70,866	4,519	63,610
Plate and manufactures	.....	22,014	.....	3,326
Total	.....	**757,276**	.....	**543,966**

Miscellaneous Non-Metallic Mineral Products Industry.—In 1924 there was only 1 firm included under this classification. Foundry supplies such as facings, sand, etc., were among the main products of this firm.

DIRECTORY OF FIRMS IN THE INDUSTRIES CLASSIFIED UNDER THE "MANUFACTURES OF NON-METALLIC MINERAL PRODUCTS"

Aerated Waters

Name of Firm	Head Office Address	Location of Plant
PRINCE EDWARD ISLAND—		
Morris, J. & T.	75 Water St., Charlottetown	Charlottetown.
Simmons, G. H.	Spring Pk. Rd., Charlottetown	Charlottetown.
NOVA SCOTIA—		
Bigelow & Hood, Ltd	Box 44, Truro	Truro.
Bridgewater Bottling Works	Box 366, Bridgewater	Bridgewater.
Chambers, James	Main St., Trenton	Trenton.
Colley, Frank	Regent St., North Sydney	North Sydney.
Daveno, Alfred N.	184 Argyle St., Halifax	Halifax.
Donovan, W. H.	41-45 Granville St., Halifax	Halifax.
Fraser, James E.	Springhill	Springhill.
Havelock Bottling Co., Ltd.	112-114 York St., Sydney	Sydney.
Home Bottling Co., Ltd.	Drawer 814, Commercial St., North Sydney	North Sydney.
Kempton, T. S.	Milton	Milton.
Laurentian Laboratories, Ltd.	230 De Courcelles St., St. Henry, Montreal, Que.	Halifax
McAllister, Patrick	Esplanade, Sydney	Sydney
McCann, John	Water St., Yarmouth	Yarmouth.
McKinley & Sons	McKay's Corners, C.B.	McKay's Corners, C.B.
Meteghan Fruit Supply Co.	Meteghan Station	Meteghan Station.
New Glasgow Mineral Springs	New Glasgow	New Glasgow.
Olaud, David F.	295 Agricola St., Halifax	Halifax
Pink, Joseph	Main St., Yarmouth	Yarmouth.
Roue, James	53-55 Upper Water, Halifax	Halifax.
Whelan & Ferguson, Ltd.	675-677 Barrington St., Halifax	Halifax.
Yarmouth Fruit Co.	Brown St., Yarmouth	Yarmouth.
NEW BRUNSWICK—		
Blue Ribbon Beverage Co.	80-82 Elm St., St. John	St. John.
Bosca & Burgalia	Box 281, Bathurst	Bathurst.
Campbellton Ginger-Ale Works	Campbellton	Campbellton.
Capitol Bottling Co.	313 Queen St., Fredericton	Fredericton.
Cassidy, Charles	Chatham	Chatham.
Crown Beverages, Ltd.	562 Main St., St. John	St. John.
Driscoll, John J.	124 Prince Edward St., St. John	St. John.
Havelock Mineral Spring Co., Ltd.	240 Botsford St., Moncton	Moncton.
International Drug Co., The	King St., St. Stephen	St. Stephen.
Moncton Bottling Works	432 Main St., Moncton	Moncton.
Sussex Beverage Co.	Court St., Sussex	Sussex.
Sussex Mineral Springs Co., Ltd.	Pleasant Ave., Sussex	Sussex.
Terris, J. J.	51 City Rd., St. John	St. John
Vital, H. Albert	Church St., Edmundston	Edmundston.
Woodstock Bottling Works	85 King St., Woodstock	Woodstock.
QUEBEC—		
Allan's Ltd.	86 Dorchester St. west, Montreal	Montreal.
Archambault & Frère	Bout de l'Isle, Montreal	Bout de l'Isle Montreal
Beaumont & Frère	7 Rue St. Etienne	Montmagny.
Bédard, Wilfred A.	165 Rue de la Couronne, Quebec	Quebec.
Bélisle, O.	Asbestos	Asbestos.
Brocher, Edouard	Gorthby Station	Gorthby Station.
Bégin, C. E.	Beauceville	Beauceville
Bélanger, Arthur	Papineauville	Papineauville.
Blackburn, Henry	80 Papineau St., Hull	Hull.
Brissette, J. L.	17 rue St. Antoine St., Ste. Agathe des Monts	Ste. Agathe des Monts.
Brodeur, Arthur	10 rue du Havre., Montreal	Montreal.
Brunelle & Metines	87 St. Jean Baptiste St., Victoriaville	Victoriaville.
Caisse, C. O.	28 Sophie St., Sorel	Sorel.
Chevalier, Jos.	61 Mercier St., Shawinigan Falls	Shawinigan Falls.
Christin, J., & Cie, Ltd.	21 Ste. Julie St., Montreal	Montreal.
Coca-Cola Co.	90 Broadview Ave., Toronto, Ont.	35 Vallée St., Montreal.
Coca-Cola Co., The	90 Broadview Ave., Toronto, Ont.	15 des Prairies St., Quebec.
Côté, Roch	Pierreville	Pierreville.
Coulombe, Ed.	112 Dalhousie, Quebec	56 rue Morin., Quebec.
Cousineau, Avial	Rue du Marché, Vaudreuil Village	Vaudreuil Village.
Crystal Soda Water Co.	108a Demontigny St. E., Montreal	Montreal.
Crystal Spring Bottling Works, The	Waterloo	Waterloo.
De La Boissière	Box 325, Roberval	Roberval.
Désilets & Grenier	236 St. Maurice St., Grand'Mère	Grand'Mère.
Desjardins, Léon	Ste. Thérèse de Blainville	Ste. Thérèse de Blainville.
Désormeaux & Frères	6 Richard St., Joliette, Box 100	Joliette.
Désormeaux, S.	33 St. Louis St., St. Jérôme	St. Jérôme.
Dominion Soda Water Co., Ltd.	502 Cadieux St., Montreal	Montreal.
Dorville, Harvey	Murray Bay	Murray Bay.
Dufresne & Frère	129 Bonaventure St., Three Rivers	Three Rivers.
Fluet, F. A.	65 Des Prairies, Quebec	Quebec.
Fornal, Hormisdas	Eastern Ave., Waterloo	Waterloo.
Fortier, Elzear Ltee.	123 St. Dominique, Que.	Quebec
Fortier, J. E.	10 rue Niverville, Three Rivers	Three Rivers.
Frisco Soda Water Co.	1514 Clarke St., Montreal	Montreal.
Gagnon, L. J.	Beauce Junction	Beauce Junction.

