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DOMINION BUREAU OF STATISTICS
MINING, METALLURGICAL AND CHEMICAL BRANCH

CHEMICALS AND ALLIED PRODUCTS IN CANADA

1924

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1926

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, and** (f) **Construction.**

Manufacturing or secondary production 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.

CLASSIFICATION OF MANUFACTURING INDUSTRIES IN CANADA FOR THE COLLECTION OF STATISTICS

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 Products; Brass and Copper Products; Lead, Tin and Zinc Products; Manufactures of Precious Metals; 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; 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) Fuel Briquettes; (e) Gypsum Products; (f) Mica Products.

(8) **Chemicals and Allied Products,** including—Coal Tar and its Products; 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.

PREFACE

While the present report on Chemicals and Allied Products has been prepared along the lines followed in previous issues, several new features have been added which it is thought enhance its value considerably. An alphabetical list of all the products made in the various industries included in the scope of the Bureau's survey has been prepared, the convenience of which will be apparent. More comprehensive data have been compiled on the imports and exports of chemicals than appeared in previous issues; statistics have been collected to show the imports and exports for (a) the fiscal year ending March 31, 1914; (b) the average for the five fiscal years ending March 31, 1924 and (c) the fiscal year ending March 31, 1925. It will be observed also that some slight changes have been made in the format of the report: following the general review of the industry and the general tables relating to all the industries and to their distribution by provinces, are several chapters each of which presents all the statistics relating to a particular industry.

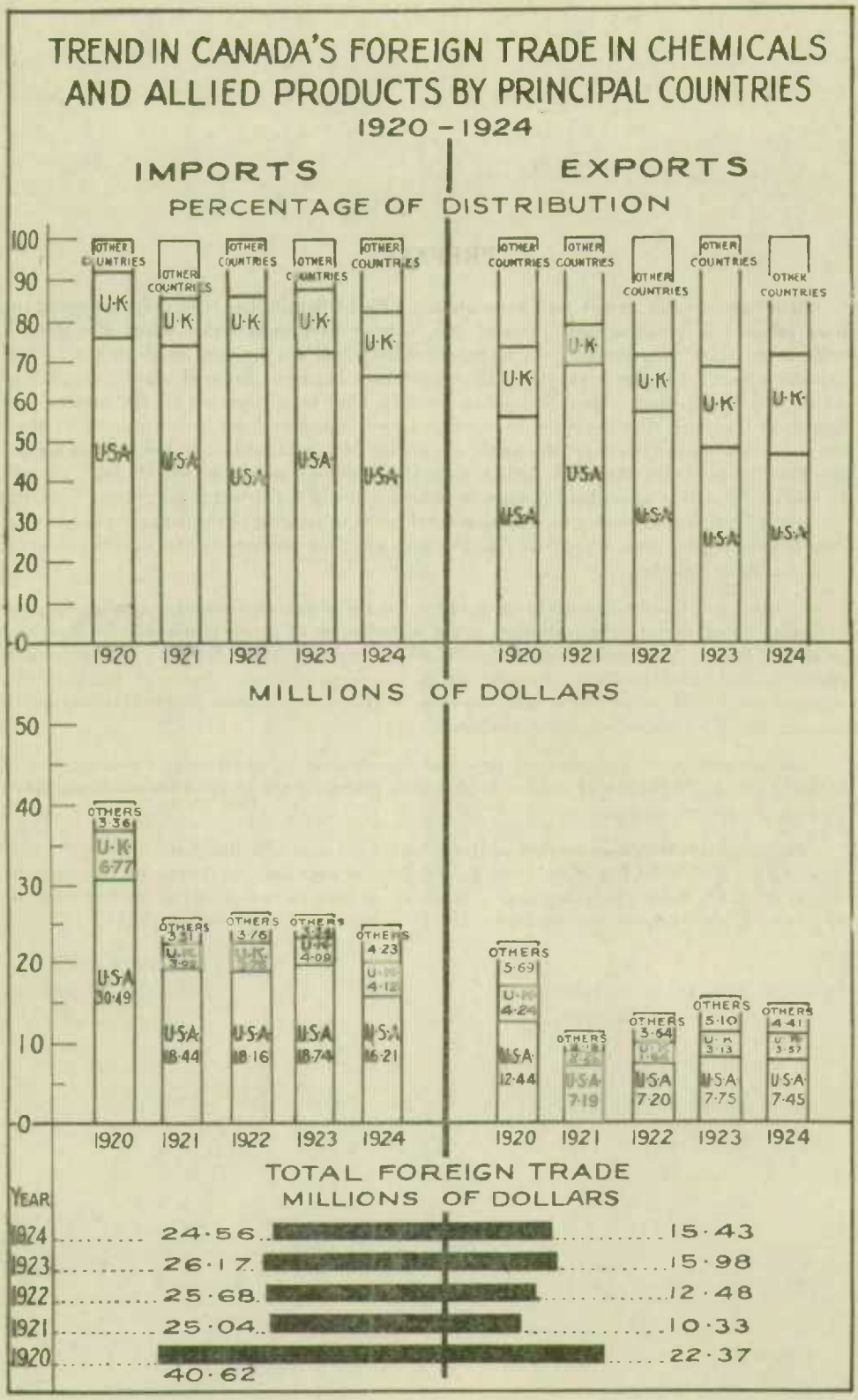
Another new feature introduced in this report is the inclusion of statistics relating to those industries which use chemical processes in the manufacture of products not usually described as chemicals; for this reason these industries are not included in the Bureau's classification of chemicals and allied products. Students of the chemical industries, however, will find this comprehensive table more useful than the more restricted compilation which deals only with the output of recognized chemical products.

On the next preceding page will be found a description of the Bureau's classification of industries for the collection of production statistics indicating the place of the chemical industries in the general scheme.

Preparation of the present report has been carried out 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 of the Bureau, by Mr. H. McLeod, B.Sc., who is in charge of the work on manufactures based on mineral products. In this work Mr. McLeod was assisted by Mr. E. L. Smith and a staff of four clerks.

R. H. COATS,
Dominion Statistician.

Dominion Bureau of Statistics,
Ottawa, February 27, 1926.


TREND IN CANADA'S FOREIGN TRADE IN CHEMICALS AND ALLIED PRODUCTS BY PRINCIPAL COUNTRIES
1920 – 1924
IMPORTS
EXPORTS
PERCENTAGE OF DISTRIBUTION
OTHER COUNTRIES
U·K·
U·S·A·
1920
1921
1922
1923
1924
MILLIONS OF DOLLARS
OTHERS 3·36
U·K· 6·77
U·S·A 30·49
OTHERS 3·31
U·K· 3·92
U·S·A 18·44
OTHERS 3·76
U·K· 4·26
U·S·A 18·16
OTHERS 3·24
U·K· 4·09
U·S·A 18·74
OTHERS 4·23
U·K· 4·12
U·S·A 16·21
OTHERS 5·69
U·K· 4·24
U·S·A 12·44
OTHERS 2·52
U·K· 1·46
U·S·A 7·19
OTHERS 3·64
U·K· 1·56
U·S·A 7·20
OTHERS 5·10
U·K· 3·13
U·S·A 7·75
OTHERS 4·41
U·K· 3·57
U·S·A 7·45
TOTAL FOREIGN TRADE
MILLIONS OF DOLLARS
YEAR
1924 24·56 15·43
1923 26·17 15·98
1922 25·68 12·48
1921 25·04 10·33
1920 40·62 22·37

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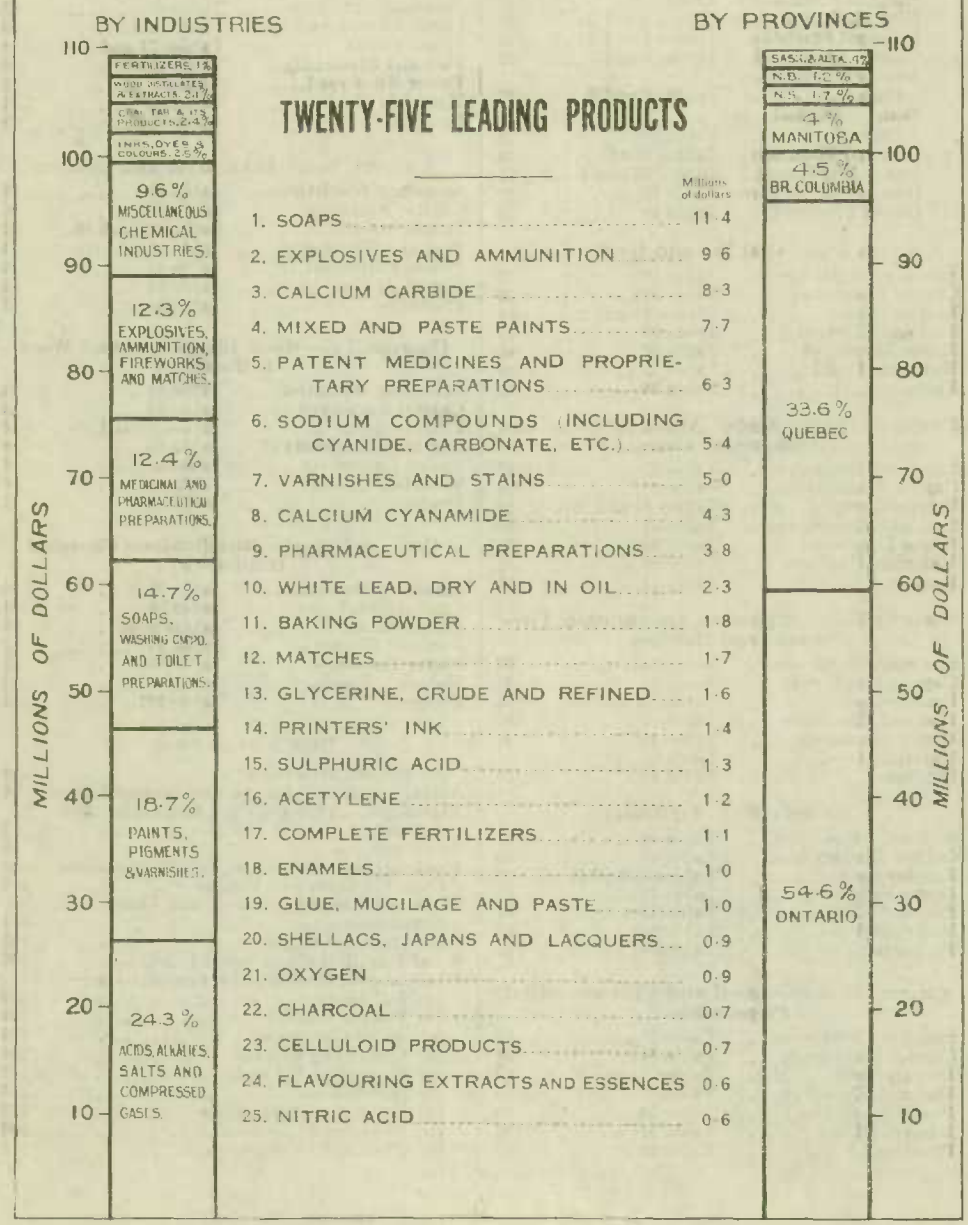

TWENTY-FIVE LEADING PRODUCTS

	Millions of dollars
1. SOAPS	11·4
2. EXPLOSIVES AND AMMUNITION	9·6
3. CALCIUM CARBIDE	8·3
4. MIXED AND PASTE PAINTS	7·7
5. PATENT MEDICINES AND PROPRIETARY PREPARATIONS	6·3
6. SODIUM COMPOUNDS (INCLUDING CYANIDE, CARBONATE, ETC.)	5·4
7. VARNISHES AND STAINS	5·0
8. CALCIUM CYANAMIDE	4·3
9. PHARMACEUTICAL PREPARATIONS	3·8
10. WHITE LEAD, DRY AND IN OIL	2·3
11. BAKING POWDER	1·8
12. MATCHES	1·7
13. GLYCERINE, CRUDE AND REFINED	1·6
14. PRINTERS' INK	1·4
15. SULPHURIC ACID	1·3
16. ACETYLENE	1·2
17. COMPLETE FERTILIZERS	1·1
18. ENAMELS	1·0
19. GLUE, MUCILAGE AND PASTE	1·0
20. SHELLACS, JAPANS AND LACQUERS	0·9
21. OXYGEN	0·9
22. CHARCOAL	0·7
23. CELLULOID PRODUCTS	0·7
24. FLAVOURING EXTRACTS AND ESSENCES	0·6
25. NITRIC ACID	0·6

DOMINION BUREAU OF STATISTICS, CANADA

R. H. COATS, B.A., F.S.S., (Hon.,) F.R.S.C., Dominion Statistician

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CHEMICALS AND ALLIED PRODUCTS IN CANADA IN 1924

CHAPTER ONE

GENERAL REVIEW

(a) Summary

Production of chemicals and allied products in Canada during 1924 reached a total value of $108,217,237 as compared with $111,244,156 in the preceding year. The manufacture of heavy chemicals and the production of medicinal and pharmaceutical preparations showed increases. The coal-tar distillation industry, the manufacture of inks, dyes and colours, the fertilizer industry, the wood distillation industry and the numerous small plants producing miscellaneous chemical products held their standing fairly well in comparison with the preceding year; explosives, ammunition, fireworks and matches, the manufacture of soaps, washing compounds and toilet preparations, and the paint and varnish industry showed slightly lower outputs. Employing 13,796 persons to whom 17 million dollars were paid in salaries and wages, the 457 plants reporting in the chemical industries of Canada in 1924 represented a capital investment of 126 million dollars and used materials costing 54·3 million dollars in the production of commodities having a selling value of 108·2 million dollars. The value added by manufacture thus amounted to 53·9 million dollars.