Aerated Waters—Continued

Name of Firm	Head Office Address	Location of Plant
QUEBEC—Concluded		
Goulet, Calixte	872 Ontario St. E., Montreal	Montreal.
Gurd, Chas. & Co., Ltd	76 Bleury St., Montreal	Montreal.
Houde, J. L. H	Nicolet	Nicolet.
Ideal Soda Water Co., Ltd	135 Lafrance St., Montreal	Montreal.
Kel-Ola Co. Regd	496 Châteaubriand Ave., Montreal	Montreal.
Lachapelle, Pierre	St. Barthélémi	St. Barthélémi.
La Cie d'Eau Minérale	148 Concorde St., St. Hyacinthe	St. Hyacinthe.
Lafontaine, Donat	St. Laurent, Louiseville	Louiseville.
Laframbroise, Victor	St. Clet	St. Clet.
Lafrance, Noël	3 St. Germain St., St. Hyacinthe	St. Hyacinthe.
Langlault & Frere	Box 204, Sorel	Sorel.
Laniel, Théophile	Ellice St., Valleyfield	Valleyfield.
Leclerc, Joseph	St. Evariste Station	St. Evariste Station.
Lévasseur, Victor	761-1 rue, Shawinigan Falls	Shawinigan Falls.
Lévesque, Jos	Cabana	Cabana.
MacKimmie, J. P. & Son	Foundry St., Lachute	Lachute.
Massicotte, J. E	St. Tite	St. Tite.
Ménard, Edouard	Box 194, St. Jean	St. Jean.
Milloy, P. A	121 and 123 St. André, Montreal	Montreal.
Moisan, Alfred	Lake Megantic	Lake Megantic.
Morrissette, Adélard	25 rue Baby, Joliette	Joliette.
National Bottling Works	330 Clerke St., Montreal	Montreal.
Parent, Léonard	3 d. Guevremont, Sorel	Sorel.
Paquet, Wilfrid	397 St. Catherine, Grand'Mère	Grand'Mère.
Pellerin, Albert	rue de l'église, St. Barnabé Nord	St. Barnabé Nord.
Pelletier, Z	St. Jérôme	St. Jérôme.
Péloquin, J. H	Coaticook	Coaticook.
Poulin, P	St. Camille	St. Camille.
Pye, M	Windsor Mills	Windsor Mills.
Regent Bottling Works	La Prairie	La Prairie.
Reina Mineral Water Co., Ltd	101 Duvernay St., Montreal	Montreal.
Robillard, & Cie Ltée	9 Robillard Ave., Montreal	Montreal.
Roy, Cyprien	St. Germain de Kamouraska	St. Germain de Kamouraska.
Roy, Théo J	Room 35, Board of Trade Bldg., Montreal	Montreal.
Sherbrooke Bottling Works	Sherbrooke	Sherbrooke.
St. Pierre, Ernest	rue Yamaska, Farnham	Farnham
Silver Spring Bottling Works	65 Dépôt St., Sherbrooke	Sherbrooke.
Stewart Bottling Co., Ltd	297 William St., Montreal	Montreal.
Théberge and Langlois	Armagh	Armagh.
Thibault, J. A	24-26 rue Fraser, Rivière du Loup	Rivière du Loup
Timmons, M., & Son	92 Côte d'Abraham, Quebec	Quebec
Tourangeau & Champagne	Buckingham	Buckingham.
Trottier, & Cie	St. Casimir	St. Casimir.
Turmell, A. Irenee	272 Wellington St., Sherbrooke	Sherbrooke.
Union Soda Water Co	424 Cadieux St. W., Montreal	Montreal.
Veillet & Co., D	Ste. Geneviève de Batiscan	Ste. Geneviève de Batiscan.
Vincent & Frère	Ville Marie	Ville Marie.
Whistle Co. of Eastern Canada	750 St. Paul St. W., Montreal	Montreal.
White, The Robt. Co., Ltd	638 Craig St. E., Montreal	Montreal.
ONTARIO—		
Beaupré & Co	266 Princess St., Kingston	Kingston.
Birnbaum, S. J	Toronto	Toronto.
Boon & Nowell	Rear 509 Concord Avenue, Toronto	Toronto.
Bottum, W. H. & Son	354 Pinnacle St., Belleville	Belleville.
Brighton Coca-Cola Bottling Works	Main St., Brighton	Brighton.
Brown, John D	5 Bay St., Gravenhurst	Gravenhurst.
Burke Mineral Water Co	19 Colborne St., Brantford	Brantford.
Burkholder, D. C	New Liskeard	New Liskeard.
Caledonia Springs Co	2716 St. Urbain St., Montreal	Caledoam Springs.
Carrigan, Charles	58 Riddell St., Woodstock	Woodstock.
Chambers, F. S	Killarney St., Humberstone	Humberstone.
Clurian, Jas	South Porcupine	South Porcupine.
Cobalt Aerated Water Co	45 Presley St., Cobalt	Cobalt.
Coca-Cola Co	90 Broadview Avenue, Toronto	118 Secord St., Port Arthur.
Coca-Cola Co	90 Broadview Ave., Toronto	Gravenhurst.
Coca-Cola Co	90 Broadview Avenue, Toronto	65-67 Bellwoods Ave., Toronto.
Coca-Cola Co	90 Broadview Avenue, Toronto	327-329 Church St., Belleville.
Coca-Cola Co	90 Broadview Ave., Toronto	340 Queen St., Ottawa.
Coca-Cola Co	90 Broadview Ave., Toronto	55 Vine St., Hamilton.
Coca-Cola Co	90 Broadview Ave., Toronto	430 McDougal St., Windsor.
CocaCola Co	90 Broadview Ave., Toronto	60 Rideau St., Kingston.
Coca-Cola Co	90 Broadview Ave., Toronto	649 Colborne St., London.
Coca-Cola Co	90 Broadview Ave., Toronto	190 George St., Peterborough.
Coca-Cola Bottling Works	44 Bond St., Oshawa	Oshawa.
Cochrane Bottling Works	P. O. Box 239, Cochrane	Cochrane.
Collingwood Ginger-Ale Works	Robinson St., Collingwood	Collingwood.
Colonial Bottling Works	23 Kent St., Simcoe	Simcoe.
Conlin, F	65 McGill St., Smiths Falls	Smiths Falls.

Aerated Waters—Continued

Name of Firm	Head Office Address	Location of Plant
ONTARIO—Continued		
Cooke, Thos. & Son	Box 251, Port Perry	Port Perry.
Cornwall Bottling Works	Amelia St., Cornwall	Cornwall.
Cronmeller, John H	Fraser St., Pt. Colborne	Pt. Colborne.
Crown Bottling Works	Port Hope	Port Hope.
Cunningham, D. K	Elgin St., Arnprior	Arnprior.
Dawe & Peterson	38 Church St., Chatham	Chatham.
Denault, Ferrier	Bourget	Bourget.
Dey, Henry	32 McAnnany St., Belleville	Belleville.
Dominion Soda Water Co	105 Manning Ave., Toronto	Toronto.
Dominion Soda Water Co	58 Rodman St., St. Catharines	St. Catharines.
Dominion Soda Water Mfg. Co	308 St. John St. W., Hamilton	Hamilton.
Dunfield, Samuel	Bridge St., Carleton Place	Carleton Place.
Empire Bottling Works	Espanola	Espanola.
Estel's, Ltd	138 Pears Ave., Toronto	Toronto.
Farmer, Richard	373 Cannon St. E., Hamilton	Hamilton.
Finnish Bottling Works	326 Bloor St., Sault Ste. Marie	Sault Ste. Marie.
Fort William Bottling Works	131 N. Archibald St., Ft. William	Fort William.
Gauvreau, A	Mattawa	Mattawa.
Goderich Mineral Water Co	West St., Goderich	Goderich.
Grady, Patrick J	583 Water St., Peterboro	Peterboro.
Gray, W. J	Collingwood	Collingwood.
Hanlon & Hicks	Tecumseh Rd., Windsor	Windsor.
Harris, Geo. & Paparoni	10 Park St., Welland	Welland.
Heller & Witts	223 Drouillard Rd., Ford	Ford.
Hinds, F. P. & Son	20 Front St. S., Orillia	Orillia.
Hinds, Matthew C	308 King St., Midland	Midland.
Hires, Charles E. Co., Ltd	47 Davies Ave., Toronto	Toronto.
Hoag, Smith A	774 Ferry St., Niagara Falls	Niagara Falls.
Horne, S. V	148 Ontario St., Kingston	Kingston.
Horsman, Chas. I	Palleser St., Campbellford	Campbellford.
Imperial Bottling Works	Box 44, Dundas	Dundas.
International Bottling Works	157 Machar Ave., Pt. Arthur	Port Arthur.
International Bottling Works, The	North Cobalt	North Cobalt.
Italian Bottling Works	33 Wellington St., Sault Ste. Marie	Sault Ste. Marie.
Jersey Crème Co	5-9 Van Horne St., Toronto	Toronto.
Kenora Bottling Works	119 Main St., Kenora	Kenora.
King & Dalton	103 Duchess St., Toronto	Toronto.
Knox Soda Water Co	384 Queen St., Peterboro	Peterboro.
La-Kola Co	22 Macaulay St., Hamilton	Hamilton.
Lankin, A. C. & Co	77½ Wright St., Toronto	Toronto.
Lepofsky, A	230 Augusta Ave., Toronto	Toronto.
Lowe, Richard	43 Park St., Chatham	Chatham.
Mack Mineral Springs Co	111 Welland Ave., St. Catharines	St. Catharines.
Maedel, C. E	Talbot St., Essex	Essex.
Marinucci, E., Bottling Works	Timmins	Timmins.
Martin, Frank E	48 Ontario St., Oshawa	Oshawa.
Martin, R. H	67 King St., Lindsay	Lindsay.
McDonald & Son	North Bay	North Bay.
McLaughlin, J. J., Ltd	145-155 Sherbourne St., Toronto	Toronto.
Mirault, Eugène	317 Rideau St., Ottawa	Ottawa.
Montgomery Mineral Water C	257 Colborne St., Brantford	Brantford.
Morrison, M. J	King St. E., Ingersoll	Ingersoll.
Murray Bottling Works	139 Market Sq., Windsor	Windsor.
New Ontario Bottling Works, Ltd	227 Minto St., Sudbury	Sudbury.
Niagara Falls Bottling Works	19 Centre St., Niagara Falls	Niagara Falls.
Nipigon Bottling Works	Box 35, Nipigon	Nipigon.
Northern Springs	Ridgeway	Ridgeway.
Norton, C. H. & Co	393 King St. E., Kitchener	Kitchener.
Nurmi Bros	256 Regent St., Sudbury	Sudbury.
Oakville Aerated Beverage Co	Wilson St., Oakville	Oakville.
O'Dair, Laurence	Cornwall	Cornwall.
Oges, Henry	Crystal Beach	Crystal Beach.
Orange Crush Bottlers, Ltd	London	London.
Orange Crush Bottlers, Ltd	100 Claremont St., Toronto	Toronto.
Orange Crush Bottlers, Ltd	100 Claremont St., Toronto	45 Wellington St. N., Hamilton.
Orange Dandy Co., Ltd	183 Elm St., Toronto	Toronto.
Parisian Refreshment Co	396 Sandwich St., Sandwich	Sandwich.
Paris Soda Water Mfg. Co., The	237½ Horton Ave., London	London.
Penetang Bottling Co	Penetanguishene	Penetanguishene.
Perry, O. R	Renfrew	Renfrew.
Perth Bottling Works	Perth	Perth.
Peterboro Aerated Water Co	Cor. Sherbrooke and Aylmer St., Peterborough	Peterborough.
Pure Springs Co	102 Baldwin St., Ottawa	Ottawa.
Raphael, M	233 St. Catharine St. W., Hamilton	Hamilton.
Reid, Henry W	Parry Sound	Parry Sound.
Reinhart, Albert J	243 Dundas Rd., Guelph	Guelph
Riverdale Bottling Works	34 Eaton Ave., Toronto	Toronto.
Robertson, Alex	Homewood Ave., Mount Forest	Mount Forest.
Rosenberg, H	31 Vine St., St. Catharines	St. Catharines.
Royal Bottling Works, The	130 First St., Fort Frances	Fort Frances.
Royal City Mineral Water Works	Guelph	Guelph.
Ryders Mineral Water Works	Guelph	Guelph.
St. Lawrence Bottling Co	38 Water St., Brockville	Brockville
St. Thomas Soda Water Works	219 Talbot St., St. Thomas	St. Thomas.
Sanitaris Limited	Corner John and William Sts., Arnprior	Arnprior.
Seal Bottling Works	820 Mercer St., Windsor	Windsor.

Aerated Waters—Continued

Name of Firm	Head Office Address	Location of Plant
ONTARIO—Concluded		
Sharpe & Kirkpatrick	118 Victoria St., Sarnia	Sarnia.
Silver Foam Bottling Works	Box 1480, Sudbury	Sudbury.
Smile Syrup Co. of Ontario, Ltd	29–31 Terauley St., Toronto	Toronto.
Star Beverage Co., The	11 Federal St., Toronto	Toronto.
Stinson, E. H. & Co	St. Paul St., Alexandria	Alexandria.
Stratford Soda Water Works	235 William St., Stratford	Stratford.
Stratton & Monenger	Wallaceburg	Wallaceburg.
Sugarman, H. H	201 Besserer St., Ottawa	Ottawa.
Sutherland Limited	12 and 14 Jarvis St., Hamilton	Hamilton.
Tally-Ho Pure Water Co	610 Cooper St., Ottawa	Ottawa.
Taylor, Wm. & Son, Ltd	957 Fourth Ave. E., Owen Sound	Owen Sound.
Thomas Bros. of Galt, Ltd	45 Dickson St., Galt	Galt.
Thompson, George	294 Princess St., Kingston	Kingston.
Thompson & Wilson	Glen Williams	Glen Williams.
1000 Islands Mineral Water Co	58 Brock St., Brockville	Brockville.
Twin City Bottling Works	819 Minnesota St., Ft. William	Ft. William.
Union Soda Water Co., Ltd	30 St. Patrick St., Toronto	Toronto.
Vitality Aerated Water Co	Petawawa	Petawawa.
Walker & Co	Church St., Orangeville	Orangeville.
Walsh, G. R	Box 296, Barrie	Barrie.
Wentworth Mineral Water Co., Ltd., The	Rear 542 Main St. E., Hamilton	Hamilton.
Whistle Bottling Works	Sarnia	Sarnia.
Whistle Co. of Eastern Canada, Ltd	132 Pears Ave., Toronto	Toronto.
Wilson, Charles, Limited	517–519 Sherbourne St., Toronto	Toronto.
Wise, C. W	60 Avon St., Welland	Welland.
Wright & Biggar	819 Arthur St., Windsor	Windsor.
MANITOBA—		
Bennett, H. E	The Pas	The Pas.
Boroditsky Bros	1087 Selkirk Ave., Winnipeg	Winnipeg.
Coca-Cola Co	90 Broadview Ave., Toronto	Bannatyne & Dagmar, Winnipeg.
Coca-Cola Co	90 Broadview Ave., Toronto, Ont	20–12th St., Brandon.
Green River, Ltd	187 Sutherland Ave., Winnipeg	Winnipeg.
Orange Crush Bottling Co	191 Fort St., Winnipeg	Winnipeg.
Orange Crush Co	120–124 Ninth St., Brandon	Brandon.
Portage Soda Water Works	60 Tupper St., Portage la Prairie	Portage la Prairie.
Whistle Bottling Co. of Winnipeg	251 Jarvis Ave., Winnipeg	Winnipeg.
SASKATCHEWAN—		
Chippewa Water Co	Fifth St., Estevan	Estevan.
Coca-Cola Co	90 Broadview Ave., Toronto, Ont	265 Third Ave. N., Saskatoon.
Coca-Cola Co	90 Broadview Ave., Toronto, Ont	1742 Cornwall St., Regina.
Gold Seal Limited	Cor. Ave. C and 19 St., Saskatoon	Saskatoon.
Orange Crush Co	311 Ave B South, Saskatoon	Saskatoon.
Pachal Bottling Works	Agricultural Ave., Yorkton	Yorkton.
Prince Albert Mineral Water Co., Ltd	1125–3rd Ave. W., Prince Albert	Prince Albert.
Quality Beverage Mfgrs	415 Athabaska St., Moose Jaw	Moose Jaw.
Regina Bottlers, Ltd	1205–11th Ave., Regina	Regina.
Standard Mineral Water Works	1371 George St., North Battleford	North Battleford.
Swift Current Bottling Works	401 Railway St. E., Swift Current	Swift Current.
Thompson Bottling Co	561 Home St. W., Moose Jaw	Moose Jaw.
Watt, G. & J	2023 Ottawa St., Regina	Regina.
Weyburn Bottling Works	Box 514, Weyburn	Weyburn.
ALBERTA—		
Alberta Aerated Water	124 Lansdowne St., Wetaskiwin	Wetaskiwin.
Blue Label Bottling Co	508–3rd Ave. W., Calgary	Calgary.
Bradley, E. F	Rear Assiniboin Hotel, Medicine Hat	Medicine Hat.
Dominion Bottling Works	10172–94th St., Edmonton	Edmonton.
Coca-cola Co	90 Broadview Ave., Toronto, Ont	126–4th Ave. W., Calgary.
Coca-Cola Co	90 Broadview Ave., Toronto, Ont	10345–102nd St., Edmonton.
Coca-Cola Co	90 Broadview Ave., Toronto, Ont	314–8th St. S., Lethbridge.
McLaughlin, J. J., Ltd	9641–102a Ave., Edmonton	Edmonton.
Orange Crush Co., Ltd	100 Claremont St., Toronto	Fourth Ave. South Calgary.
Orange Crush Co., Ltd	100 Claremont St., Toronto	10015–102nd Ave., Edmonton.
Peace River Bottling Works	Peace River	Peace River.
Polar Aerated Water Works	1301–11th Ave. E., Calgary	Calgary.
Prairie Rose Mfg. Co	9539–106 Ave., Edmonton	Edmonton.
Purity Bottling Works	327–3rd St. S., Lethbridge	Lethbridge.
Standard Bottling Co	Box 800, Medicine Hat	Medicine Hat.
United Mfg. Co	514–11th Ave. W., Calgary	Calgary.

Aerated Waters—Concluded

Name of Firm	Head Office Address	Location of Plant
BRITISH COLUMBIA—		
Acme Soda Water and Bottling Works	208 Simpson St., New Westminster	New Westminster.
Beaver Bottling Works	Box 577, Prince Rupert	Prince Rupert.
Bowness Export Co., Ltd	Van Horn, Cranbrook	Cranbrook.
Coca-Cola Co	90 Broadview Ave., Toronto, Ont	326 Selby St., Nanaimo.
Coca-Cola Co	90 Broadview Ave., Toronto, Ont	898 Richard St., Vancouver.
Cross & Co., Ltd	38 Fourth Ave. E., Vancouver	Vancouver.
Crystal Spring Water Supply	1244 Richardson St., Victoria	Victoria.
Fairall's Limited	420-422 William St., Victoria	Victoria.
Gold Star Bottling Works	Courtenay	Courtenay.
Harper, James	Columbia Ave., Rossland	Rossland.
Henley, Joseph	717 Princess St., New Westminster	New Westminster.
McCulloch, A. Co	201 Coldstream St., Vernon	Vernon.
Nanaimo Bottling Works	Mill St., Nanaimo	Nanaimo.
Orange Crush Bottling Co	100 Claremont St., Toronto, Ont	136 Water St., Vancouver.
Rumming, William E	199 Wallace St., Nanaimo	Nanaimo.
Salmon Arm Aerated Water Co	Box 40, Salmon Arm	Salmon Arm.
Tilley, J A S	Box 69, Kelowna	Kelowna.
Van Bros., Ltd	195 Commercial Drive, Vancouver	Vancouver.
Vancouver Botanic Beverage Co	28-27th Ave. W., Vancouver	Vancouver.
Victoria Botanic Beverage Co	2620 Cedar Hill Road, Victoria	Victoria.

Asbestos and Allied Products

NOVA SCOTIA—		
Guilford and Sons	649 Barrington St., Halifax	Halifax
QUEBEC—		
Asbestos Manufacturing Co., Ltd., The	17 St. James St., Quebec	Lachine.
Atlas Asbestos Co., Ltd	34 St. Peter St., Montreal	Montreal.
ONTARIO—		
Canadian Raybestos Co., Ltd	Peterborough	Peterborough.
Garlock Packing Co	200 Queen St. North, Hamilton	Hamilton.
Heal, T. Sanitary Floor Co. of Toronto	268 MacDonnel Ave., Toronto	147 Close Ave., Toronto.
Sterne, G. F. & Sons	124 Bruce St., Brantford	Brantford.
Turner, C. B	894 Bathurst St., Toronto	Toronto.
BRITISH COLUMBIA—		
Baillie, Hugh	144 Alexander St., Vancouver	Vancouver.