Price fluctuations in post-war years have made it difficult to determine the actual growth of industries when data on values only are available for comparison. Taking the average prices prevailing in 1913 as 100, the index of prices for chemical products, computed by the Bureau of Statistics and weighted according to the volume of trade in the 13 commodities listed, showed an average of 223·3 in 1920; declined to an average of 184·7 in 1921; dropped further to 166·4 for 1922 and to 164·8 for 1923; and stood at 161·8 for 1924. By applying these index numbers to the actual production for each of the five years mentioned, it is possible to obtain figures which perhaps more nearly represent the growth in quantity production than do the gross selling values of the products made in each year. For example, the aggregate production in 1920 was valued at $124,545,772; the index number of chemical prices for the year was 223·3 in comparison with 100 for 1913 prices; the application of this factor to the gross value of production mentioned above, show that the output of chemicals and allied products in Canada during 1920 computed on the base of 1913 prices was actually worth $55,990,000. Computed on the same basis the production in each of the next years was valued as follows: 1921—$48,140,000; 1922—$57,650,000; 1923—$67,480,000; and 1924—$67,091,000. These figures give a better indication of the growth in quantity production of chemicals and allied products in Canada than, do the actual market values of the outputs and make it apparent that the peak in production values reached in 1920 was very largely due to enhanced commodity prices, and also that the volume of production in each of the last three years was in excess of the 1920 total. Thus computed, the volume of production in 1923 would then be the highest on record, but only slightly above the output in 1924.

Throughout 1924, prices in the chemical products showed only a slightly downward trend. In January, the index based on average prices of 1913 as 100, stood at 168·4; in March, the highest point for the year was attained at 170·6; and the lowest was reached in August when the index stood at 154·1. For the whole year the average was 161·8.

Of the 457 plants in Canada reporting a production of chemicals or allied products in 1924, the number located in Ontario was 244; production from these plants totalled $59,046,932. There were 129 plants in Quebec with a production valued at $36,253,126. British Columbia

ranked third among the chemical-producing provinces with 29 plants and output valued at $4,930,614. Manitoba came next with 25 plants and a production of $4,414,528. Nova Scotia's 11 plants produced $1,808,531 worth of chemical products; 9 plants in New Brunswick had an output valued at $1,300,114; the other prairie provinces were represented by 10 plants and production was valued at $463,092.

In 1923 there were 475 plants in operation in this industry. The returns for 1924 showed a loss of 1 in the province of Nova Scotia; 1 in the area represented by the prairie provinces; a drop of 9 in Quebec and of 8 in Ontario and a gain of 1 in New Brunswick.

By industries, the acids, alkalies, salts and compressed gases group led the list with a total production value of $26,241,722, followed by paints, pigments and varnishes, $20,200,824; soaps, washing compound and toilet preparations, $15,965,318; medicinal and pharmaceutical preparations, $13,350,347; explosives, ammunition fireworks and matches, $13,310,315; and the miscellaneous chemical industries group with products valued at $10,294,171. Products of the inks, dyes and colours industry, wood distillates and extracts industry, and of the coal tar products, each exceeded 2 million dollars; and the output of fertilizers was above the million-dollar mark.

The total capital employed in the chemicals and allied products group was above that in the preceding year and amounted in all to $126,495,685 of which approximately one-half was invested in lands, buildings, machinery and tools, and the remainder was almost equally divided between the cost of materials, stocks in process, etc., and working capital. Ontario plants reported a total investment of $64,150,460 and Quebec accounted for $44,048,116. British Columbia was credited with about 9 million dollars' investment; Manitoba 5 million dollars; Nova Scotia, 2 million dollars, and New Brunswick slightly over 1 million dollars, while the capital employed in Alberta and Saskatchewan totalled about half a million dollars. There was little change in the amount of capital invested in the several groups from the totals recorded for the preceding year.

Including both salaried employees and wage-earners, 13,796 persons found employment in the industries classified under chemicals and allied products in 1924. This represented a decrease of about 9 per cent from the preceding year. Salaries and wages declined 7 per cent to an aggregate of $17,074,529 in 1924. Most of the employees were engaged in Ontario and Quebec plants, these two provinces accounting for 12,467 employees in all.

The trend of employment as reflected by the records of the number of wage-earners on the rolls as at the fifteenth of each month showed 10,206 wage-earners (excluding salaried employees) on the rolls in January, from which the number employed receded gradually to 9,616 in December making an average of 10,201 for the year.

It is, perhaps, not generally known, that the consumption of electricity by the firms classified under the chemical and allied products group in Canada amounted in value to $1,551,727 in 1924, while other fuel including anthracite and bituminous coal, coke, fuel, oil, gas, wood, etc., used during the year reached a total value of only $1,768,723 or only slightly more than the value of electricity used. Ontario and Quebec were the principal users of fuel. The consumption of electricity in Ontario amounted in value to $1,000,117 out of a total for fuel and electricity amounting to $2,049,439 and Quebec plants used, $491,668 worth of electricity and spent for all their fuel, $1,035,218. Consumption of bituminous coal in the chemical industries in 1924 amounted to 230,533 tons; this marked little change from the previous year. Ontario was the principal user, consuming 162,629 tons at a cost of $891,759. Fuel oil and gasoline used during the year amounted in all to 1,613,644 imperial gallons, of which 735,262 gallons were used in British Columbia plants; 582,920 gallons in Ontario plants, and 292,963 gallons in plants located in Quebec and 2499 imperial gallons by plants in Nova Scotia, New Brunswick, Manitoba, Alberta and Saskatchewan.

In recent years there have been considerable changes in Canada's foreign trade in chemical products. In the calendar year 1919, chemicals and allied products imported into Canada amounted in value to 27·2 million dollars; in that year 82 per cent of these purchases came from the United States, 13 per cent from the United Kingdom and 5 per cent from other countries. In the calendar year 1920, imports of chemicals and allied products into Canada were valued at 40 million dollars, but in the four succeeding calendar years the value of these commodities has been at about 25 million dollars annually. The proportion of Canadian purchases from the

United States has gradually decreased from 74 per cent of the total in 1921 to 66 per cent of the total in 1924. Imports from the United Kingdom during the same years have increased; 12 per cent of the total for 1921, and 17 per cent of the total for 1924 were brought in from this source. Imports from countries other than the United States and United Kingdom were greater in 1924 than in any previous year and amounted in all to 4·2 million dollars or 17 per cent of the total importations of chemical products.

Canada's exports of chemicals and allied products which totalled 28·5 million dollars in the calendar year 1919, dropped in 1920 to 22·3 million dollars and in 1921 to the low point of 10·3 million dollars. There was a slight recovery to a total of 12·4 million dollars in 1922 and in 1923 and 1924 the total exports stood at 15·9 and 15·4 million dollars, respectively. In 1924, exports of chemicals and allied products from Canada to the United States amounted to 48 per cent of the total. Exports to the United Kingdom stood at 23 per cent and exports to other countries amounted to 29 per cent.

In the export field, electrochemical products led the list. Sodium cyanide, cyanamide and calcium carbide were the three largest items in the group and the export of acetic acid, much of which is produced from carbide, has also increased in recent years. Canada's other chemical exports of importance include soda ash, cobalt oxides and salts, ammonium sulphate, paints, pigments and varnishes, medicinal and pharmaceutical preparations, soaps (more particularly toilet soaps) and white arsenic.

In studying the production of chemicals and allied products in Canada it has been found convenient to arrange these industries in ten (10) groups, namely: 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 colour compounds; wood distillates and extracts; miscellaneous chemical industries.

(b) By Industries

Coal Tar and Its Products.—This industrial group includes all those firms whose principal products were obtained by the distillation of crude coal tar, or by the manufacture of commodities, such as disinfectants, from the distillation products. Statistics relating to this industry are more complete in the reports for 1923 and 1924 than in previous issues as it has been possible to include data for the tar-distilling departments of several large plants manufacturing composition roofings, which previously were reported only in the bulletin in "Prepared Roofing."

In 1924, the same number of plants reported as in the previous year, but production dropped half a million dollars to $2,637,573. Of the 14 plants in this group, 8 were primarily tar distilling units and 6 were engaged in the manufacture of disinfectants.

(a) Coal Tar Distillation.—The 8 tar-distilling units were located as follows: 3 in Ontario, 2 in Quebec and 1 in each of the provinces of Nova Scotia, Manitoba and British Columbia. Capital employed at $2,926,297 was only slightly below the 1923 figure but production dropped more than half a million dollars to $2,519,489. Raw materials worth $1,090,421 consisting essentially of crude tar, yielded nearly 2 million gallons of creosote and special oils, 25,297 tons of pitch, 4 million gallons of tar and about 1 million dollars worth of other products.

(b) Disinfectants.—The disinfectant industry showed considerable improvement in 1924. Capital invested rose to $173,698 from $117,843 in 1923 and production increased 52 per cent to a value of $118,084 in the same time. The 6 plants were distributed as follows: 3 in Ontario; 2 in Quebec, and 1 in Manitoba.

Acids, Alkalies, Salts and Compressed Gases.—Production of industrial chemicals other than coal-tar products, including such heavy chemicals as sulphuric, nitric and hydrochloric acids, caustic soda, salt cake and calcium carbide, and compressed gases such as oxygen, hydrogen, ammonia and acetylene dissolved in acetone, has been reviewed as one industrial group, but owing to the fact that the manufacture of compressed gases differs appreciably from the manufacture of heavy chemicals the group has been divided into two sections (a) acids, alkalies and salts; (b) compressed gases.

For the group as a whole, production increased by 2·3 million dollars and the value added by manufacturing rose a like amount in spite of the fact that there were 6 fewer plants reporting and although the capital employed was lower by 2 million dollars than in the previous year. The average number of persons employed fell to 2,413 from 2,788 in 1923 and salaries and wages showed a corresponding decline. Ontario plants contributed $19,248,712 to the total value of the output and production from the Quebec plants amounted to $6,113,636.

(a) Acids, Alkalies and Salts.—This industry included the operations of 20 plants in 1924 as compared with 24 in the previous year. Capital employed declined 1·8 million dollars and the average number of employees was 15 per cent below 1923 but, in spite of this, the selling value of products was greater by 2·4 millions dollars and amounted to $24,190,247. There was a decline in the production of nitric, hydrochloric and sulphuric acids but calcium compounds including cyanamide and carbide rose in value to $5,917,146. Sodium compounds including carbonate, cyanide, hydroxide, etc. remained at about the same figure as in 1923.

In this industry, more particularly than in most other industries covered by this report, large quantities of intermediate products are made for the further use of reporting firms. Of the total production of 1924 which amounted in value to 24·2 million dollars, 7·4 million dollars represented the value of products used as materials in further processes. Lime, calcium carbide, and crude cyanamide made up the bulk of the intermediates.

(b) Compressed Gases.—Although there were 2 fewer reporting plants in this industry, the production of compressed gases was maintained at about the same level as in 1923 and had a selling value of $2,051,448. Oxygen, acetylene and carbon dioxide were the principal products of this group; aqua and anhydrous ammonia, and nitrogen were produced in smaller amounts.

This group includes all firms manufacturing oxygen, hydrogen, acetylene, carbon dioxide and ammonia. Some firms who did not manufacture their own acetylene purchased the gas and compressed it in cylinders in which form it was marketed. The manufacture of pure ammonia gas has also been recorded in this group but the product of ammonia liquid from gas plants was excluded.

Explosives, Ammunition, Fireworks and Matches.—The industrial group included under the foregoing heading comprises four separate industries, namely: (a) explosives, (b) ammunition, (c) fireworks, (d) matches. In the general tables these industries have been grouped but in the chapter relating thereto, separate statistics have been shown for each industry.

There were 18 plants included in this group in 1924. Of these 8 were located in Quebec, 8 in Ontario, and 2 in British Columbia. Production values amounted to $13,310,315 or about a million dollars below the total for 1923. Employment likewise was but little below 1923, there being an average of 2,174 on the rolls in 1924 as compared with 2,290 in the previous year.

(a) Explosives.—Production, valued at $8,502,682, was nearly a million dollars higher than in 1923 but the cost of materials rose nearly as much to $6,007,787, thus giving a value added by manufacturing of $2,494,895 as compared with the corresponding figure of $2,206,761 for 1923. More gelatine dynamite was made than in 1923, but the output of monobel and gunpowder was slightly below that of the previous year. Among the intermediates made for use, nitric acid, nitro-glycerine, recovered acids, mixed acids, and ammonium nitrate figured largely, reaching a total value of $3,500,785 as compared with a value of $5,001,899 for products made for sale.

(b) Ammunition.—There was no change in the number of reporting plants in comparison with 1923. Products made for sale showed a slightly lower value at $2,143,126 and intermediate products made for use at $793,834 were also lower than in the previous year.

(c) Fireworks.—This industry is very small. There were 4 plants operating in 1924, and the production was valued at $196,672 as compared with $242,808 in the previous year. The industry employed 47 persons throughout the year and paid in $62,167 in salaries and wages. Manufactured fireworks made up the large part of the production.

Matches.—The total production of the match industry amounted in value to $1,674,001, a decline of 39 per cent from the total of $2,714,950 in 1923. Four plants were in operation

but the largest of these was closed during October and operated only part of the plant in the remaining two months of the year. The production value as reported above, was the value exclusive of the excise tax.

Fertilizers.—The fertilizer industry as herein reviewed includes only those plants engaged in the manufacture of fertilizers as a principal product. Mention has been made, however, of commodities such as cyanamide, ammonium sulphate, ground bone, etc., and other fertilizers and fertilizer materials produced in other industries.

Four plants classified in this industry did not operate during the year leaving 14 plants in operation in 1924 as compared with 18 in the previous year. Capital employed fell to $2,072,488 or 43 p.c. below 1923 when it stood at $3,616,001, and the average number of persons employed declined to 166 from 329 in the same time. Production also fell below that of 1923 but not to the same extent. In 1924, the output was valued at $1,277,145 as compared with $1,487,-244 in 1923. Complete fertilizers produced in this industry amounted to 61,422,923 pounds valued at $1,086,806 as compared with 58,011,637 pounds produced in the previous year at a selling value of $1,113,857.

Production of fertilizers in other industries was also below the quantities reported in 1923. The outputs of calcium cyanamide and of animal tankage were greater but the outputs of ammonium sulphate, ground bone, complete fertilizers from the slaughtering and meat-packing industry, and fish fertilizer were less than in 1923.

Imports of chemical fertilizers into Canada during 1924 were valued at about half a million dollars more than in 1923. Imports of ammonium sulphate totalled only about a third of the quantity brought in during 1923. Cyanamide also dropped back to normal at about 12,000 tons. Muriate of potash imports on the other hand, showed a decided increase over the tonnage reported in the preceding year as also did nitrate of soda and acid phosphate of lime. Basic slag was also imported in large quantities.

Medicinal and Pharmaceutical Preparations.—Further improvement was noted in the production of medicinal and pharmaceutical preparations in Canada during 1924. The total output was valued at $13,350,347 as compared with $12,256,608 in 1923. The industry continued to be centred largely in Ontario where 66 plants produced patent and proprietary and other medicinal, pharmaceutical and toilet preparations worth in the aggregate $8,617,695, Quebec's 28 plants produced $2,996,562 worth of such preparations. There were also 6 plants in this industry located in Manitoba, 2 in Nova Scotia and one in each of the provinces of New Brunswick and British Columbia.

Paints, Pigments and Varnishes.—In point of value of production the paints, pigments and varnishes industry ranked next to the heavy chemical industry in 1924. The output of the paint industry was valued at $20,200,824, a decline of over 6 per cent from the total in 1923. One plant did not operate during the year and one other was absorbed by a larger company leaving 55 plants in operation in 1924 as against 57 in the previous year. Active plants were located as follows: 26 in Ontario; 14 in Quebec; 4 in Manitoba; 9 in British Columbia; and one in each of the provinces of Nova Scotia and Alberta. Quebec plants produced $8,925,660 worth of paint products while plants in Ontario had an output valued at $8,076,155.

The total production in 1924 included $18,187,681 worth of products for sale and $2,013,143 worth of intermediates for further use in the producing plants. In 1923, products for sale were valued at $20,938,802 and intermediates, at only $614,356. Mixed paints ready for use was the chief product with varnishes of next importance. Only 4 firms corroded pig lead for the production of basic carbonate white lead.

Canada's imports of paints, pigments and varnishes during the calendar year of 1924 totalled $3,448,167 in value as compared with $3,615,777 in 1923. Export values also fell away slightly to $459,761 from $550,639 in the preceding year.

Soaps, Washing Compounds and Toilet Preparations.—Production of soaps, washing compounds and toilet preparations in 1924 was valued at $15,965,318 which was 2 million dollars below the total for the preceding year. Fewer persons were employed due to the fact that there were only 66 reporting plants as compared with 70 in 1923. Thirty-three plants in Ontario had

a production worth $9,889,493 in 1924, and the output of the 20 plants in Quebec was valued at $3,448,408. There were also 3 plants in Manitoba; 1 in New Brunswick; 4 in Alberta; 1 in Saskatchewan; and 4 in British Columbia.

(a) Soaps.—Representing a capital investment of $14,497,596 and employing 1,464 persons, the 33 plants in this industry in 1924 had a combined output worth $13,187,267. In 1923, the same 33 plants produced $14,939,786 worth of commodities. Production of household soaps in 1924 dropped nearly 6 million pounds, while the output of laundry soaps and soap chips gained nearly the same amount. The production of toilet soaps, soap powders and other commodities in this industry, except washing compounds, was below that of the preceding year.

(b) Washing Compounds.—The washing compound industry includes those firms manufacturing washing compounds, javelle water, ammonia powder and similar products which are used to some extent instead of soap for certain household purposes. There were 9 plants with a production valued at $334,470 in 1924 as compared with 11 plants and an output worth $348,801 in 1923. For the most part, concerns in this group are small and the value of production is usually considerably in excess of the investment in plant and equipment. Many of the products have a great utility, however, and there is a good market for the output.

(c) Toilet Preparations.—While considerable quantities of perfumes, cosmetics and toilet preparations are made as minor products of several other industries, the manufacture of these commodities as principal products has been carried on in Canada for a number of years. In 1924, there were 24 plants in this industry as against 26 in the preceding year. Production was somewhat lower, also, at $2,443,581. Most of the products consisted of toilet preparations including perfumes, hair tonics, etc., but there was also a small production of liquid and toilet soaps in this industry.

Inks, Dyes and Colours—Printing inks, writing inks, dyes and dye soaps, printers' rollers and composition, and paints, stains and enamels, were the principal products of this industry in 1924. The manufacture of printing inks reached a total value of $1,348,850 in 1924 as against $1,385,492 in 1923. Writing inks, mucilage, and paste reached a value of $257,240 as against $261,550 in the previous year. Dyes and dye soaps totalled $393,894 as against $473,391 in 1923.

The 24 plants operating in 1924 had a total production worth $2,656,400 as compared with 26 plants and an output valued at $2,876,347 in 1923. Four plants made dyes and colours as their principal product; 13 made printing inks or printers' rollers; and 7 manufactured writing inks. These industries are treated separately in a succeeding chapter but are grouped in the general tables.

Wood Distillates and Extracts.—Although there were 3 more plants reporting in 1924 than in 1923, the capital employed, at $2,784,681, was nearly the same and the number of persons employed was greater at 367. Production, on the other hand, declined to $2,283,422 from $2,743,295 in the preceding year. Gray acetate of lime made for sale was nearly 2 million pounds below the quantity reported in 1923. Production of formaldehyde was also less by nearly 300,000 pounds. On the other hand, the quantity of acetone made was nearly doubled and amounted to 939,278 pounds worth $176,584. Charcoal and wood creosote were made in larger quantities.

Miscellaneous Chemical Industries.—A number of firms operating in Canada produce chemicals or allied products which do not naturally fall in any of the previous groups; a miscellaneous group has accordingly been made and the industries therein have been divided into 9 main classes, namely: adhesives, baking powder, boiler compounds, celluloid products, flavouring extracts, insecticides, polishes and dressings, sweeping compounds, chemical products not elsewhere specified.

Data for the 109 firms in this group are shown in a separate chapter but in the general tables, only the group totals are shown. The production totals given in these tables do not necessarily represent the entire output in Canada of the commodities mentioned, but only the outputs of the industries producing these articles as their principal products. For example,

baking powder, polishes and dressings and insecticides are also made in other industries whose principal products place them in other categories. Production in this group in 1924 totalled $10,294,171 in value and afforded employment to 1,707 persons during the year.

(c) By Provinces

Nova Scotia.—In 1924, there were 11 plants in Nova Scotia engaged in the manufacture of chemicals and allied products. These plants, representing a capital investment of $2,058,565, employed 209 persons throughout the year and produced commodities valued in the aggregate at $1,858,531. Raw materials used during the year cost $738,681 so the net addition to industrial wealth from this source amounted to $1,069,850 for the province. Production of paints, pigments and varnishes and of coal-tar products each exceeded the half-million dollar mark; the output of acids, alkalies, salts and compressed gases and of fertilizers each amounted to about a quarter million dollars in value; medicinal and pharmaceutical preparations were made in considerable quantity; and the miscellaneous chemical group was also represented.

In 1923, there were 12 such plants in operation in Nova Scotia and the total production amounted to $1,979,976.

New Brunswick.—Only 9 plants in New Brunswick manufactured chemical products in 1924. There were 2 establishments producing fertilizer materials from fish scrap; 2 manufacturing insecticides; and one plant operating in each of the following industries: medicinal and pharmaceutical preparations; soaps; printing inks; adhesives; flavouring extracts. These plants had a combined production worth $1,300,114, the bulk of which was contributed by the soap industry. Capital employed amounted to $1,305,674 and employees numbered 125. Wages and salaries totalled $145,807.

In 1923, there were only 8 plants belonging to this group in operation in this province but the production was in excess of that of 1924 and amounted in value to $1,457,691.

Quebec.—In 1924, Quebec led all provinces in the production of explosives, paints, and coal tar products but had to yield first place to Ontario in most of the other industries. The value of production in each of the industries was as follows: coal tar products and disinfectants, $922,003; acids, alkalies, salts and compressed gases, $6,113,636; explosives, ammunition, fireworks, and matches, $9,947,482; medicinal and pharmaceutical preparations, $2,996,562; paints, pigments and varnishes, $8,925,660; soaps, washing compounds and toilet preparations, $3,448,408; inks, dyes and colours, $556,693; wood distillates and extracts, $1,045,106; miscellaneous chemical products, $2,297,876. In all, there were 129 plants with a total production valued at $36,253,426. These plants employed 5,246 persons and paid out $5,853,826 in wages and salaries. Capital employed amounted to $44,048,116 of which more than half was invested in permanent assets, such as lands, buildings, plant machinery and tools. Fuel and electricity consumed in the manufacturing plants cost over a million dollars.

In the previous year, 1923, there were 138 operating plants that employed 5,615 persons and produced commodities with a total selling value of $37,963,779.

Ontario.—Ontario led all provinces in the production of chemicals and allied products with a total output valued at $59,046,932 in 1924. Of the 457 plants in the chemical industries in Canada, 244 were located in Ontario. Represented by a capital investment of $64,150,460 these plants gave employment to 7,221 persons during the year and used $28,735,764 worth of raw materials for the manufacturing processes.

Ontario produced 73 per cent of all the acids, alkalies, salts and compressed gases made in Canada. In this industry there were 18 plants in Ontario with a combined output worth $19,248,712. The medicinal and pharmaceutical preparations industry in this province contributed products valued at $8,617,695 and the soap industry with a production value of $9,889,493 was another of Ontario's larger chemical industries. Paints, pigments and varnishes made during the year were worth $8,076,155 and inks, dyes and colours were valued at $1,984,887. On the basis of values, Ontario also accounted for 50 per cent of the Canadian production of wood distillates; 50 per cent of the fertilizers; and 75 per cent of the output from the miscellaneous chemical industries.

Electricity used for power purposes in the chemical plants in Ontario cost over a million dollars and fuel consumed reached a like amount bringing the total cost of fuel and electricity to $2,049,439 in 1924.

Manitoba.—Manitoba ranked fourth among the provinces producing chemicals and allied products in Canada in 1924. The major chemical industries were paints, pigments and varnishes, in which there were 4 plants with a total production worth $1,538,943, and the medicinal and pharmaceutical preparations industry with 6 plants and an output worth $1,537,100. There were also 3 establishments manufacturing soaps; 2 plants making coal-tar products; 4 concerns producing compressed gases; 1 making fertilizer; 2 producing inks; and 3 plants manufacturing miscellaneous chemical products. In all, the 25 paints produced $4,414,528 worth of commodities from materials costing $2,300,182 at the works. The industry afforded employment to 444 persons and expenditures for wages and salaries amounted to $603,871. In 1923, the same 25 plants made chemical products worth $3,963,246.

Saskatchewan.—Saskatchewan had only 2 plants in the chemical industries. One establishment manufactured soaps and the other was in the miscellaneous chemical group; both were very small concerns.

Alberta.—Eight establishments in Alberta produced chemicals and allied products having a total selling value of $460,462. The soaps, washing compounds and toilet preparations industry with 4 plants and a production worth $384,368 was by far the more important chemical industry in this province. One concern produced compressed gases in considerable quantity but the remaining plants were very small.

British Columbia.—In point of production values, British Columbia ranked third in the Dominion with an output worth $4,930,614. The explosives industry and the paint industry were the more important of the group. There were 2 large plants producing explosives during the year and 9 plants manufacturing paints worth $1,034,436. Two plants produced heavy chemicals and the same number made compressed gases; one firm distilled coal-tar and manufactured composition roofing; and 4 establishments produced nearly half a million dollars' worth of soaps, washing compounds and toilet preparations; pharmaceutical preparations, inks, and other chemical products were also made in small quantities. In all, the 29 plants employed a capital of $8,937,327 paid 486 persons over $675,642 in salaries and wages, and used fuel and electricity worth $86,407.