Cement Products

NOVA SCOTIA—		
La Have Concrete Co., Ltd	West La Have	West La Have.
Middleton Cement Product Co., Ltd	Middleton	Middleton.
NEW BRUNSWICK—		
Canada Lock Joint Pipe Co., Ltd	65 Pleasant Blvd., Toronto ,Ont	St. John.
Concrete Builders Ltd	Box 641, Fredericton	Fredericton.
Hartland Cement Block Co	Hartland	Hartland.
Moncton Cement Product Works	Robinson St., Moncton	Moncton.
QUEBEC—		
Brenner, Alex., Ltd	100 Bleury St., Montreal	Outremont.
Canadian Concrete Products Co., Ltd	521 People's Gas Bldg., Chicago, Ill., U.S.A.	St. Lambert.
Canadian Siegwart Beam Co., Ltd	103 St. Fr.-Xavier, Montreal	Three Rivers.
Dugas, Isaie	163 Baby St., Montreal	Montreal.
Dutrisac, Alfred	133 Sir George Etienne, Cartier Square, Montreal	Montreal.
Faille, Aimé	131 St. Jérôme St., Montreal	Montreal.
Genest, Jos	St. Basile	St. Basile.
Gibault Frères & Cie Inc	Ste. Elizabeth	Ste. Elizabeth.
Giguère & Paiement	828 Benubien, St., Montreal	Montreal.
Groulx, I	1273 Crawford St., Verdun	Verdun.
Hétu, Samuel	St. Simon	St. Simon.
Jucques, Pierre	Rue St. Jacques, Grand' Mère	Grand' Mère.
Laflamme, C. E	St. Jérôme	St. Jérôme.
La Cie du Produits St. Jérôme	St. Jérôme	St. Jérôme.
La Société de Construction	10 Cathcart St., Montreal	Montreal.
McArthur Concrete Pile and Foundation Co	Chicoutimi	Chicoutimi.
Melançon, J. T. H	Grand' Mère	Grand' Mère.
Taillefer, Elie	St. Polycarpe	St. Polycarpe.
ONTARIO—		
Andrews, S J	Queen St., Clinton	Clinton.
Anthistle W J	309 Cromwell St., London	London.
Art Granite Co	Box 311, Essex	Essex.
Ashman T. J	520 Grosvenor St., London	London.
Banks, John	755 Queens Ave., London	London.
Bawden, Frederick W	Langhall St., Exeter	Exeter.
Bell, John T	R. R. 4, Brussels	Brussels.
Beuglas, Jas	Bright	Bright.

Cement Products—Continued

Name of Firm	Head Office Address	Location of Plant
ONTARIO—Continued		
Bierwagen, Robt. & Sons	213 Waterloo St., Kitchener	Kitchener.
Border Builders Supply Co, Ltd	1436 Howard Ave., Windsor	Windsor.
Bosman, L. H	Bluevale	Bluevale.
Bowers, E G	Cottam	Cottam.
Boyd Bros	Osgoode	Osgoode.
Brigden, Henry	Port Elgin	Port Elgin.
Brown, D. L	197 Cedar St. Sudbury	Sudbury.
Burger, Harold	Box 47, Tillsonburg	Tillsonburg.
Burkholder, Geo	Whitevale	Whitevale.
Burwell, C. A	Tillsonburg	Tillsonburg.
Calder, James	Fergus	Fergus.
Canadian Concrete Products Co., Ltd	122 South Michigan Ave., Chicago, Ill., U.S.A.	Chatham.
Chatham Cement, Tile and Block Co., Ltd.	Richmond St., Chatham	Chatham.
Christie Concrete Products	Angeline St., Lindsay	Lindsay.
Corinthian Stone Co	20 Durham St., Guelph	Guelph.
Corlett, A S	Talbot St., W. Leamington	Leamington.
Cross Builders Supply Co., Ltd	924 Windsor Ave., Windsor	Windsor.
Devitt, W. J	R. R. 1, Locust Hill	Locust Hill.
Dillon, John	Seeley's Bay	Seeley's Bay.
Doidge, J .A	261 Ottawa St., Hamilton	Hamilton.
Dominion Concrete Co	Kemptville	Kemptville.
Eldridge, Geo	326 Durand St., Sarnia	Sarnia.
Elliott, J .A	R. R. 1, Dunsford	Dunsford.
Excelsior Concrete Products Co	Barrie	Barrie.
Fletcher, J H, & Sons	R. R. 1, Ridgeville	Ridgeville.
Flowers, Wm	Box 175, Caledonia	Caledonia.
Frost, Rupert	Seaforth	Seaforth.
Fulton, John	Pakenham	Pakenham.
Garnett, Thos. & Sons	Barrett St., Port Hope	Port Hope.
Gendreau, W	935 Pierre Ave., Windsor	Windsor.
Gillis, Alfred	Hespeler Rd., Galt	Galt.
Goodwin, W. J	R. R. 1, Selkirk	Selkirk.
Granite Concrete Block Co., Ltd	832 Weston Rd., Toronto	Toronto.
Hall, John Warren	677 Water St., Peterborough	Peterborough.
Hare, John	Mount Joy	Mount Joy.
Hayley, Harry	171 Waller St., Ottawa	Ottawa.
Henson & Co	405 Gorge Rd., Victoria	Victoria.
Hewitt, A. B. & Son	Princeton	Princeton.
Hooper Bros	Middlemiss	Middlemiss.
Howe, H. & Nott, J. H	Niagara Falls South	Ridgeway.
Hunt, J. W. & Sons	Mount Forest	Mount Forest.
Hyndman, John	Gorrie	Gorrie.
Ideal Concrete Block Mfg. Co	Port Arthur	Port Arthur.
Independent Concrete Pipe Co., Ltd	198 Riddell St., Woodstock	Woodstock.
Ingroville, Stephen	Metcalfe St., Strathroy	Strathroy.
Jacques Cement Block Factory, The	570 Goyeau St., Windsor	Windsor.
Kilbourne, H. & Son	145½ Wharncliffe Rd., London	London.
Kingston Cement Products	69 Patrick St., Kingston	Kingston.
Kinzel Bros	Box 322, Preston	Preston.
Lawrence Bros	Stoney Creek	Stoney Creek.
Lefebvre, Jos	710 Pierre Ave., Windsor	Windsor.
Lesperance, Peter J	184 Albert Road, Ford City	Ford City.
Lisgman, W. H	Box 100, Cayuga	Cayuga.
McAllister, Robt	R. R. 2, Goderich	Goderich.
McQueen, Alex	Moorefield	Moorefield.
Miller, Thomas	711 Peter St., Sandwich	Sandwich.
Mitchell, Ralph R	17-6th St., Niagara Falls	Niagara Falls.
Morse, W. O	Campbellville	Campbellville.
Oakes, Sam	Box 306, Burlington	Burlington.
Oestricher, Daniel	Creditor	Creditor.
Oil Springs Tile and Cement Co	Oil Springs	Oil Springs.
Oliver, Wm	Grand Bend	Grand Bend.
Ord, John A	R. R. 3, Guelph	Guelph.
Osterhout, Peter	61 Pitt St. E. Windsor	Windsor.
Page, George Leslie	R. R. 3, Lucknow	Lucknow.
Paige, Fred	Grand Bend	Grand Bend.
Palm, Jacob	Mildmay	Mildmay.
Pettypiece, Limited	Amerstburg	Amherstburg.
Pfaff, W. E	Queen St., Hensall	Hensall.
Pfeiffer, Charles	West Lorne	West Lorne.
Ratcliffe, E B., Ltd	Kenilworth Ave. and G.T.R., Hamilton	Hamilton.
Ridgeville, Concrete Works	Ridgeville	Ridgeville.
Robidoux, Henry	No. 323, Amherstburg	Amherstburg.
Robinson, Edward	R. R. No. Mitchell	Mitchell.
Ross, Charles & Son	Dunnville	Dunnville.
Russello, Howard	Box 8, Leamington	Leamington.
St. Onge, Hormidas	1072 Wyandotte St., Windsor	Windsor.
Sebringville Cement Brick Tile & Block Co.	Sebringville	Sebringville.
Schade, John	West Monkton	West Monkton.
Schmidt, J. T	R. R. 1, Waterloo	Waterloo.
Shoemaker, Allen	R. R. 4, Kitchener	Kitchener.
Shovel Bros	R. R. 6, Owen Sound	Owen Sound.
Smith, Allan G. C	Box 197, Acton	Acton.
Smithson, F	Erie St., N. Leamington	Leamington.
Somerville, W. G. & Son	Division St., Welland	Welland.

Cement Products—Concluded

Name of Firm	Head Office Address	Location of Plant
ONTARIO—Concluded		
Stanley, J.	Stanley's Corners	Stanley's Corners.
Stinson, R. H.	Omemee	Omemee.
Sydenham Block and Tile Co.	Box 438, Wallaceburg	Wallaceburg.
Tambling, A. L.	Dunnville	Dunnville.
Telford, Peter	Holland Centre	Holland Centre.
Theaker, William	Bartonville	Bartonville.
Tigert, John	Port Albert	Goderich.
Wessels, D. S., Co.	1090 Ottawa St., Walkerville	Walkerville.
White, Homer & Co.	Spring St., Picton	Picton.
White, Sidney	R. R. 4, St. Catharines	Homer.
Whitlock, Peter	R. R. 1, Hensall	Hensall.
Williams, Geo. C.	Wheatley	Wheatley.
Winchester Cement Block and Tile Mfg. Co.	Winchester	Winchester.
Word, John	149 Simcoe St. E., Hamilton	Hamilton.
Young, John & Son	Ridgeway	Ridgeway.
SASKATCHEWAN—		
Adams, Arthur E.	325-1st Ave., N. Saskatoon	Saskatoon.
Turminger, Geo.	Melfort	Melfort.