TABLE 1.—SUMMARY STATISTICS

(a) Chemicals and Allied Products in Canada by Industries 1920-1924

Year	Number of plants	Capital employed $	Number of employees	Salaries and wages $	Cost of materials $	Selling value of products $	Value added by manufacturing $
Coal Tar and its Products							
1920	11	1,385,012	161	216,914	615,363	2,035,034	1,419,671
1921	9	1,502,670	114	153,699	456,474	1,183,130	726,656
1922	8	1,237,077	90	110,026	313,341	886,358	573,017
1923	14	3,205,780	239	334,955	1,381,724	3,166,100	1,784,376
1924	14	3,099,995	208	280,728	1,137,497	2,637,573	1,500,076
Acids, Alkalies, Salts, and Compressed Gases							
1920	50	32,473,016	3,479	5,443,975	4,812,534	18,720,209	13,916,675
1921	50	34,163,604	1,814	3,004,948	5,336,568	13,869,166	8,532,598
1922	46	35,163,154	2,189	2,917,361	6,166,469	16,879,267	10,712,798
1923	47	36,436,315	2,788	3,780,443	11,636,321	23,912,992	12,276,671
1924	41	34,298,071	2,413	3,469,320	11,616,643	26,241,722	14,625,079
Explosives, Ammunition, Fireworks and Matches							
1920	21	14,689,508	2,631	2,858,412	8,528,128	15,459,279	6,931,151
1921	22	13,641,857	1,771	1,831,362	6,201,260	10,999,844	4,798,644
1922	20	12,345,296	2,123	2,030,877	8,893,740	13,788,658	4,894,918
1923	18	13,820,102	2,290	2,131,997	9,270,641	14,428,390	5,157,749
1924	18	20,457,440	2,174	2,059,642	8,787,392	13,310,315	4,522,923
Fertilizers							
1920	16	3,839,923	402	437,438	2,388,818	3,788,027	1,399,209
1921	15	3,209,240	274	369,653	1,696,205	2,677,735	981,530
1922	17	3,935,467	344	348,879	1,098,230	1,981,418	883,188
1923	18	3,616,001	329	310,441	831,470	1,487,244	655,774
1924	14	2,072,488	166	159,310	730,158	1,277,145	546,987
Medicinal and Pharmaceutical Preparations							
1920	100	12,191,155	2,838	2,964,822	7,029,594	15,728,224	8,698,630
1921	103	12,903,071	2,230	2,529,898	4,466,001	11,945,435	7,479,434
1922	109	13,995,461	2,302	2,752,680	4,145,298	11,532,536	7,387,238
1923	104	14,655,699	2,271	2,667,741	4,474,487	12,256,608	7,782,121
1924	104	15,156,479	2,193	2,666,997	4,895,352	13,350,347	8,454,995
Paints, Pigments and Varnishes							
1920	48	20,320,851	2,568	3,431,064	15,931,923	27,042,096	11,110,173
1921	49	20,340,951	2,231	3,209,589	9,714,521	18,044,325	8,329,804
1922	53	21,073,706	2,451	3,421,217	11,354,903	20,230,545	8,875,642
1923	57	20,806,909	2,591	3,665,823	10,751,273	21,553,158	10,798,885
1924	55	20,587,856	2,287	3,044,228	11,674,837	20,200,824	8,525,987
Soaps, Washing Compounds and Toilet Preparations							
1920	58	16,238,916	1,996	2,267,052	12,924,863	19,804,815	6,879,952
1921	63	16,114,665	1,871	2,160,066	8,482,704	15,307,821	6,825,117
1922	68	15,781,214	1,873	2,215,310	8,484,676	15,841,905	7,357,229
1923	70	15,468,592	2,082	2,459,655	9,400,752	17,909,011	8,508,259
1924	66	16,367,060	1,904	2,359,060	8,782,985	15,965,318	7,183,233
Inks, Dyes and Colours							
1920	26	1,931,705	412	613,084	1,643,991	3,288,664	1,644,673
1921	26	2,083,697	353	582,210	1,054,195	2,533,480	1,479,285
1922	26	2,116,953	416	668,719	1,070,287	2,756,006	1,685,719
1923	26	2,252,370	415	689,336	1,141,102	2,876,347	1,735,245
1924	24	2,391,859	377	632,607	942,325	2,656,400	1,714,075

TABLE 1.—SUMMARY STATISTICS—Continued

(a) Chemicals and Allied Products in Canada by Industries 1920-1924—Concluded

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$
Wood Distillates and Extracts							
1920	17	4,247,097	604	701,110	2,153,005	4,982,283	2,829,278
1921	12	2,694,824	276	327,271	1,110,697	2,202,314	1,091,617
1922	12	3,205,882	295	292,229	932,667	1,902,243	969,576
1923	9	2,814,045	344	332,026	976,621	2,743,295	1,766,674
1924	12	2,784,681	367	384,050	1,055,658	2,283,422	1,227,764
Miscellaneous Chemical Industries							
1920	110	11,523,714	2,192	2,802,261	6,810,244	13,688,141	6,877,897
1921	120	12,060,910	1,735	2,020,893	4,827,225	10,138,297	5,311,072
1922	110	9,081,243	2,001	2,013,499	4,460,357	10,145,249	5,684,892
1923	112	13,261,668	1,800	2,091,252	4,770,671	10,911,011	6,140,340
1924	109	9,279,747	1,707	2,018,587	4,689,966	10,294,171	5,604,205
Total Chemicals and Allied Products							
1920	**457**	**118,840,897**	**17,283**	**21,736,132**	**62,838,463**	**124,545,772**	**61,707,309**
1921	**469**	**118,705,489**	**12,669**	**16,279,589**	**43,345,790**	**88,901,547**	**45,555,757**
1922	**469**	**118,025,483**	**14,084**	**16,770,804**	**46,919,968**	**95,941,185**	**49,021,217**
1923	**475**	**126,537,481**	**15,149**	**18,433,679**	**54,638,062**	**111,244,156**	**56,606,094**
1924	**457**	**126,495,685**	**13,796**	**17,074,529**	**54,311,913**	**108,217,237**	**53,905,324**

(b) Other Industries using Chemical Processes Classified According to Their Principal Products

Malt							
1920	8	2,444,209	179	280,758	4,338,453	5,457,166	1,118,713
1921	7	2,246,223	181	306,892	2,019,577	2,793,417	773,840
1922	6	2,183,282	174	369,752	1,372,301	2,416,686	1,044,385
1923	5	2,473,818	184	364,134	1,504,187	2,599,966	1,095,779
1924	5	3,553,042	134	245,550	2,047,500	4,308,631	2,261,131
Brewery Products							
1920	57	37,494,396	3,368	4,379,660	12,525,107	29,695,859	17,170,752
1921	55	37,645,447	3,027	4,353,613	9,714,486	30,931,853	21,217,367
1922	53	34,788,432	2,857	3,903,240	8,125,364	25,875,730	17,750,366
1923	52	38,384,708	3,100	4,308,550	9,846,130	29,260,243	19,414,113
1924	57	45,375,529	3,820	5,347,563	15,368,618	33,532,783	18,164,165
Distilled Liquors							
1920	4	11,773,046	340	376,708	1,210,633	2,815,359	1,604,726
1921	5	11,557,051	457	759,118	2,161,525	7,460,845	5,299,320
1922	6	15,253,827	313	466,587	1,546,376	3,296,545	1,750,169
1923	9	16,135,724	409	556,560	1,714,716	4,226,465	2,511,749
1924	13	22,556,007	806	1,023,522	3,322,878	10,711,801	7,388,922
Wines and Grape Juice							
1920	13	1,301,465	98	136,206	653,623	1,040,978	387,355
1921	13	1,066,659	128	156,409	350,098	706,289	356,191
1922	12	1,939,831	145	189,209	500,568	1,136,075	635,507
1923	16	2,257,413	159	197,388	675,090	1,624,382	949,292
1924	22	2,636,728	155	231,875	612,521	1,325,333	712,812

TABLE 1.—SUMMARY STATISTICS—Continued

(b) Other Industries using Chemical Processes Classified according to their Principal Products—Continued

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$
Linseed Oil and Oil Cake							
1920	8	2,911,634	222	306,068	7,180,011	9,230,084	2,050,073
1921	8	2,509,124	292	324,978	4,239,255	6,223,376	1,981,121
1922	8	2,603,241	251	303,465	4,319,555	5,558,627	1,239,072
1923	8	2,818,291	249	299,906	4,697,051	5,761,840	1,064,789
1924	8	2,231,954	217	286,977	4,851,264	5,911,530	1,060,266
Rubber Footwear and Rubber Goods							
1920	35	58,370,039	15,238	16,199,930	41,838,200	80,717,308	38,879,108
1921	35	54,237,618	9,798	9,759,366	16,857,124	39,469,786	22,612,662
1922	62	50,652,497	10,369	10,621,893	19,295,080	46,487,327	27,192,247
1923	40	56,061,625	11,646	12,329,117	26,335,306	56,512,947	30,177,641
1924	38	56,160,930	10,778	11,413,632	24,468,736	57,411,446	32,942,710
Starch and Glucose							
1920	5	6,112,124	885	1,162,104	5,936,610	8,379,185	2,442,575
1921	7	5,887,210	697	781,108	2,716,292	4,436,328	1,720,036
1922	9	5,671,843	551	543,156	2,242,282	3,871,977	1,629,695
1923	8	4,380,179	579	654,133	3,146,245	5,135,103	1,988,858
1924	7	4,803,122	556	649,980	3,665,350	5,241,908	1,576,558
Refined Sugar							
1920	8	46,719,034	3,118	4,632,814	103,689,088	119,086,731	15,397,643
1921	7	35,783,067	2,469	3,182,894	56,882,242	69,509,827	12,627,585
1922	7	36,691,472	2,745	3,265,972	56,493,942	70,822,782	14,328,840
1923	7	45,618,182	2,393	3,329,662	61,817,862	77,004,026	15,186,164
1924	7	46,229,188	2,387	3,399,826	55,071,573	67,292,122	12,220,549
Tanned Leather							
1920	100	29,739,987	3,886	4,630,343	30,370,591	39,967,831	9,597,240
1921	119	32,137,488	3,707	4,081,062	15,157,358	22,905,528	7,748,170
1922	116	32,818,775	3,854	4,302,918	15,754,951	24,291,884	8,536,933
1923	123	30,348,468	3,787	4,302,069	16,458,674	23,633,165	7,174,491
1924	114	30,031,624	3,907	4,416,572	16,486,261	25,655,675	9,169,414
Tallow and Animal Oils							
1920	6	233,736	45	52,594	303,338	536,063	232,725
1921	7	196,652	33	42,064	175,429	304,459	129,030
1922	7	202,251	41	44,106	153,862	326,973	173,111
1923	8	797,414	110	132,444	254,667	595,331	340,664
1924	5	734,006	104	120,210	350,156	527,237	177,081
Textiles—Dyed, Cleaned and Finished							
1920	375	9,148,318	7,140	6,413,446	1,692,078	13,796,618	12,104,540
1921	530	7,498,834	6,807	6,150,698	1,600,800	13,413,787	11,812,987
1922	620	8,740,368	7,490	6,538,832	1,733,273	14,649,726	12,916,453
1923	605	10,798,737	7,969	7,156,359	1,824,628	15,551,684	13,727,056
1924	518	14,930,859	8,065	7,469,786	2,218,890	15,577,050	13,358,160
Pulp and Paper							
1920	100	347,553,333	31,208	45,253,893	84,208,688	236,420,176	152,211,488
1921	100	379,812,751	24,611	34,199,090	62,276,224	151,003,165	88,726,941
1922	104	381,006,324	25,830	32,918,955	64,092,722	158,950,950	94,258,234
1923	110	417,611,678	29,234	38,382,845	71,322,722	184,414,675	113,091,953
1924	115	459,457,696	27,027	37,649,528	72,233,876	179,259,504	107,025,628

TABLE 1.—SUMMARY STATISTICS—Continued

(b) Other Industries using Chemical Processes Classified according to their Principal Products—*Concluded*

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$
Wood—Creosoted or Otherwise Preserved							
1920	3	1,108,254	74	88,227	417,140	581,199	164,059
1921	3	1,469,781	49	65,555	691,055	1,017,771	326,716
1922	5	2,018,085	179	146,351	1,737,605	2,484,536	746,931
1923	6	2,133,137	213	175,478	1,285,733	1,973,705	687,972
1924	8	2,700,646	238	159,599	1,446,870	2,148,818	701,948
Coke							
1920	6	19,278,539	875	1,606,088	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
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	9,024,084	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
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	14,892,372	3,356	3,778,802	3,714,515	11,098,026	7,383,511
1924	48	13,304,814	3,137	3,666,213	3,667,660	10,776,816	7,109,156
Refined Petroleum							
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	6,182,544	36,629,576	52,932,415	16,302,839
1922	19	62,054,029	3,555	5,492,683	38,413,191	57,035,563	18,622,372
1923	20	61,027,704	4,257	5,648,320	36,816,686	46,280,534	9,463,838
1924	25	53,795,794	3,669	5,749,705	37,092,711	49,411,067	12,318,356
Artificial Ice							
1920	16	1,823,450	222	302,926	41,251	668,645	627,394
1921	18	1,775,266	302	502,248	46,368	1,153,249	1,106,881
1922	23	2,244,004	282	415,582	53,827	1,058,021	1,004,194
1923	24	3,422,571	244	343,549	48,179	1,010,363	962,184
1924	25	4,557,912	309	424,665	102,452	1,202,344	1,099,892
Totals for Other Industries Using Chemical Processes							
1920	867	677,165,325	78,294	101,010,316	361,439,939	655,101,356	293,661,417
1921	1,033	702,976,821	63,134	79,677,142	237,067,261	418,711,040	241,643,779
1922	1,156	713,905,048	65,260	77,581,153	231,432,826	453,531,793	319,098,967
1923	1,137	775,182,958	71,502	86,603,521	261,924,348	500,189,210	238,261,892
1924	1,065	830,193,871	70,087	87,991,516	256,659,408	498,834,251	242,174,843
GRAND TOTAL—ALL INDUSTRIES							
1920	1,324	796,006,222	95,577	122,716,478	421,278,402	779,647,128	355,368,726
1921	1,502	821,682,310	75,803	95,956,731	280,413,051	537,612,587	257,199,536
1922	1,625	831,930,521	79,341	94,351,956	281,352,794	549,475,978	268,123,184
1923	1,612	901,720,149	86,651	105,037,703	316,562,410	611,433,396	291,870,986
1924	1,522	956,689,556	83,883	105,006,075	310,971,321	607,051,488	296,080,167

TABLE 1.—SUMMARY STATISTICS—Concluded

(c) Number of Plants, Materials Used and Products Made in the Chemical Industries in Canada, by Provinces, 1923 and 1924