Sand-Lime Brick

ONTARIO—		
Caledon Brick Co., Ltd.	Room 24, Imperial Bank Bldg., 171 Yonge St., Toronto	Caledon East.
Canada Sand-Lime Pressed Brick Co.	28 Symes Rd., Toronto, W.	Toronto.
Don Valley Brick Works, Ltd.	Dominion Bank Bldg., Toronto	Toronto.
Harbour Brick Co., Ltd.	Lumsden Bldg., Toronto	Bathurst St. Dock, Toronto.
Hinde Bros.	134 Northlands Ave. West Toronto	Toronto.
Toronto Brick Co., Ltd.	60 Victoria St., Toronto	Scarboro.
Toronto Brick Co., Ltd.	60 Victoria St., Toronto	Swansea.
West Lake Brick and Products Co., Ltd.	392 East Genesee St., Buffalo, N.Y.	West Lake.
Willcox Lake Brick Co., Ltd.	Richmond Hill	Richmond Hill.
York Sandstone Brick Co., Ltd.	Cor. Gerrard St. and Victoria Park Ave., Toronto	Toronto.
MANITOBA—		
Winnipeg Brick Co., Ltd.	Osborne St., Winnipeg	Winnipeg.
Woods Brick Co., Ltd.	1038 Arlington St., Winnipeg	Winnipeg.
SASKATCHEWAN—		
Saskatoon Brick and Supply Co., Ltd., The	18th St., Saskatoon	Saskatoon.

Coke and By-Products

NOVA SCOTIA—		
British Empire Steel Corporation	Sydney	Sydney.
ONTARIO—		
Algoma Steel Corporation, Ltd.	Sault Ste. Marie	Sault Ste. Marie.
Hamilton By-Product Coke Ovens Ltd.	15 Main St., Hamilton	Hamilton.
Steel Company of Canada, Ltd.	Hamilton	Hamilton.
ALBERTA—		
International Coal and Coke Co.	Coleman	Coleman.
BRITISH COLUMBIA—		
Canadian Collieries (Dunsmuir) Ltd.	Victoria	Cumberland, Lady Smith and Union Bay.
Crow's Nest Pass Coal Co., Ltd.	Fernie	Fernie.
Granby Consolidated Mining, Smelting and Power Co.	718 Granville St., Vancouver	Anyox.

Glass Products (Including the bevelling, bending and cutting of plate and window glass, and the manufacture of mirrors, art glass and cut glass)

NEW BRUNSWICK—		
Murray & Gregory, Ltd.	Douglas Ave., St. John	St. John.
QUEBEC—		
La Cie Ceramo-Vitrail Inc.	1410 Blvd. St. Laurent, Montreal	Montreal.
Colonial Art Works, Ltd.	112 St. Peter St., Montreal	Montreal.
Consolidated Plate Glass Co.	211 Spadina Ave., Toronto, Ont.	30 St. Sulpice, Montreal.
Grimson, Geo.	76-78 St. Antoine St., Montreal	Montreal.
Hobbs Mfg. Co., Ltd.	London, Ontario	Montreal.

Glass Products—Concluded

Name of Firm	Head Office Address	Location of Plant
QUEBEC—Concluded		
Montreal Art Glass Works	2614 St. Lawrence Blvd., Montreal	Montreal.
O'Shea, J. P. & Co.	15 Perrault Lane, Montreal	Montreal.
Phillips, Geo. & Co., Ltd.	585 St. Timothée St., Montreal	Montreal.
Ramsay Glass Company	964 St. Paul St. W., Montreal	Montreal.
ONTARIO—		
Advance Glass Co.	175 King St., Toronto	140 Euclid Ave., Toronto.
Bullas, J., Glass Co.	Kitchener	Kitchener.
Canadian Tumbler Co.	83-85 King St. E., Toronto	Toronto.
Central Ornamental Glass Co.	83 McCaul St., Toronto	Toronto.
Colonial Art Glass Co.	586 Bank St., Ottawa	Ottawa.
Colonial Glass Co.	Queen St., Lakefield	Lakefield.
Consolidated Plate Glass Co. of Canada, Ltd.	241 Spadina Ave., Toronto	Toronto.
Dominion Stained Glass Co.	380 Adelaide St., Toronto	Toronto.
Excelsior Plate Glass Co., Ltd.	189 Queen St. E., Toronto	Toronto.
Glass and Mirrors, Ltd.	175 King St., Stratford	Stratford.
Clappertons, Ltd.	61 Albert St., Toronto	Toronto.
Hobbs Manufacturing Co., Ltd.	London	304 Ridout St., London.
Hobbs Manufacturing Co., Ltd.	London	121 Liberty St., Toronto.
Horwood Glass Mfg. Co., Ltd.	402 Bank St., Ottawa	Ottawa.
Luxfer Prism Co., Ltd.	162 Parliament St., Toronto	Toronto.
Lyon, N. T. Glass Co., Ltd.	141 Church St., Toronto	Toronto.
McCausland, Robt., Ltd.	141-143 Spadina Ave., Toronto	Toronto.
Pringle & London	146 Jarvis St., Toronto	Toronto.
Phillips, W. E., & Co.	Oshawa	Oshawa.
Sovereign Cut Glass Co.	143 Adelaide St. E., Toronto	Toronto.
Tait Plate Glass Co.	Victoria and Edward Sts., Kitchener	Kitchener.
Toronto Plate Glass Imp'g Co., Ltd.	91 Don Roadway, Toronto	Toronto.
Wallaceburg Cut Glass Works	Wallaceburg	Wallaceburg.
Windsor Mirror Works	164 Sandwich St. W., Windsor	Windsor.
MANITOBA—		
Canadian Cut Glass, Ltd.	146 Princess St., Winnipeg	Winnipeg.
Consolidated Plate Glass Co.	241 Spadina Ave., Toronto	375 Balmoral St', Winnipeg.
Hobbs Mfg. Co., Ltd., The	London, Ont.	360 Princess St., Winnipeg.
ALBERTA—		
Capital Glass Works	9801-9803 Jasper Ave., Edmonton	Edmonton.
BRITISH COLUMBIA—		
Bogardus Wickens, Ltd.	1000 Homer St., Vancouver	Vancouver.
Fox, Geo. "Regal Art Glass Co."	1471 Broadway, Vancouver	Vancouver.
Townley, James	385 Kingsway, Vancouver	Vancouver.
Western Glass Co., Ltd.	158 Cordova St. W., Vancouver	Vancouver.

Glass (Pressed and Blown)

QUEBEC—		
Consumer's Glass Co., Ltd.	P.O. Box 40, Montreal	Montreal.
Dominion Glass Co., Ltd.	285 Beaver Hall Hill, Montreal	Pointe St. Charles, Montreal.
Dominion Glass Co., Ltd.	285 Beaver Hall Hill, Montreal	Delorimier Ave., Montreal.
ONTARIO—		
Beaver Flint Glass Co. of Toronto, Ltd.	547 Parliament St., Toronto	Toronto.
Dominion Glass Co., Ltd.	285 Beaver Hall Hill, Montreal, Que.	Chapelle St., Hamilton.
Dominion Glass Co., Ltd.	285 Beaver Hall Hill, Montreal, Que.	Toronto.
Dominion Glass Co., Ltd.	285 Beaver Hall Hill, Montreal, Que.	Wallaceburg.
Dominion Glass Co., Ltd.	285 Beaver Hall Hill, Montreal Que.	388 Carlaw Ave., Toronto.
Pilkington Bros., Ltd.	St. Catharines	Thorold.
Richards Glass Co., Ltd.	66 Temperance St., Toronto	Toronto.
ALBERTA—		
Dominion Glass Co., Ltd.	285 Beaver Hall Hill, Montreal, Que.	Redcliffe.

Illuminating and Fuel Gas

NOVA SCOTIA—		
Nova Scotia Tramways & Power Co., Ltd., The	Tramway Bldg., Box 770, Halifax	Halifax.
NEW BRUNSWICK—		
New Brunswick Power Co.	St. John	St. John.
Pintsch Compressing Co.	New Haven, Conn., U.S.A.	McAdam Jct.

Illuminating and Fuel Gas—Continued

Name of Firm	Head Office Address	Location of Plant
QUEBEC—		
City of Sherbrooke Gas Dept	Sherbrooke	Sherbrooke.
Montreal Gas Co	Power Bldg., Montreal	Montreal.
Pintsch Compressing Co	New Haven, Conn., U.S.A	67 Lusignan St. Montreal.
Quebec Railway Light Heat and Power Co., Ltd	Quebec Railway Bldg., Quebec	Quebec.
ONTARIO—		
Barrie Gas Co., Ltd	16 Owen St., Barrie	Barrie.
Belleville Gas Dept	Belleville	Belleville.
Board of Light and Heat Commission	Guelph	Guelph.
Brockville Public Utilities Commission	Brockville	Brockville.
City Gas Co	215 Dundas St., London	London.
City of St. Thomas Gas Dept	St. Thomas	St. Thomas.
Consumers Gas Co. of Toronto	19 Toronto St., Toronto	Toronto.
Hydro-Electric Power Commission of Ontario	190 University Ave., Toronto, 2	Colsourg.
Hydro-Electric Power Commission of Ontario	190 University Ave., Toronto, 2	Oshawa.
Hydro-Electric Power Commission of Ontario	190 University Ave., Toronto, 2	Peterborough.
Kingston Civic Utilities	Kingston	Kingston.
Ottawa Gas Co	35 Sparks St., Ottawa	Ottawa.
Pintsch Compressing Co	New Haven, Conn., U.S.A	Fort William.
Pintsch Compressing Co	New Haven, Conn., U.S.A	North Bay.
Pintsch Compressing Co	New Haven, Conn., U.S.A	John St., Toronto.
Port Hope Gas Co	John St., Port Hope	Port Hope.
Public Utilities Commission of Kitchener	189 King St. W., Kitchener	Kitchener.
Public Utilities Commission of Owen Sound	1062-2nd Ave. E., Owen Sound	Owen Sound.
Stormont Electric and Power Co	Cornwall	Cornwall.
Stratford Gas Co	51 Downie St., Stratford	Stratford.
Waterloo Water and Light Commission Gas Dept	Waterloo	Waterloo.
MANITOBA—		
Acetylene Construction Co	611 Power Bldg., Montreal, Que	Morris.
Canada Gas and Electric Corporation	27-29-10th St., Brandon	Brandon.
Carberry Gas Co., Ltd	Carberry	Carberry.
Deloraine Gas Co., Ltd	611 Power Bldg., Montreal, Que.	Delorraine.
Hamiota Gas Plant	611 Power Bldg., Montreal, Que	Hamiota.
Manitou Gas Co., Ltd	611 Power Bldg., Montreal, Que	Manitou.
Pintsch Compressing Co	New Haven, Conn., U.S.A	Sutherland Ave., Winnipeg.
Souris Consumers Gas Co., Ltd	Souris	Souris.
Winnipeg Electric Railway Co	Electric Railway Chambers, Winnipeg	Winnipeg.
SASKATCHEWAN—		
Moosomin Gas Co., Ltd	Acetylene Construction Co., Power Bldg., Montrdal, Que	Moosomin.
Pintsch Compressing Co	New Haven, Conn., U.S.A	Moose Jaw.
ALBERTA—		
Pintsch Compressing Co	New Haven, Conn., U.S.A	10354-108th St., Edmonton.
BRITISH COLUMBIA—		
City of Nelson	Front St., Box 1058, Nelson	Nelson.
Cunningham Hardware Co., Gas Manufacturers	751 Columbia St., New Westminster	New Westminster.
Pintsch Compressing Co	New Haven, Conn., U.S.A	Vancouver.
Vancouver Gas Co., Ltd	425 Corrall St., Vancouver	Vancouver.
Victoria Gas Co	Victoria	Victoria.

Imported-Clay Products

NEW BRUNSWICK—		
Foley Pottery Ltd., Loe	Marsh Bridge, St. John	St. John.
QUEBEC—		
Canada Firebrick Co	371 Aqueduct St., Montreal	Montreal.
Canadian Potteries Ltd	2 Longueuil, St. Johns	St. Johns.
Canada Stoneware works	Iberville	Iberville.
Dominion Sanitary Pottery Co	189 St. James St., St. Johns	St. Johns.
Standard Clay Products, Ltd	P. O. Box 819, St. Johns	St. Johns.
ONTARIO—		
Bailey, G. & Co	321 Albany St., Toronto	Toronto.
Campbells Sons, R. Hamilton Pottery	100 Lock St., S. Hamilton	Hamilton.
Canadian General Electric Co	Peterborough	Peterborough.
Canadian Porcelain Co., Ltd	Paradise Road, Hamilton	Hamilton.
Dominion Insulator Co., Ltd	Niagara Falls	Niagara Falls.

Monumental and Ornamental Stone

Name of Firm	Head Office Address	Location of Plant
PRINCE EDWARD ISLAND—		
Chandler & Bell	160 Kent St., Charlottetown	Charlottetown.
NOVA SCOTIA—		
Bear River Granite Works	Bear River	Bear River.
Colonial Granite Co., Ltd	New Glasgow	New Glasgow.
Dauphinee, A. T	Shelburne	Shelburne.
Goudey, Robt. H	Horton St., Yarmouth	Yarmouth.
Hoyt, C. M	Middleton	Middleton.
Kelly, George J	Bridgewater	Bridgewater.
McKay, H. D	Main St., River John	River John.
Myatt, Albert H	Oxford	Oxford.
Purvis, James	Windsor	Windsor.
Rottler, Albert A	Kentville	Kentville.
Steele, John D	Commercial St. N., Sydney	North Sydney.
Tingley Granite and Marble Works	3 Lansdowne Ave., Amherst	Amherst.
Truro Granite and Marble Works	Truro	Truro.
NEW BRUNSWICK—		
Kinsella, P. & Son	Kanes Corner E., St. John	St. John.
Lawlor & Williams	Chatham	Chatham.
Meating Epps Co., Ltd	St. George	St. George.
Milne Coutts & Co., Ltd	St. George	St. George.
Nelson Bros	Lower Cape	Lower Cape.
O'Brien & Baldwin	Box 80, St. George	St. George.
Pelletier, Alfred B	St. Basil	St. Basil.
Price, Alfred, Estate (St. Stephens Granite Works)	Queen St., St. Stephen	St. Stephen.
Sherrard, Thos. F. und Son	135 Victoria St., Moncton	Moncton.
QUEBEC—		
Anglin-Norcross, Ltd	65 Victoria, St., Montreal	Montreal.
Aberdeen Granite and Marble Works	1116 Bleury St., Montreal	Montreal.
Beebe Monument Co	Beebe	Beebe.
Brandford, John	10 Drummont St., Granby	Granby.
Brault, Z	1 Champlain St., Valleyfield	Valleyfield.
Brodies Ltd	1070 Rue Bleury, Montreal	Montreal.
Brunet, G	Ormstown	Ormstown.
Brunet, J. Ltd	675 Chemin-de-la-Côte-des-Neiges, Montreal	Montreal.
Chaussé, Edouard	66 Cascades St., St. Hyacinthe	St. Hyacinthe.
Côté, Victor	187 1st Ave., Limoilou Quebec	Quebec.
Courtemanche Bros	Waterloo	Waterloo.
Dulceggio, Francois	726 Chemin Côte-des-Neiges, Montreal	Montreal.
Desudelin & Baron	92 St. Antoine St., St. Hyacinthe	St. Hyacinthe.
Ducharme, Z	11 Notre Dame, Victoriaville	Victoriaville.
Dussault, Theo, & Cie	Mount Laurier, Quebec	Quebec.
Gignac, Azarias	St. Alban	St. Alban.
Gosselin et Fils	Beauceville Est	Beauceville Est.
Guerrette, Joseph	St. Philippe De Néri	St. Philippe.
Hambly, Richard	Coaticook	Coaticook.
Hazelton, Wm	Beebe	Beebe.
Hill, Clayton J	Richmond	Richmond.
Holmes, J. H	Sutton	Sutton.
Iberville Granite Works	97 Stevenson St., Iberville	Iberville.
Jacques, Olivier	18 rue Shaw, Lévis	Lévis.
Laforce & Frs	3981 St. Joseph St. Québec	Québec.
Lelebvre, J. A	78 Rue Limoilou, Québec	Québec.
Lemay, Alcide	Deschaillons	Deschaillons.
McKenny, V. B	Bedford	Bedford.
Perron, Godfroy	Coaticooke	Coaticooke.
Perusse, Alcide	St. Marc des Carrières	St. Marc des Carrières.
Poulin, P. A	72½ Champlain St., St. John	St. John.
Roberge, T	69 Blvd., Langelier, Québec	Québec.
Robertson, Fred	Beebe Junction	Beebe Junction.
Roche, Gingras	Ste. Foy	Ste. Foy.
Rolland, J. A	1285 Rue St. Valier, Québec	Quebec.
Savard, J. Bte	Ste. Anne de la Pérade	St. Anne de la Pérade.
Shore, Thomas	Box 182, Shawville	Shawville.
Smith Bros., of Montreal, Ltd	458 Bleury St., Montreal	Montreal.
Smith Marble and Construction Co., Ltd	145 Van Horne Ave., Montreal	Montreal.
Stanstead Granite Quarries Co., Ltd	Beebe	Beebe.
Thompson, T. C	270 Wellington St. S. Sherbrooke	Sherbrooke.
Xavier, Jean	St. Fabien	St. Fabien.
ONTARIO—		
Adams, Geo	561-563 Dundas St., Woodstock	Woodstock.
Allan, Wm	Brampton	Brampton.
Alpaugh, J	St. Andrews St., Fergus	Fergus.
Ambroise, S. L., & Son	Guelph	Guelph.
Arnprior Marble und Granite Works	Arnprior	Arnprior
Bent, J. R. & Son	Pembrooke	Pembroke.
Borland, S	Collingwood	Collingwood.
Bounsall, E. R	Division St., Bowmanville	Bowmanville.
Boyer, H. & Son	Box 28, Bracebridge	Bracebridge.
Braun, Casper	295 King St. W. Kitchener	Kitchener.
Brown & Nettleship	R. R. 4, St. Catharines	St. Catharines.
Brown, Robert	376 Sparks St., Ottawa	Ottawa.
Brown, Wm	340—9th St. W., Owen Sound	Owen Sound.