Province	1923				1924			
	Number of plants	Cost of materials	Value of products	Value added by manufacturing	Number of plants	Cost of materials	Value of products	Value added by manufacturing
		$	$	$		$	$	$
(a) Chemicals and Allied Products—								
Nova Scotia	12	605,434	1,979,976	1,374,545	11	738,681	1,808,531	1,069,850
New Brunswick	8	873,782	1,457,091	583,909	9	746,892	1,300,114	553,222
Quebec	138	19,561,172	37,963,779	18,402,607	129	18,722,758	36,253,426	17,530,668
Ontario	252	28,776,033	60,954,034	32,178,091	244	28,735,764	59,046,932	30,311,168
Manitoba	25	1,876,286	3,963,246	2,086,960	25	2,300,182	4,414,528	2,114,346
Saskatchewan, Alberta	11	249,548	467,370	217,822	10	231,562	463,092	228,530
British Columbia	29	2,695,810	4,458,060	1,762,250	29	2,833,074	4,930,614	2,097,540
Canada	**475**	**51,638,062**	**111,244,156**	**56,606,094**	**457**	**54,311,913**	**108,217,237**	**53,935,324**
(b) Other Industries Using Chemical Processes—								
Prince Edward Island	5	7,120	24,681	17,561	5	42,916	75,818	32,902
Nova Scotia	34	16,976,879	22,633,991	5,657,112	33	12,514,346	18,118,518	5,604,172
New Brunswick	34	16,737,698	24,326,717	7,589,049	33	15,732,180	22,753,122	7,020,942
Quebec	233	77,193,910	172,657,034	95,464,024	221	77,390,839	*151,054,230	*73,663,391
Ontario	504	114,740,555	217,312,239	102,571,684	486	114,462,348	*180,719,388	*66,257,040
Manitoba	75	3,189,487	7,014,101	3,824,614	67	3,862,027	9,703,849	5,841,822
Saskatchewan, Alberta	35	4,902,065	8,625,744	3,723,679	89	11,435,030	19,789,099	8,354,069
British Columbia	64	2,317,222	5,562,164	3,244,942				
	153	25,859,412	42,031,639	16,172,227	131	21,219,722	*39,208,781	*17,989,059
Canada	**1,137**	**261,924,348**	**509,189,210**	**238,261,892**	**1,065**	**256,659,408**	**498,834,251**	**242,174,843**
(c) Grand Total—								
Prince Edward Island	5	7,120	24,681	17,561	5	42,916	75,818	32,902
Nova Scotia	46	17,582,310	24,613,967	7,031,657	44	13,253,027	19,927,049	6,674,022
New Brunswick	42	17,611,480	25,784,438	8,172,958	42	16,479,072	24,053,236	7,574,164
Quebec	371	96,755,082	210,621,713	113,866,631	350	96,113,597	*187,307,656	*91,194,059
Ontario	756	143,516,588	278,266,273	134,749,685	730	143,198,112	*239,766,320	*96,568,208
Manitoba	100	5,065,773	10,977,347	5,911,574	92	6,162,209	14,118,377	7,956,168
Saskatchewan, Alberta	110	7,468,835	14,655,278	7,186,443	99	11,669,592	20,252,191	8,582,599
British Columbia	182	28,555,222	46,489,699	17,934,477	160	24,052,796	*34,139,395	*20,086,599
Canada	**1,612**	**316,562,410**	**611,433,396**	**294,870,986**	**1,522**	**310,971,321**	**607,051,488**	**296,080,167**

*Data for the value of products and for the value added by manufacturing in the rubber footwear and rubber goods industry are not included in the provincial totals but they are included in the Canada totals.

Table 2.—Historical Summary of the Chemicals and Allied Products Industry in Canada, 1880-1924

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of materials	Value of products	Value added by manufacturing
		$		$	$	$	$
1880-81	474	3,449,287	2,340	711,413	3,516,364	5,836,556	2,320,192
1891	143	5,317,777	2,318	926,580	–	7,459,511	–
1901	136	8,444,975	2,389	832,972	–	9,132,990	–
1911	225	28,574,364	5,352	2,384,563	13,775,634	27,243,926	13,468,292
1917	419	106,838,052	13,126	9,996,022	56,994,355	114,982,473	57,988,118
1918	431	108,121,600	14,836	15,113,533	77,592,651	149,273,449	71,680,798
1919	429	111,700,019	15,607	16,384,429	50,384,133	98,554,310	48,170,177
1920	457	118,840,897	17,283	21,736,132	62,838,463	124,545,772	61,707,309
1921	469	118,705,489	12,669	16,279,589	43,345,790	88,901,547	45,555,757
1922	469	118,025,483	14,084	16,770,803	46,919,968	95,944,185	49,024,217
1923	475	126,537,481	15,149	18,433,679	54,638,062	111,244,156	56,606,094
1924	457	126,495,685	13,796	17,071,529	54,311,913	108,217,237	53,935,324

Table 3.—Imports into Canada and Exports of Chemicals and Allied Products during the Fiscal Years ending March 31, 1895-1925

Imports					Exports				
Fiscal Years	United Kingdom	United States	Other Countries	**Total Imports**	Fiscal Years	United Kingdom	United States	Other Countries	**Total Exports**
	$	$	$	$		$	$	$	$
1895.....	1,174,408	1,614,921	679,871	**3,469,200**	1895...	204,089	199,876	58,306	**462,271**
1896.....	1,276,645	1,761,582	802,579	**3,840,806**	1896...	240,574	182,026	59,061	**481,661**
1897.....	1,205,029	1,853,837	745,691	**3,804,557**	1897...	142,329	157,802	82,810	**382,941**
1898.....	1,311,441	2,199,559	995,061	**4,506,061**	1898...	120,834	172,360	99,614	**392,808**
1899.....	1,479,598	2,450,280	1,046,541	**4,976,419**	1899...	172,782	197,723	129,402	**499,907**
1900.....	1,743,473	2,674,519	1,007,355	**5,425,347**	1900...	232,025	114,388	110,517	**456,930**
1901.....	1,770,468	2,927,679	994,417	**5,692,564**	1901...	245,905	377,982	168,088	**791,975**
1902.....	1,601,971	3,373,581	1,268,421	**6,243,973**	1902...	240,375	581,741	181,308	**1,003,424**
1903.....	1,849,785	3,757,950	1,376,794	**6,984,529**	1903...	213,173	653,954	268,217	**1,135,344**
1904.....	1,828,884	3,830,826	1,443,799	**7,103,509**	1904...	178,779	707,603	324,977	**1,211,359**
1905.....	1,988,784	4,106,188	1,467,730	**7,562,702**	1905...	292,171	777,721	332,725	**1,492,617**
1906.....	2,395,823	4,358,284	1,497,271	**8,251,378**	1906...	411,925	902,430	470,445	**1,784,800**
1907.....	2,422,444	3,502,662	1,134,719	**7,059,825**	1907...	327,688	712,524	320,991	**1,361,203**
1908.....	3,345,643	5,030,924	1,537,668	**9,914,235**	1908...	343,776	1,052,636	592,043	**1,988,455**
1909.....	3,016,650	5,096,238	1,308,063	**9,120,951**	1909...	358,472	1,073,620	612,376	**2,044,468**
1910.....	3,236,106	6,141,469	1,394,134	**10,771,709**	1910...	527,404	1,483,934	656,169	**2,667,507**
1911.....	3,553,692	6,981,961	1,954,123	**12,489,776**	1911...	543,300	1,684,008	673,071	**2,900,379**
1912.....	3,860,127	7,940,071	2,130,729	**13,930,927**	1912...	504,691	1,606,411	863,473	**2,974,575**
1913.....	4,411,455	10,220,001	3,011,005	**17,642,461**	1913...	613,595	2,270,631	934,196	**3,818,422**
1914.....	4,293,412	9,583,462	3,227,519	**17,104,393**	1914...	496,469	3,169,015	968,057	**4,633,541**
1915.....	3,061,189	9,907,278	1,418,379	**14,386,846**	1915...	649,334	3,749,631	893,016	**5,291,981**
1916.....	2,957,776	15,192,511	1,108,039	**19,258,326**	1916...	7,640,515	6,757,005	1,550,960	**15,948,480**
1917.....	4,183,090	23,151,423	1,338,485	**28,672,998**	1917...	32,593,751	15,137,772	4,861,412	**52,592,935**
1918.....	3,316,961	23,262,817	1,260,798	**27,840,576**	1918...	27,856,626	17,576,572	3,697,886	**49,131,084**
1919.....	3,397,095	28,719,765	2,165,787	**34,282,647**	1919...	20,176,855	30,671,606	5,951,338	**56,799,799**
1920.....	4,154,345	23,854,300	1,877,457	**29,886,102**	1920...	3,595,936	13,803,067	5,182,046	**22,581,049**
1921.....	6,048,717	26,776,364	3,509,531	**36,334,612**	1921...	3,225,947	11,694,858	4,661,246	**19,582,051**
1922.....	3,238,465	17,088,482	3,114,938	**24,041,885**	1922...	939,529	5,937,114	2,394,384	**9,271,027**
1923.....	3,636,013	18,414,962	3,742,126	**25,793,101**	1923...	1,984,441	7,951,543	4,110,956	**14,046,940**
1924.....	4,203,320	18,409,812	3,474,903	**26,088,041**	1924...	3,188,187	7,598,432	4,773,337	**15,559,956**
1925.....	4,146,061	16,366,165	4,248,011	**24,760,237**	1925...	3,805,628	7,826,076	4,578,116	**16,209,820**

Table 4.—Principal Statistics Relative to the Manufacture of Chemicals and Allied Products in Canada, by Industries and by Provinces, 1923

Industry	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan and Alberta	British Columbia	*Canada
COAL TAR AND ITS PRODUCTS—								
Number of plants	1	–	4	6	2	–	1	14
Capital employed $	–	–	1,406,428	937,156	–	–	–	3,205,780
Number of salaried employees—								
Male	–	–	14	12	–	–	–	34
Female	–	–	2	6	–	–	–	11
Number of wage-earners—								
Male	–	–	89	42	–	–	–	193
Female	–	–	–	1	–	–	–	1
Total employees	–	–	105	61	–	–	–	239
Salaries $	–	–	47,231	35,723	–	–	–	103,440
Wages $	–	–	101,788	53,906	–	–	–	231,525
Total $	–	–	149,019	89,719	–	–	–	334,965
Cost of fuel and electricity $	–	–	39,007	31,708	–	–	–	103,458
Cost of materials $	–	–	694,509	374,548	–	–	–	1,381,724
Value of products $	–	–	1,187,706	936,860	–	–	–	3,166,100
ACIDS, ALKALIES, SALTS AND COMPRESSED GASES—								
Number of plants	3	–	13	21	4	1	5	47
Capital employed $	–	–	9,572,182	25,132,713	503,628	–	641,348	36,436,315
Number of salaried employees—								
Male	–	–	121	273	15	–	13	437
Female	–	–	22	47	0	–	2	83
Number of wage-earners—								
Male	–	–	550	1,603	18	–	35	2,227
Female	–	–	27	14	–	–	–	41
Total employees	–	–	720	1,937	39	–	50	2,788
Salaries $	–	–	287,628	573,419	34,734	–	27,537	963,323
Wages $	–	–	508,015	2,108,129	21,297	–	59,639	2,817,120
Total $	–	–	885,643	2,681,548	56,031	–	87,176	3,780,443
Cost of fuel and electricity $	–	–	581,683	1,427,911	14,432	–	10,953	2,050,538
Cost of materials used—								
Purchased $	–	–	1,633,141	3,086,916	71,116	–	88,043	4,994,186
Firms' own make $	–	–	43,100	6,599,035	–	–	–	6,642,135
Total $	–	–	1,676,241	9,685,951	71,116	–	88,043	11,636,321
Value of products—								
Made for sale $	–	–	3,913,070	12,523,636	215,617	–	311,346	17,271,169
Made for use $	–	–	42,195	6,599,628	–	–	–	6,641,823
Total $	–	–	3,955,265	19,123,264	215,617	–	311,346	23,912,992
EXPLOSIVES, AMMUNITION, FIREWORKS AND MATCHES—								
Number of plants	–	–	8	8	–	–	2	18
Capital employed $	–	–	10,326,950	1,387,244	.	–	–	13,820,102
Number of salaried employees—								
Male	–	–	141	57	–	–	–	238
Female	–	–	14	4	–	–	–	21
Number of wage-earners—								
Male	–	–	1,035	194	–	–	–	1,352
Female	–	–	560	119	–	–	–	679
Total employees	–	–	1,750	374	–	–	–	2,290
Salaries $	–	–	216,673	110,366	–	–	–	426,903
Wages $	–	–	1,383,627	155,530	–	–	–	1,705,094
Total $	–	–	1,600,300	265,896	–	–	–	2,131,997
Cost of fuel and electricity $	–	–	223,027	8,502	–	–	–	279,489
Cost of materials used—								
Purchased $	–	–	3,547,059	580,513	–	–	–	4,981,760
Firms' own make $	–	–	3,529,700	–	–	–	–	4,288,881
Total $	–	–	7,076,759	580,513	–	–	–	9,270,641
Value of products—								
Made for sale $	–	–	7,619,171	1,027,980	–	–	–	10,139,509
Made for use $	–	–	3,529,700	–	–	–	–	4,288,881
Total $	–	–	11,148,871	1,027,980	–	–	–	14,428,390
FERTILIZERS—								
Number of plants	3	2	2	8	1	–	2	18
Capital employed $	1,388,607	–	–	935,068	-	–	–	3,616,001
Number of salaried employees—								
Male	26	–	–	41	–	–	–	84
Female	7	–	–	4	–	–	–	14
Number of wage-earners—								
Male	111	–	–	66	–	–	–	229
Female	1	–	–	1	–	–	–	2
Total employees	145	–	–	112	–	–	–	329
Salaries $	58,683	–	–	58,746	–	–	–	152,134
Wages $	56,917	–	–	54,824	–	–	–	158,387
Total $	115,600	–	–	113,570	–	–	–	310,411
Cost of fuel and electricity $	22,523	–	–	12,588	–	–	–	39,638
Cost of materials $	191,810	–	–	405,077	–	–	–	831,470
Value of products $	396,520	–	–	670,850	–	–	–	1,487,244

*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.—Principal Statistics Relative to the Manufacture of Chemicals and Allied Products in Canada, by Industries and by Provinces, 1923—Continued