Monumental and Ornamental Stone—Continued

Name of Firm	Head Office Address	Location of Plant
ONTARIO—Continued		
Campbell, John	Trenton	Trenton.
Cater & Worth	153 Main St. E., Galt	Galt.
Central Canada Stone Co., Ltd	278 Booth Ave., Toronto	Point Edward.
Central Marble & Granite Works	Maxville	Maxville.
de Carle, Chas. W. and Victor	R. R. 3, Brockville	Brockville.
Chapman, Wm. E	Box 24, Seaforth	Seaforth.
Colby, C. H	Chatham	Chatham.
Corbett, A. J	Main St., Mt. Forest	Mt. Forest.
Corley, A. C	Main St., Brighton	Brighton.
Coughlin, John	216 Hunter St., Peterborough	Peterborough.
Coughlin, Michael	269 Erskine Ave., Toronto	Toronto.
Craig, Andrew	Klock Ave., North Bay	North Bay.
Creber Bros	204 Kingston Rd., Toronto	Toronto.
Creber Son & Company	1333 St. Clair Ave., W. Toronto	Toronto.
Cresswell, W. H	Box 462, Lindsay	Lindsay.
Cullen, Colin A	Leamington	Leamington.
Cunningham & Pryde	Exeter	Exeter.
Delanty, Patrick E	Cobourg	Cobourg.
Dillon, Joseph	Gananoque	Gananoque.
Doan & Panther	20 Elgin St., St. Thomas	St. Thomas.
Doyle, Jno. E	269-8th St., East Owen Sound	Owen Sound.
Durward, John	Box 312, Kincardine	Kincardine.
Duvall, George R	Elgin St., Alexandria	Alexandria.
Excelsior Marble and Granite Works	37 Pitt St., E. Windsor	Windsor.
Fallon Bros	130 Clergy St., Kingston	Kingston.
Froats, Geo. H. & Co	Renfrew	Renfrew.
George, John J	Pt. Elgin	Pt. Elgin.
Gibson, J. G. Marble and Granite Co., Ltd	50 Winchester St., Toronto	Toronto.
Gibson, John F	Winchester	Winchester.
Gould, A. J	Uxbridge	Uxbridge.
Halladay, B. S	Chesley	Chesley.
Hamilton & Sons	228 Woolwich St., Guelph	Guelph.
Hayes Bros. Co	Sudbury	Sudbury.
Herbert, T. H	66 Wentworth St., Hamilton	Hamilton.
Hibberd, Arthur	195 Melita Ave., Toronto	Toronto.
Hill, William	Maxville	Maxville.
Hoidge Marble Co. Ltd	34 Price St., Toronto	Toronto.
Hurst & Rogers	1193 Queen St. W., Toronto	Toronto.
Isaac, Jas. & Son	30 Dupont St., Toronto	Toronto.
Jackson, J. H	South Shaftsburg Ave. and C.P.R. tracks, Toronto.	Toronto.
Johnston, T. & Son	Paisley	Paisley.
Jones & Stevens	277 Rideau St., Ottawa	Ottawa.
Jones, Thomas C	Listowel	Listowel.
Jones, W. A	Main St., W. Pictou	Pictou.
Leeder, W. J	Gananoque	Gananoque.
Lindsay Monumental Works	11 Cambridge St., N. Lindsay.	Lindsay.
Lippert, F. & Sons	Durham St., Walkerton	Walkerton.
Lloyd, T	Main St., Prescott	Prescott.
London Marble and Granite Co	493 Richmond St., London	London.
Luesby, George W	Cor. Main & Queen St., Newmarket	Newmarket.
Martel & Cummings	Vankleek Hill	Vankleek Hill.
Matheson, John T	Whitby	Whitby.
McCallum Granite Co., Ltd	397 Princess St., Kingston	Kingston.
McDowell, Wm	186 George St., Brantford	Brantford.
McElroy, H. J	154 Woolwich St., Guelph	Guelph.
McIntosh Granite Co., Ltd. of Toronto	1623 Yonge St., Toronto	Toronto.
McKay, Alexander	2 Browns Ave., Toronto	Toronto.
McMillan Granite Co., Ltd	135 Ontario St., Sarnia	Sarnia.
Middleton Marble and Granite Co., Ltd	122 Main St. E., Hamilton	Hamilton.
Minna, Charles	Box 35 B, Wardsville	Wardsville.
Moore, Chas. B	404 Front St., Belleville	Belleville.
Moore, John	Stirling	Stirling.
Moss, Jno. O	Box 412, Newmarket	Newmarket.
Napanee Marble and Granite Works	Napanee	Napanee.
Nicholson, T. G	1117 Yonge St., Toronto	Toronto.
Noble, A. & E	Cor. William and C.P.R., London	London.
Oakley, Geo. & Son, Ltd	278 Booth Ave., Toronto	Toronto.
Ontario Marble Co., Ltd	Maria St., Peterborough	Peterborough.
Ottawa Cut Stone Co	135 Nelson St., Ottawa	Ottawa.
Perrott, Joseph	Alliston	Alliston.
Pollard, James	715 Queen St., Sault Ste. Marie	Sault Ste. Marie.
Porterfield & Colquhoun	Mitchell	Mitchell.
Price, G. W	18 West St., Orillia	Orillia.
Rhodes, Thomas	Cayuga	Cayuga.
Richardson, Robt. Harvey	Hanover	Hanover.
Ritchie, Jas	51 Catherine St., Ottawa	Ottawa.
Ritchie Cut Stone Co., Ltd	191 Grant Ave., Hamilton	Hamilton.
Ross, Chas	Dunnville	Dunnville.
Ruch, T. J. & Son	Wellington St., St. Marys	St. Marys.
Rutledge, S. H	Orangeville	Orangeville.
Rutter, Wm	Ontario St., Port Hope	Port Hope.
Sanderson, R. J. Marble Co	33 Peter St., Orillia	Orillia.
Sarnia Granite and Marble Works	156 Victoria St., Sarnia	Sarnia.
Scott, John F	176 E. Main St., Galt	Galt.
Scott Bros	38 McGee St., Toronto	Toronto.
Sherwood & King	551 Bethune St., Peterborough	Peterborough.

Monumental and Ornamental Stone—Concluded

Name of Firm	Head Office Address	Location of Plant
ONTARIO—Concluded		
Simcoe Marble Works	20 Owen St., Barrie	Barrie.
Skelton, E. J. & Son	Walkerton	Walkerton.
Smith, R. B.	Merrickville	Merrickville.
Smyth, Frank W.	344 Wellington St., London	London.
Snider, L. R.	Humberstone	Humberstone.
Stead, Arthur	148 Central Ave., Hamilton	Hamilton.
Steiner, J.	409 Dundas St., Toronto	Toronto.
Thake, H. W.	Westport	Westport.
Thatcher & Co.	39 Market Square, Chatham	Chatham.
Thomson, Monument Co., Ltd.	862 Dupont St., Toronto	Toronto.
Twin City Marble and Granite Co.	386 Brock St., E. Fort William	Fort William.
Vokes, John	884 Dupont St., Toronto	Toronto.
Wardell Monumental Works	2696 Dundas St., W. Toronto	Toronto.
Webb, George	448 Summerhill Ave., Toronto	Toronto.
Widdicombe, Benjamin	5 Bond St., St. Catharines	St. Catharines.
Wideman, L. C. & Son	Stouffville	Stouffville.
Williamson, W. A. & Son	Gananoque	Gananoque.
Williscroct, B.S.	229—9th St., Owen Sound	Owen Sound.
MANITOBA—		
Allen & Grant	Youville St., St. Boniface	St. Boniface.
Brook, J. H., & Sons	266 Main St., Winnipeg	Winnipeg.
Campbell, R. M.	90 Hespeler St., Winnipeg	Winnipeg.
Gillis, Aug. & Son	Spruce and Richard Sts., Winnipeg	Winnipeg.
Guinn & Simpson Co., Ltd.	Box 511, Portage la Prairie	Portage la Prairie.
Hooper Marble and Granite Co., Ltd.	537 Portage Ave., Winnipeg	Winnipeg.
Johnston, James J.	525 Cordyon Ave., Winnipeg	Winnipeg.
Marble and Tile Co. of Canada, Ltd.	La Vérandrye and St. Jean Baptiste Sts., St. Boniface	St. Boniface.
Pirotton, N.	St. Boniface	St. Boniface.
Somerville & Co.	1417 Rosser Ave., Brandon	Brandon.
Western Stone Co.	St. Boniface	St. Boniface.
Wheeldon & Sons	1055 Main St., Winnipeg	Winnipeg.
Winnipeg Marble and Tile Co., Ltd.	199 Main St., Winnipeg	Winnipeg.
SASKATCHEWAN—		
Moose Jaw Marble and Granite Works, Ltd.	706 Athabasca St. E., Moose Jaw	Moose Jaw.
Regina Marble and Tile Ltd.	826 Dewdney Ave., Regina	Regina.
Sask. Marble & Construction Co., Ltd.	117 Eighth St. E., Prince Albert	Prince Albert.
Saskatoon Granite & Marble Co., Ltd.	131 Ave. A North, Saskatoon	Saskatoon.
Western Granite Marble & Stone Co., Ltd.	714-716—2nd Ave. N., Saskatoon	Saskatoon.
Vaughan, William J.	Box 434, Yorkton	Yorkton.
Young, Alex., Ltd.	Cor. Fourth Ave. and Scart St., Regina	Regina.
ALBERTA—		
Alberta Granite, Marble & Stone Co., Ltd.	10702—101st. St., Edmonton	Edmonton.
Capital Stone Works Ltd	10330—108th St., Edmonton	Edmonton.
Hart, Albert J.	1831—2nd St. East, Calgary	Calgary.
Lethbridge Monumental Works	315—8th St. S., Lethbridge	Lethbridge.
North West Granite & Marble Co.	8537—109th St., Edmonton	Edmonton.
Somerville Co.	2313—2nd St. E., Calgary	Calgary.
BRITISH COLUMBIA—		
Campbell & Ritchie	507 Front St., Nelson	Nelson.
Continental Marble Co., Ltd.	1404 Dominion Bldg., Vancouver	Vancouver.
Independent Monument Co.	20th Ave. E. and Windsor St., Vancouver	Vancouver.
Keast & Allan	880 Beach Ave., Vancouver	Vancouver.
Malaspina Marble Co., Ltd.	915 Credit Foncier Bldg., Vancouver	Vancouver.
Mortimer, John & Son	720 Courtenay St., Victoria	Victoria.
Newall, Jno. B.	Cor. Fraser and 36th Ave., Vancouver	Vancouver.
Phillips Stone Works	1502 Fairfield Rd., Victoria	Victoria.
Stewart Monumental Works, Ltd.	1401 May St., Victoria	Victoria.

Petroleum Products (a) Lubricating Oils

QUEBEC—		
Economic Products, Ltd.	1040 Durocher St., Montreal	Montreal.
Three in One Oil Co.	165 Broadway, New York, U.S.A.	21 Mount Royal Hotel, Montreal.
ONTARIO—		
Cataract Refining Co., Ltd.	1 Sherbourne St., Toronto	Toronto.
Dominion Oil Co., Ltd.	263 Wallace Ave., Toronto	Owen Sound.
Galena-Signal Oil Co.	134 Royce Ave., Toronto	Toronto.
Ontario Lubricating Co., Ltd.	115 Melbourne St., Hamilton	Hamilton.
Peterson Core Oil & Mfg. Co. of Canada, Ltd.	1111 West Washington St., Chicago, Ill., U.S.A.	Harmony Ave., Hamilton.
ALBERTA—		
Canadian Lubricants, Ltd.	10569-95th St. Edmonton	Edmonton.

Petroleum Products—Concluded

(b) Petroleum Refining

Name of Firm	Head Office Address	Location of Plant
NOVA SCOTIA—		
Imperial Oil, Ltd.	Sarnia, Ont.	Dartmouth.
QUEBEC—		
Imperial Oil, Ltd.	Sarnia, Ont.	5250 Notre Dame St. E. Montreal.
National Oil Refineries, Ltd.	Montreal.	Montreal.
ONTARIO—		
British American Oil Co., Ltd.	1306 Royal Bank Bldg., Toronto.	Toronto.
Canadian Oil Companies, Ltd.	707 Excelsior Life Bldg., Toronto.	Petrolia.
Imperial Oil, Ltd.	445 S. Christina St., Sarnia.	Sarnia.
MANITOBA—		
North Star Oil & Refining Co.	705–710 Notre Dame Investment Bldg., Winnipeg	St. Boniface.
SASKATCHEWAN—		
Imperial Oil, Ltd.	Sarnia, Ont.	Regina.
ALBERTA—		
Alberta Refining Co., Ltd.	Coults.	Coults.
Canadian Oil and Refining Co.	Lethbridge.	Lethbridge.
Canada Southern Oil & Refining Co., Ltd.	Alberta Corners, Black Diamond.	Black Diamond.
Imperial Oil, Ltd.	Sarnia, Ont.	Calgary.
Jennings Refining Co., The.	207–8th Ave. West, Calgary.	Calgary.
Royalite Oil Co., Ltd.	239–6th Ave., W. Calgary.	Black Diamond.
Southern Alberta Oils, Ltd.	407 Grain Exchange, Calgary.	Okotoks
BRITISH COLUMBIA—		
Imperial Oil, Ltd.	Sarnia, Ont.	Ioco.
Union Oil Co. of Canada, Ltd.	Port Moody.	Port Moody.

Miscellaneous Non-Metallic Mineral Products

(a) Artificial Abrasives

QUEBEC—		
Canadian Carborundum Co., Ltd.	P. O. Box 536, Niagara Falls, N.Y.	Shawinigan Falls.
ONTARIO—		
Abrasive Co. of Canada, Ltd.	Burlington St. and Harvey Lane, Hamilton.	Hamilton.
Canadian Carborundum Co., Ltd.	P. O. Box 536, Niagara Falls, N.Y.	Niagara Falls, Ont.
Exolon Co.	110 Brookline Ave., Boston, Mass.	Thorold.
Norton Company	New Bond St., Worcester, Mass., U.S.A.	Chippewa.

(b) Abrasive Products

ONTARIO—		
Abrasives Ltd.	Canal Rd., Brantford.	Brantford.
Brantford Grinding Wheel Co. of Canada, Ltd.	188 Pearl St., Brantford.	Brantford.
Canadian Hart Wheels, Ltd.	800 Burlington St. E., Hamilton.	Hamilton.
Caunt, W. A.	P.O. Box 1379, Detroit, Mich., U.S.A.	Walkerville.
Dominion Abrasive Wheel Co., Ltd.	Main St., Mimico.	Mimico.
Lion Grinding Wheel Co.	Brockville.	Brockville.
Norton Company of Canada, Ltd.	3 Beach Rd., Hamilton.	Hamilton.
Ontario Abrasive Wheels Ltd.	Prescott.	Prescott.
Prescott Emery Wheel Co.	Prescott.	Prescott.

(c) Artificial Graphite and Electrodes

ONTARIO—		
Acheson Graphite Co.	Niagara Falls, N.Y., U.S.A.	Cor. Buttrey Ave. and Swinyard St., Niagara Falls.
Electro Metallurgical Co. of Canada.	Welland.	Welland.

(d) Gypsum Products

QUEBEC—		
Alluisi, Arthur	2115 rue St-Laurent, Montreal.	Montreal.
Keystone Wall Plaster Co.	126 Laurier Ave. E., Montreal.	Ste. Thérèse.
Petrucci, T. Carli.	316–320 Notre Dame E., Montreal.	Montreal.
ONTARIO—		
Alabastine Co., Ltd.	Paris.	Paris.
Canadian Nu-Art Marble Co.	7 Hunter St. E., Peterborough.	Peterborough.
Ebsary Gypsum Co., Ltd.	Box 1295, Scottsville, N.Y., U.S.A.	Caledonia.
Hynes, W. J., Ltd.	858 Dupont St., Toronto.	Toronto.
Ontario Gypsum Co.	Paris.	Caledonia.

Miscellaneous Non-Metallic Mineral Products—Concluded

(e) Mica Trimming

Name of Firm	Head Office Address	Location of Plant
QUEBEC—		
Loughborough Mining Co., Ltd.	Sorel	Yamaska.
Loughborough Mining Co., Ltd.	Sorel	St. Casimir.
Loughborough Mining Co., Ltd.	Sorel	Pont Rouge.
Loughborough Mining Co., Ltd.	Sorel	Pierreville.
Loughborough Mining Co., Ltd.	Sorel	Sorel.
Loughborough Mining Co., Ltd.	Sorel	St. Aimé.
Loughborough Mining Co., Ltd.	Sorel	Nicolet.
Mica Co. of Canada, Ltd.	2 Lois St., Hull	Hull.
Mica Insulator Co.	Victoriaville	Manseau.
Mica Insulator Co.	Victoriaville	Lyster.
Mica Insulator Co.	Victoriaville	Plessisville.
Mica Insulator Co.	Victoriaville	St. Agapit.
Mica Insulator Co.	Victoriaville	Deschaillons.
Mica Insulator Co.	Victoriaville	Victoriaville.
Mica Insulator Co.	Victoriaville	Daveluyville.
Mica Insulator Co.	Victoriaville	Ste. Marie.
Mineral Products Co.	8 Wellington St. E., Toronto, Ont.	Hull.
ONTARIO—		
Fillion, S. O.	86–88 Duke St., Ottawa	Ottawa.
Laurentide Mica Co., Ltd.	Box 911, Pittsburgh, Pa., U.S.A.	Rockland.
O'Brien & Fowler	17 Beech St., Ottawa	Ottawa.

(f) Miscellaneous Non-Metallic Mineral Products n.e.s.

ONTARIO—		
Hamilton Facing Mill Co., Ltd.	Hamilton	Hamilton.
Phœnix Briquetting & Fuel Co., Ltd.	Keating St. (foot of Booth Ave.), Toronto	Toronto.