Industry	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan and Alberta	British Columbia	*Canada
MEDICINAL AND PHARMACEUTICAL PREPARATIONS—								
Number of plants	1	1	30	65	6	–	1	**101**
Capital employed $	–	–	2,449,201	9,078,837	2,726,479	–	–	**14,655,699**
Number of salaried employees—								
Male	–	–	152	377	10	–	–	**552**
Female	–	–	39	194	24	–	–	**258**
Number of wage-earners—								
Male	–	–	130	434	51	–	–	**620**
Female	–	–	221	551	55	–	–	**841**
Total employees	–	–	542	1,556	140	–	–	**2,271**
Salaries $	–	–	418,115	1,047,956	54,184	–	–	**1,541,560**
Wages $	–	–	236,420	789,803	89,781	–	–	**1,126,181**
Total $	–	–	654,535	1,837,759	143,965	–	–	**2,667,741**
Cost of fuel and electricity $	–	–	17,457	66,518	7,440	–	–	**91,895**
Cost of materials $	–	–	1,101,653	2,730,821	570,888	–	–	**4,474,187**
Value of products $	–	–	2,766,739	7,841,435	1,439,520	–	–	**12,256,608**
PAINTS, PIGMENTS AND VARNISHES—								
Number of plants	1	–	14	29	3	1	9	**57**
Capital employed $	–	–	11,615,974	6,539,289	646,604	–	1,418,292	**20,806,909**
Number of salaried employees—								
Male	–	–	258	322	49	–	57	**698**
Female	–	–	97	103	13	–	14	**230**
Number of wage-earners—								
Male	–	–	815	433	91	–	72	**1,467**
Female	–	–	114	56	10	–	11	**196**
Total employees	–	–	1,284	914	163	–	154	**2,591**
Salaries $	–	–	931,546	867,687	99,570	–	129,657	**2,052,381**
Wages $	–	–	858,890	507,783	109,331	–	94,235	**1,615,442**
Total $	–	–	1,790,436	1,375,470	208,901	–	223,892	**3,665,823**
Cost of fuel and electricity $	–	–	194,130	64,189	17,969	–	5,715	**288,617**
Cost of materials used—								
Purchased $	–	–	5,253,268	3,508,190	540,375	–	501,918	**9,965,145**
Firms' own make $	–	–	76,310	639,875	37,941	–	35,002	**789,428**
Total $	–	–	5,329,578	4,148,065	578,316	–	536,920	**10,754,573**
Value of products—								
Made for sale $	–	–	10,669,160	7,496,166	1,241,054	–	1,029,097	**20,938,802**
Made for use $	–	–	95,769	445,644	37,941	–	35,002	**614,356**
Total $	–	–	10,764,929	7,941,810	1,278,995	–	1,064,099	**21,554,158**
SOAPS, WASHING COMPOUNDS AND TOILET PREPARATIONS—								
Number of plants	–	1	20	37	3	5	4	**70**
Capital employed $	–	–	2,329,842	10,650,324	–	410,089	398,819	**15,668,592**
Number of salaried employees—								
Male	–	–	78	308	–	26	13	**471**
Female	–	–	30	127	–	2	3	**175**
Number of wage-earners—								
Male	–	–	196	621	–	24	33	**966**
Female	–	–	149	277	–	10	13	**470**
Total employees	–	–	453	1,333	–	62	62	**2,082**
Salaries $	–	–	250,107	728,591	–	29,085	29,728	**1,145,547**
Wages $	–	–	263,854	842,993	–	32,186	44,300	**1,314,108**
Total $	–	–	513,961	1,571,584	–	61,271	74,028	**2,159,655**
Cost of fuel and electricity $	–	–	48,485	250,680	–	4,182	4,110	**348,377**
Cost of materials $	–	–	1,569,326	6,205,660	–	216,709	286,100	**9,400,752**
Value of products $	–	–	3,276,189	12,021,180	–	376,717	470,623	**17,909,011**
INKS, DYES AND COLOURS—								
Number of plants	–	1	7	12	2	1	3	**26**
Capital employed $	–	–	493,752	1,671,099	–	–	18,830	**2,252,370**
Number of salaried employees—								
Male	–	–	23	84	–	–	1	**112**
Female	–	–	11	18	–	–	–	**30**
Number of wage-earners—								
Male	–	–	30	175	–	–	2	**216**
Female	–	–	40	16	–	–	1	**57**
Total employees	–	–	104	293	–	–	4	**415**
Salaries $	–	–	52,951	315,887	–	–	1,400	**382,272**
Wages $	–	–	53,902	213,960	–	–	2,713	**277,061**
Total $	–	–	106,853	529,847	–	–	4,113	**659,336**
Cost of fuel and electricity $	–	–	5,204	17,023	–	–	171	**22,993**
Cost of materials $	–	–	229,839	859,466	–	–	17,022	**1,141,102**
Value of products $	–	–	673,485	2,083,290	–	–	55,867	**2,876,347**

*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 includedi n the Canada totals for each industry.

Table 4.—Principal Statistics Relative to the Manufacture of Chemicals and Allied Products in Canada, by Industries and by Provinces, 1923—Concluded

Industry	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan and Alberta	British Columbia	*Canada
WOOD DISTILLATES AND EXTRACTS—								
Number of plants	–	–	4	5	–	–	–	9
Capital employed $	–	–	1,442,119	1,371,926	–	–	–	2,814,045
Number of salaried employees—								
Male	–	–	11	12	–	–	–	23
Female	–	–	2	1	–	–	–	3
Number of wage-earners—								
Male	–	–	117	201	–	–	–	318
Female	–	–	–	–	–	–	–	–
Total employees	–	–	130	214	–	–	–	344
Salaries $	–	–	20,688	23,108	–	–	–	43,796
Wages $	–	–	119,590	168,610	–	–	–	288,230
Total $	–	–	140,278	191,748	–	–	–	332,026
Cost of fuel and electricity $	–	–	93,682	183,874	–	–	–	277,556
Cost of materials used—								
Purchased $	–	–	156,141	414,232	–	–	–	570,373
Firms' own make $	–	–	406,248	–	–	–	–	406,248
Total $	–	–	562,389	414,232	–	–	–	976,621
Value of products—								
Made for sale $	–	–	1,182,253	999,235	–	–	–	2,181,488
Made for use $	–	–	268,195	293,612	–	–	–	561,807
Total $	–	–	1,450,448	1,292,847	–	–	–	2,743,295
MISCELLANEOUS CHEMICAL INDUSTRIES—								
Number of plants	3	3	36	61	4	3	2	112
Capital employed $	34,570	58,199	2,441,566	10,652,984	51,363	4,558	–	13,261,668
Number of salaried employees—								
Male	5	7	137	371	3	3	–	527
Female	–	8	33	166	1	–	–	208
Number of wage-earners—								
Male	8	3	266	468	4	4	–	755
Female	3	–	80	226	–	–	–	310
Total employees	16	18	516	1,231	8	7	–	1,800
Salaries $	6,112	13,965	267,780	870,677	4,133	2,994	–	1,167,761
Wages $	5,677	2,581	272,574	632,134	5,017	3,240	–	923,491
Total $	11,789	16,546	540,354	1,502,811	9,150	6,234	–	2,091,252
Cost of fuel and electricity $	5,618	1,359	37,123	121,739	243	217	–	166,697
Cost of materials $	7,792	63,834	1,289,527	3,371,700	16,099	10,400	–	4,770,671
Value of products $	35,430	95,633	2,689,094	8,014,518	35,175	21,040	–	10,911,011
ALL INDUSTRIES—								
Number of plants	12	8	138	252	25	11	29	475
Capital employed $	3,235,438	1,608,617	42,170,047	68,356,640	5,546,070	552,920	5,067,749	126,537,481
Number of salaried employees—								
Male	59	35	937	1,857	117	36	135	3,176
Female	17	11	250	670	60	3	22	1,033
Number of wage-earners—								
Male	229	65	3,237	4,237	243	34	298	8,343
Female	16	12	1,191	1,261	78	10	29	2,597
Total employees	321	123	5,615	8,025	498	83	484	15,149
Salaries $	129,175	76,225	2,494,669	4,632,160	285,898	47,126	311,864	7,977,117
Wages $	177,929	73,795	3,892,396	5,527,792	335,979	41,450	407,221	10,456,562
Total $	307,104	150,020	6,387,065	10,159,952	621,877	88,576	719,085	18,433,679
Cost of fuel and electricity $	66,802	22,661	1,239,832	2,184,732	72,504	6,908	75,819	3,669,258
Cost of materials used—								
Purchased $	605,431	873,782	15,505,814	21,537,123	1,838,345	249,548	1,901,627	42,511,670
Firms' own make $	–	–	4,055,358	7,238,910	37,941	–	794,183	12,126,392
Total $	605,431	873,782	19,561,172	28,776,033	1,876,286	249,548	2,695,810	54,638,062
Value of products—								
Made for sale $	1,979,976	1,457,691	34,027,920	53,615,150	3,925,305	467,370	3,663,877	99,137,289
Made for use $	–	–	3,935,859	7,338,884	37,941	–	794,183	12,106,867
Total	1,979,976	1,457,691	37,963,779	60,954,034	3,963,246	467,370	4,458,060	111,244,156

*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 5.—Principal Statistics Relative to the Manufacture of Chemicals and Allied Products in Canada, by Industries and by Provinces, 1924

	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan and Alberta	British Columbia	*Canada
COAL TAR AND ITS PRODUCTS—								
Number of plants	1	–	4	6	2	–	1	14
Capital employed $	–	–	1,407,315	910,367	–	–	–	3,099,995
Number of salaried employees-								
Male	–	–	12	15	–	–	–	32
Female	–	–	1	3	–	–	–	6
Number of wage-earners—								
Male	–	–	71	41	–	–	–	167
Female	–	–	–	3	–	–	–	3
Total employees	–	–	84	62	–	–	–	208
Salaries $	–	–	26,669	33,995	–	–	–	76,343
Wages $	–	–	82,590	57,579	–	–	–	204,385
Total $	–	–	109,259	91,574	–	–	–	280,728
Cost of fuel and electricity $	–	–	39,283	22,439	–	–	–	90,688
Cost of materials $	–	–	534,709	354,357	–	–	–	1,137,497
Value of products $	–	–	922,003	802,154	–	–	–	2,637,573
ACIDS, ALKALIES, SALTS AND COMPRESSED GASES—								
Number of plants	3	–	11	18	4	1	4	41
Capital employed $	–	–	8,992,123	23,550,127	558,895	–	635,491	34,298,071
Number of salaried employees-								
Male	–	–	107	264	12	–	12	411
Female	–	–	23	47	4	–	2	81
Number of wage-earners—								
Male	–	–	511	1,325	16	–	35	1,909
Female	–	–	1	10	–	–	1	12
Total employees	–	–	642	1,646	32	–	50	2,413
Salaries $	–	–	292,815	588,921	30,355	–	28,053	978,483
Wages $	–	–	584,444	1,801,326	22,897	–	57,258	2,490,847
Total $	–	–	877,259	2,390,247	53,252	–	85,311	3,469,320
Cost of fuel and electricity $	–	–	411,456	1,387,754	10,459	–	9,011	1,836,751
Cost of materials used—								
Purchased $	–	–	1,447,095	2,502,120	82,189	–	96,260	4,190,727
Firms' own make $	–	–	39,118	7,382,808	–	–	–	7,435,916
Total $	–	–	1,486,213	9,884,928	82,189	–	96,260	11,616,643
Value of products—								
Made for use $	–	–	39,118	7,391,865	–	–	–	7,437,073
Made for sale $	–	–	6,074,518	11,856,847	206,606	–	389,828	18,804,649
Total $	–	–	6,113,636	19,248,712	206,606	–	389,828	26,241,722
EXPLOSIVES, AMMUNITION, FIREWORKS AND MATCHES—								
Number of plants	–	–	8	8	–	–	2	18
Capital employed $	–	–	12,412,905	1,840,947	–	–	–	20,457,440
Number of salaried employees-								
Male	–	–	138	14	–	–	–	195
Female	–	–	15	8	–	–	–	26
Number of wage-earners								
Male	–	–	1,022	141	–	–	–	1,298
Female	–	–	543	112	–	–	–	655
Total employees	–	–	1,718	275	–	–	–	2,174
Salaries $	–	–	335,391	48,251	–	–	–	488,110
Wages $	–	–	1,247,472	148,401	–	–	–	1,571,532
Total $	–	–	1,582,863	196,652	–	–	–	2,059,642
Cost of fuel and electricity $	–	–	209,097	11,926	–	–	–	277,554
Cost of materials used—								
Purchased $	–	–	3,374,119	481,260	–	–	–	4,192,775
Firms' own make $	–	–	3,186,738	–	–	–	–	4,294,617
Total $	–	–	6,560,857	481,260	–	–	–	8,787,392
Value of products—								
Make for use $	–	–	3,186,738	–	–	–	–	4,294,617
Made for sale $	–	–	6,760,744	757,887	–	–	–	9,015,698
Total $	–	–	9,947,482	757,887	–	–	–	13,310,315
FERTILIZERS—								
Number of plants	1	2	–	7	1	–	3	14
Capital employed $	–	–	–	638,474	–	–	188,018	2,072,488
Number of salaried employees-								
Male	–	–	–	17	–	–	5	38
Female	–	–	–	4	–	–	–	13
Number of wage-earners—								
Male	–	–	–	59	–	–	14	115
Female	–	–	–	–	–	–	–	–
Total employees	–	–	–	80	–	–	19	166
Salaries $	–	–	–	32,480	–	–	10,800	64,176
Wages $	–	–	–	41,431	–	–	17,097	95,134
Total $	–	–	–	73,911	–	–	27,897	159,310
Cost of fuel and electricity $	–	–	–	7,292	–	–	2,458	24,872
Cost of materials $	–	–	–	389,819	–	–	85,650	730,158
Value of products $	–	–	–	636,984	–	–	164,704	1,277,145

*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 5.—Principal Statistics Relative to the Manufacture of Chemicals and Allied Products in Canada, by Industries and by Provinces, 1924—Continued

	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan and Alberta	British Columbia	*Canada
MEDICINAL AND PHARMACEUTICAL PREPARATIONS—								
Number of plants	2	1	28	66	6	–	1	104
Capital employed $	–	–	2,756,992	9,779,555	2,533,955	–	–	15,156,479
Number of salaried employees–								
Male	–	–	98	315	17	–	–	439
Female	–	–	32	175	14	–	–	222
Number of wage-earners—								
Male	–	–	161	431	44	–	–	645
Female	–	–	240	582	44	–	–	887
Total employees	–	–	531	1,503	119	–	–	2,193
Salaries $	–	–	366,501	1,044,127	48,075	–	–	1,441,005
Wages $	–	–	288,625	828,824	86,203	–	–	1,222,992
Total $	–	–	655,126	1,842,951	134,368	–	–	2,666,997
Cost of fuel and electricity $	–	–	26,549	59,180	7,194	–	–	93,391
Cost of materials $	–	–	1,116,655	3,088,228	649,656	–	–	4,895,352
Value of products $	–	–	2,996,562	8,617,695	1,537,100	–	–	13,350,347
PAINTS, PIGMENTS AND VARNISHES—								
Number of plants	1	–	14	26	4	1	9	55
Capital employed $	–	–	11,214,334	6,691,837	887,766	–	1,195,291	20,587,856
Number of salaried employees–								
Male	–	–	218	295	40	–	33	599
Female	–	–	63	81	10	–	18	175
Number of wage-earners—								
Male	–	–	699	411	92	–	83	1,340
Female	–	–	97	56	9	–	7	173
Total employees	–	–	1,077	843	151	–	141	2,287
Salaries $	–	–	631,153	793,435	98,969	–	86,135	1,632,342
Wages $	–	–	677,791	495,422	111,009	–	82,970	1,411,886
Total $	–	–	1,308,947	1,288,857	209,978	–	169,105	3,044,228
Cost of fuel and electricity $	–	–	173,012	78,383	17,021	–	6,752	282,654
Cost of materials used—								
Purchased $	–	–	5,080,840	3,163,761	659,765	–	475,476	9,778,525
Firms' own make $	–	–	395,364	1,173,664	299,146	–	28,138	1,896,312
Total $	–	–	5,485,204	4,337,425	958,911	–	503,614	11,674,837
Value of products—								
Made for use $	–	–	450,807	1,212,464	321,734	–	28,138	2,013,143
Made for sale $	–	–	8,474,853	6,863,691	1,217,209	–	1,006,298	18,187,681
Total $	–	–	8,925,660	8,076,155	1,538,943	–	1,034,436	20,200,824
SOAPS, WASHING COMPOUNDS AND TOILET PREPARATIONS—								
Number of plants	–	1	20	33	3	5	4	66
Capital employed $	–	–	3,005,476	10,821,939	1,181,682	407,450	–	16,367,069
Number of salaried employees–								
Male	–	–	125	232	38	18	–	443
Female	–	–	42	100	10	1	–	158
Number of wage-earners—								
Male	–	–	192	564	50	22	–	899
Female	–	–	119	242	12	9	–	404
Total employees	–	–	478	1,138	110	50	–	1,904
Salaries $	–	–	321,807	604,316	68,739	28,481	–	1,093,495
Wages $	–	–	258,674	786,455	92,639	35,851	–	1,265,565
Total $	–	–	580,481	1,390,771	161,378	64,332	–	2,359,060
Cost of fuel and electricity $	–	–	49,263	183,931	21,324	4,480	–	280,104
Cost of materials $	–	–	1,683,124	5,518,798	480,500	214,313	–	8,782,085
Value of products $	–	–	3,448,408	9,889,493	838,114	386,368	–	15,965,318
INKS, DYES AND COLOURS—								
Number of plants	–	1	6	11	2	1	3	24
Capital employed $	–	–	422,005	1,882,515	–	–	20,270	2,391,859
Number of salaried employees–								
Male	–	–	13	70	–	–	1	88
Female	–	–	6	19	–	–	–	26
Number of wage-earners—								
Male	–	–	28	183	–	–	3	221
Female	–	–	30	12	–	–	–	42
Total employees	–	–	77	284	–	–	4	377
Salaries $	–	–	41,244	293,972	–	–	1,600	347,827
Wages $	–	–	54,971	221,206	–	–	2,932	384,780
Total $	–	–	96,215	515,178	–	–	4,532	632,607
Cost of fuel and electricity $	–	–	6,221	21,611	–	–	258	28,749
Cost of materials $	–	–	200,518	693,378	–	–	15,205	942,325
Value of products $	–	–	556,693	1,984,887	–	–	53,471	2,656,400

*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 5.—Principal Statistics Relative to the Manufacture of Chemicals and Allied Products in Canada, by Industries and by Provinces, 1924—Concluded

Industry	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan and Alberta	British Columbia	*Canada
WOOD DISTILLATES AND EXTRACTS—								
Number of plants	–	–	6	6	–	–	–	12
Capital employed $	–	–	1,387,072	1,397,609	–	–	–	2,784,681
Number of salaried employees–								
Male	–	–	11	12	–	–	–	23
Female	–	–	1	–	–	–	–	1
Number of wage-earners—								
Male	–	–	116	226	–	–	–	342
Female	–	–	–	1	–	–	–	1
Total employees	–	–	128	239	–	–	–	367
Salaries $	–	–	19,650	21,732	–	–	–	41,382
Wages $	–	–	107,803	234,865	–	–	–	342,668
Total $	–	–	127,453	256,597	–	–	–	384,050
Cost of fuel and electricity $	–	–	82,475	166,341	–	–	–	248,816
Cost of materials used—								
Purchased $	–	–	156,397	435,990	–	–	–	592,387
Firms' own make $	–	–	333,606	129,665	–	–	–	463,271
Total $	–	–	490,003	565,655	–	–	–	1,055,658
Value of products—								
Made for use $	–	–	185,351	263,616	–	–	–	448,967
Made for sale $	–	–	859,755	974,700	–	–	–	1,834,455
Total $	–	–	1,045,106	1,238,316	–	–	–	2,283,422
MISCELLANEOUS CHEMICAL INDUSTRIES—								
Number of plants	3	4	32	63	3	2	2	109
Capital employed $	43,190	52,862	2,449,894	6,637,090	62,037	–	–	9,279,747
Number of salaried employees–								
Male	4	1	111	307	2	–	–	427
Female	–	1	31	160	–	–	–	192
Number of wage-earners—								
Male	10	9	257	468	4	–	–	752
Female	2	5	112	216	–	–	–	336
Total employees	16	16	511	1,151	6	–	–	1,707
Salaries $	3,672	2,340	242,916	808,868	3,240	–	–	1,061,636
Wages $	6,010	17,098	273,307	647,048	3,695	–	–	953,951
Total $	9,682	19,438	516,223	1,455,916	6,935	–	–	2,018,587
Cost of fuel and electricity $	5,437	2,292	37,862	110,582	18	–	–	156,871
Cost of materials $	7,617	57,375	1,165,385	3,421,916	10,605	–	–	4,689,966
Value of products $	32,769	74,334	2,297,876	7,794,649	28,359	–	–	10,294,171
ALL INDUSTRIES—								
Number of plants	11	9	129	244	25	10	29	457
Capital employed $	2,058,565	1,305,674	44,048,116	64,150,460	5,457,453	538,090	8,937,327	126,495,685
Number of salaried employees–								
Male	41	30	833	1,541	114	26	110	2,695
Female	13	8	214	597	40	2	26	900
Number of wage-earners—								
Male	143	63	3,057	3,849	225	28	323	7,688
Female	12	24	1,142	1,234	65	9	27	2,513
Total employees	209	125	5,246	7,221	444	65	486	13,796
Salaries $	74,808	50,893	2,278,146	4,240,097	264,466	44,169	269,130	7,230,799
Wages $	130,395	85,914	3,575,680	5,262,557	339,405	43,267	406,512	9,843,730
Total $	205,293	145,807	5,853,826	9,502,654	603,871	87,436	675,642	17,074,529
Cost of fuel and electricity $	51,270	20,356	1,035,718	2,049,439	71,329	6,431	86,407	3,320,450
Cost of materials used—								
Purchased $	734,691	746,892	14,767,932	20,049,627	2,001,036	234,562	1,691,807	40,226,547
Firms' own make $	3,990	–	3,954,826	8,686,137	299,146	–	1,141,267	14,085,366
Total $	738,681	746,892	18,722,758	28,735,764	2,300,182	234,562	2,833,074	54,311,913
Value of products—								
Made for use $	782,642	–	3,862,014	8,867,945	321,734	–	1,141,267	14,199,050
Made for sale $	1,075,889	1,300,114	32,391,412	50,178,987	4,092,794	463,092	3,789,347	91,018,187
Total $	1,858,531	1,300,114	36,253,426	59,046,932	4,414,528	463,092	4,930,614	108,217,237

*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 6.—Capital Employed in the Manufacture of Chemicals and Allied Products, by Industries, 1923 and 1924

Industry	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
	$	$	$	$	$	$	$	$
Coal tar and its products	1,869,124	528,091	808,565	3,205,780	1,871,253	593,677	635,065	3,099,995
Acids, alkalies, salts and compressed gases	26,766,619	5,475,706	4,193,990	36,436,315	24,478,840	5,395,464	4,423,767	34,298,071
Explosives, ammunition, fireworks and matches	8,834,050	2,875,211	2,110,841	13,820,102	10,213,178	2,975,745	7,268,517	20,457,440
Fertilizers	953,609	770,117	1,892,275	3,616,001	567,284	445,261	1,059,943	2,072,488
Medicinal and pharmaceutical preparations	3,941,122	4,002,365	6,712,212	14,655,699	5,331,381	4,034,966	5,790,132	15,156,479
Paints, pigments and varnishes	8,171,261	6,332,181	6,303,467	20,806,909	8,616,235	5,741,253	6,230,368	20,587,856
Soaps, washing compounds and toilet preparations	8,463,524	4,854,098	2,550,970	15,668,592	8,681,619	5,095,295	2,607,155	16,367,069
Inks, dyes and colours	1,026,294	539,262	686,834	2,252,370	1,195,411	527,521	668,927	2,391,859
Wood distillates and extracts	2,106,297	357,135	350,613	2,814,045	2,453,045	322,692	8,944	2,784,681
Miscellaneous chemical industries	6,895,015	2,408,984	3,957,669	13,261,668	4,679,501	2,522,992	2,077,254	9,279,747
All Industries	**69,026,915**	**27,943,150**	**29,567,416**	**126,537,481**	**68,070,747**	**27,654,866**	**30,770,072**	**126,495,685**

Table 7.—Capital Employed in the Manufacture of Chemicals and Allied Products, 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
	$	$	$	$	$	$	$	$
Nova Scotia	1,363,365	629,077	1,242,996	3,235,438	1,112,725	594,103	351,737	2,058,565
New Brunswick	300,591	438,799	869,227	1,608,617	295,529	311,627	698,518	1,305,674
Quebec	24,012,884	9,841,166	8,316,003	42,170,047	24,336,457	9,715,094	9,976,565	44,018,116
Ontario	38,110,030	13,894,508	16,352,102	68,356,640	35,675,558	13,756,971	14,717,931	64,150,460
Manitoba	2,246,144	1,687,197	1,612,729	5,546,070	2,487,099	1,706,002	1,264,352	5,457,453
Alberta and Saskatchewan	296,888	206,033	49,999	552,920	312,375	181,647	44,068	538,090
British Columbia	2,697,013	1,246,376	1,124,360	5,067,749	3,851,004	1,389,422	3,716,901	8,957,327
Canada	**69,026,915**	**27,943,150**	**29,567,416**	**126,537,481**	**68,070,747**	**27,654,866**	**30,770,072**	**126,495,685**

Table 8.—Number of Wage-Earners Employed in the Manufacture of Chemicals and Allied Products in Canada, by Months and by Industries, 1923

Month	Coal tar and its products	Acids, alkalies, salts and compressed gases	Explosives, ammunition, fireworks and matches	Fertilizers	Medicinal and pharmaceutical preparations
January	156	2,028	2,009	216	1,339
February	155	2,078	1,906	270	1,392
March	178	2,186	1,958	314	1,459
April	236	2,303	1,992	350	1,447
May	283	2,453	1,973	302	1,436
June	217	2,561	1,925	159	1,416
July	214	2,453	2,043	166	1,375
August	187	2,219	2,023	170	1,483
September	188	2,276	2,056	164	1,531
October	180	2,260	2,111	183	1,546
November	136	2,192	1,868	194	1,545
December	180	2,147	1,891	228	1,404
Average	**194**	**2,288**	**2,031**	**231**	**1,461**

Continued on page 28

Table 8.—Number of Wage-earners Employed in the Manufacture of Chemicals and Allied Products in Canada, by Months and by Industries, 1923—Concluded

Month	Paints, pigments and varnishes	Soaps, washing compounds and toilet preparations	Inks, dyes and colours	Wood distillates and extracts	Miscellaneous chemical industries	All industries
January	1,586	1,308	271	357	1,014	10,284
February	1,645	1,364	271	351	1,042	10,474
March	1,690	1,381	274	376	1,099	10,915
April	1,724	1,404	276	255	1,093	11,080
May	1,793	1,432	279	238	1,113	11,302
June	1,752	1,449	272	284	1,069	11,104
July	1,672	1,410	260	234	1,026	10,853
August	1,581	1,451	269	269	1,003	10,655
September	1,583	1,509	275	287	1,016	10,885
October	1,612	1,514	279	376	1,062	11,123
November	1,622	1,437	265	368	1,059	10,686
December	1,630	1,498	278	410	1,055	10,721
Average	**1,663**	**1,436**	**273**	**318**	**1,065**	**10,940**

Table 9.—Number of Wage-Earners Employed in the Manufacture of Chemicals and Allied Products in Canada, by Months and by Industries, 1924

Month	Coal tar and its products	Acids, alkalies, salts and compressed gases	Explosives, ammunition, fireworks and matches	Fertilizers	Medicinal and pharmaceutical preparations
January	148	1,989	1,841	91	1,487
February	164	1,961	1,863	108	1,495
March	185	1,874	1,856	165	1,559
April	216	1,870	1,888	166	1,492
May	237	1,887	1,911	137	1,481
June	188	1,912	1,958	104	1,450
July	170	1,989	1,966	85	1,490
August	133	1,960	1,898	86	1,505
September	164	1,902	1,821	110	1,625
October	163	1,907	1,353	95	1,620
November	161	1,930	1,539	114	1,567
December	126	1,858	1,645	102	1,501
Average	**170**	**1,921**	**1,953**	**115**	**1,532**

Month	Paints, pigments and varnishes	Soaps, washing compounds and toilet preparations	Inks, dyes and colours	Wood distillates and extracts	Miscellaneous chemical industries	All industries
January	1,503	1,371	268	434	1,074	10,206
February	1,558	1,342	266	362	1,068	10,187
March	1,621	1,361	269	272	1,102	10,261
April	1,598	1,316	276	333	1,078	10,233
May	1,593	1,261	266	291	1,093	10,157
June	1,571	1,236	262	243	1,052	10,026
July	1,540	1,271	256	327	1,025	10,119
August	1,429	1,270	254	302	1,018	9,855
September	1,395	1,314	262	335	1,019	9,918
October	1,415	1,308	267	375	1,028	9,531
November	1,450	1,265	259	388	1,058	9,731
December	1,453	1,218	256	398	1,029	9,616
Average	**1,513**	**1,303**	**263**	**343**	**1,088**	**10,201**

Table 10.—Number of Wage-Earners Working in Month of Greatest Employment, Classified According to the Number of Hours Worked per Day in the Chemicals and Allied Products Industry in Canada, by Provinces and by Industries, 1924

Province and industry	1924			
	Number of wage-earners working			
	8 hours or less per day	9 hours	10 hours	Over 10 hours
(a) By Provinces—				
Nova Scotia	75	113	10	37
New Brunswick	29	47	2	1
Quebec	1,269	2,518	884	109
Ontario	2,325	2,645	948	182
Manitoba	222	41	49	7
Saskatchewan and Alberta	41	–	–	1
British Columbia	257	127	20	23
Canada	**4,218**	**5,491**	**1,913**	**360**
(b) By Industries—				
Coal tar and its products	178	11	–	86
Acids, alkalies, salts and compressed gases	984	1,136	144	65
Explosives, ammunition, fireworks and matches	273	1,285	606	75
Fertilizers	36	59	64	9
Medicinal and pharmaceutical preparations	980	789	32	4
Paints, pigments and varnishes	551	953	143	49
Soaps, washing compounds and toilet preparations	513	763	117	27
Inks, dyes and colours	172	117	1	–
Wood distillates and extracts	2	3	514	1
Miscellaneous chemical industries	529	375	292	44
All industries	**4,218**	**5,491**	**1,913**	**360**

Table 11.—Fuel and Electricity Used in the Manufacture of Chemicals and Allied Products in Canada, by Kinds and by Industries, 1923

Industry	Anthracite coal	Bituminous coal	Coke	Fuel oil and gasoline	Gas	Wood	Other fuel	Electricity	Total value
	Tons	Tons	Tons	Gals.	M. cu.ft.	Cords	$	$	$
Coal Tar and its Products—									
Quantity	30	11,542	–	104,205	45	1,003	–	–	–
Value $	470	79,277	–	6,598	60	4,293	6,087	6,673	103,458
Acids, Alkalies, Salts and Compressed Gases—									
Quantity	1,101	81,111	27,960	88,715	48,131	40	–	–	–
Value $	8,479	527,465	265,488	11,504	4,494	255	–	1,232,853	2,050,538
Explosives, Ammunition, Fireworks and Matches—									
Quantity	3,376	21,182	118	781,209	3,459	899	–	–	–
Value $	24,130	160,725	2,204	33,700	5,002	3,303	–	50,425	279,489
Fertilizers—									
Quantity	153	4,894	18	3,400	–	201	–	–	–
Value $	1,637	32,912	252	1,070	–	867	450	2,450	39,638
Medicinal and Pharmaceutical Preparations—									
Quantity	1,178	5,600	–	7,390	4,371	118	–	–	–
Value $	11,301	44,798	–	948	3,634	728	1,764	28,722	91,895
Paints, Pigments and Varnishes—									
Quantity	435	22,459	3,128	257,208	983	581	–	–	–
Value $	5,162	171,150	42,949	22,804	1,094	2,038	1,511	41,909	288,617
Soaps, Washing Compounds and Toilet Preparations—									
Quantity	532	43,725	71	4,450	577	67	–	–	–
Value $	5,011	293,266	868	1,435	430	311	5,790	41,266	348,377
Inks, Dyes and Colours—									
Quantity	491	1,115	103	–	315	13	–	–	–
Value $	3,403	10,305	1,761	–	419	117	–	7,288	22,993
Wood Distillates and Extracts—									
Quantity	–	30,333	3,310	–	–	6,505	–	–	–
Value $	–	233,709	14,871	–	–	25,764	3,212	–	277,556
Miscellaneous Chemical Industries—									
Quantity	2,240	15,725	2	1,027	8,457	381	–	–	–
Value $	21,497	107,878	14	260	6,187	1,878	660	28,323	166,697
Total....Quantity	**9,236**	**237,686**	**34,710**	**1,247,634**	**66,338**	**9,808**	–	–	–
Value $	**80,790**	**1,661,485**	**328,407**	**78,319**	**21,320**	**39,554**	**19,474**	**1,439,909**	**3,669,258**

Table 12.—Fuel and Electricity Used in the Manufacture of Chemicals and Allied Products in Canada, by Kinds and by Industries, 1924

Industry	Anthracite coal	Bituminous coal	Coke	Fuel oil and gasoline	Gas	Wood	Other fuel	Electricity	Total value
	Tons	Tons	Tons	Gals.	M cu.ft.	Cords	$	K.W.H.	$
COAL TAR AND ITS PRODUCTS—									
Quantity	1,027	7,304	-	244,364	20	1,813	-	179,503	-
Value $	15,662	46,383	-	17,703	23	6,253	-	4,664	90,688
ACIDS, ALKALIES, SALTS AND COMPRESSED GASES—									
Quantity	1,233	89,010	9,240	84,427	255	7	-	555,276,553	-
Value $	8,329	450,697	74,871	10,192	228	14	173	1,292,247	1,836,751
EXPLOSIVES, AMMUNITION, FIREWORKS AND MATCHES—									
Quantity	7,864	16,842	180	751,765	28,155	798	-	3,540,452	-
Value $	53,389	113,355	2,611	41,457	10,429	2,560	9,257	44,490	277,554
FERTILIZERS—									
Quantity	123	1,710	-	3,800	-	230	-	221,405	-
Value $	1,657	14,135	-	1,045	-	954	225	6,856	24,872
MEDICINAL AND PHARMACEUTICAL PREPARATIONS—									
Quantity	1,194	6,302	4	29,577	11,355	251	-	1,397,877	-
Value $	11,308	41,581	48	3,208	3,866	516	2,005	27,859	93,391
PAINTS, PIGMENTS AND VARNISHES—									
Quantity	670	18,008	2,556	488,443	1,703	530	-	5,604,649	-
Value $	5,217	131,434	29,841	30,513	1,114	2,124	4,279	78,132	282,654
SOAPS, WASHING COMPOUNDS AND TOILET PREPARATIONS—									
Quantity	579	37,476	167	10,455	511	83	-	3,561,738	-
Value $	5,999	224,591	655	3,247	419	412	7,950	36,831	280,104
INKS, DYES AND COLOURS—									
Quantity	161	1,314	110	-	452	17	-	919,530	-
Value $	2,524	9,299	1,550	-	495	142	161	14,578	28,749
WOOD DISTILLATES AND EXTRACTS—									
Quantity	-	35,030	2,014	-	-	477	-	330,830	-
Value $	-	229,937	8,052	-	-	1,928	-	8,899	248,816
MISCELLANEOUS CHEMICAL INDUSTRIES—									
Quantity	452	17,537	7	813	3,449	309	-	2,445,072	-
Value $	6,158	108,060	84	261	3,107	1,502	438	37,171	156,871
Total.....Quantity	**13,303**	**230,533**	**14,278**	**1,613,644**	**45,900**	**4,515**	-	**573,477,609**	-
Value $	**110,243**	**1,372,472**	**117,712**	**107,626**	**19,771**	**16,411**	**24,488**	**1,551,727**	**3,320,450**

Table 13.—Fuel and Electricity Used in the Manufacture of Chemicals and Allied Products in Canada, by Kinds and by Provinces, 1923

Province	Anthracite coal	Bituminous coal	Coke	Fuel oil and gasoline	Gas	Wood	Other fuel	Electricity	Total value
	Tons	Tons	Tons	Gals.	M cu.ft.	Cords	$	$	$
NOVA SCOTIA—									
Quantity	16	7,691	61	1,600	47,570	11	-	-	-
Value $	250	52,553	915	496	3,971	123	-	8,494	66,802
NEW BRUNSWICK—									
Quantity	25	2,802	-	1,000	75	100	-	-	-
Value $	462	21,113	-	350	110	600	-	26	22,661
QUEBEC—									
Quantity	6,429	63,559	26,216	160,491	7,208	1,450	-	-	-
Value $	53,784	485,226	244,518	15,833	8,235	5,103	6,743	420,390	1,239,832
ONTARIO—									
Quantity	2,638	157,326	8,178	327,925	11,047	5,595	-	-	-
Value $	24,496	1,048,743	79,902	29,473	8,426	23,827	4,569	965,296	2,184,732
MANITOBA—									
Quantity	54	5,221	83	880	91	14	-	-	-
Value $	1,065	45,883	1,378	287	152	110	2,214	21,415	72,504
ALBERTA AND SASKATCHEWAN—									
Quantity	2	124	-	153	-	2	-	-	-
Value $	13	836	-	65	-	19	3,548	2,427	6,908
BRITISH COLUMBIA—									
Quantity	72	963	172	755,585	347	2,636	-	-	-
Value $	720	7,131	1,694	31,815	426	9,772	2,400	21,861	75,819
Total.....Quantity	**9,236**	**237,686**	**34,710**	**1,247,634**	**66,338**	**9,808**	-	-	-
Value $	**80,790**	**1,661,485**	**328,407**	**78,319**	**21,320**	**39,554**	**19,474**	**1,439,909**	**3,669,258**

Table 14.—Fuel and Electricity Used in the Manufacture of Chemicals and Allied Products in Canada, by Kinds and by Provinces, 1924

Province	Anthracite coal	Bituminous coal	Coke	Fuel oil and gasoline	Gas	Wood	Other fuel	Electricity	Total value
	Tons	Tons	Tons	Gals.	M cu.ft.	Cords	$	K.W.H.	$
NOVA SCOTIA—									
Quantity	30	5,651	60	1,222	-	30	-	342,240	-
Value $	247	38,666	840	367	-	180	-	10,970	51,270
NEW BRUNSWICK—									
Quantity	25	2,468	-	1,000	-	100	-	18,050	-
Value $	525	17,822	-	325	-	600	-	1,084	20,356
QUEBEC—									
Quantity	10,384	53,549	3,814	292,963	35,174	884	-	197,187,411	-
Value $	84,511	373,482	30,207	27,812	14,229	3,936	9,373	491,668	1,035,218
ONTARIO—									
Quantity	2,785	162,629	10,110	582,920	10,233	216	-	370,933,948	-
Value $	24,160	891,759	83,105	39,085	4,908	1,164	5,141	1,000,117	2,049,439
MANITOBA—									
Quantity	-	5,325	101	27	91	-	-	3,187,091	-
Value $	-	43,731	1,607	11	146	-	2,059	23,775	71,329
SASKATCHEWAN AND ALBERTA—									
Quantity	-	104	-	250	36	1	-	125,605	-
Value $	-	766	-	105	36	12	3,779	1,733	6,431
BRITISH COLUMBIA—									
Quantity	79	807	193	735,262	366	3,284	-	1,683,263	-
Value $	800	6,246	1,953	39,921	452	10,519	4,136	22,380	86,407
Canada ...Quantity	**13,303**	**230,533**	**14,278**	**1,613,644**	**45,900**	**4,515**	**-**	**573,477,609**	**-**
Value $	**110,243**	**1,372,472**	**117,712**	**107,626**	**19,771**	**16,411**	**24,488**	**1,551,727**	**3,320,450**

Table 15.—Power Equipment Installed for the Manufacture of Chemicals and Allied Products in Canada, by Industries, 1924 with Comparative Totals for 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
Coal tar and its products	No.	15	10	-	-	-	-	22
	H.P.	1,671	130	-	-	-	-	207
Acids, alkalies, salts and compressed gases	No.	41	39	-	1	3	159	1,018
	H.P.	7,989	7,630	-	225	6,000	2,523	23,655
Explosives, ammunition, fireworks and matches.	No.	25	15	-	2	1	166	273
	H.P.	4,809	2,928	-	21	200	1,622	3,167
Fertilizers	No.	2	3	2	2	-	3	25
	H.P.	55	90	72	8	-	75	475
Medicinal and pharmaceutical preparations.	No.	22	5	2	-	-	8	325
	H.P.	1,442	290	7	-	-	29	1,228
Paints, pigments and varnishes	No.	38	20	-	-	1	21	317
	H.P.	2,797	1,908	-	-	99	293	3,657
Soaps, washing compounds and toilet preparations.	No.	50	15	-	2	-	14	394
	H.P.	6,948	832	-	18	-	112	2,522
Inks, dyes and colours	No.	7	1	1	-	-	1	96
	H.P.	265	40	4	-	-	28	1,038
Wood distillates and extracts	No.	35	9	-	1	-	2	16
	H.P.	4,475	343	-	6	-	40	455
Miscellaneous chemical industries	No.	39	24	1	1	1	15	267
	H.P.	3,239	567	6	22	110	201	1,919
Total for 1924	**No.**	**274**	**141**	**6**	**9**	**6**	**389**	**2,753**
	H.P.	**33,690**	**14,758**	**89**	**300**	**6,409**	**4,933**	**38,323**
Total for 1923	**No.**	**248**	**151**	**8**	**8**	**8**	**382**	**2,846**
	H.P.	**31,363**	**15,813**	**135**	**277**	**6,525**	**4,962**	**39,765**

Table 16.—Power Equipment Installed for the Manufacture of Chemicals and Allied Products in Canada, by Provinces, 1924

Province		Boilers	Steam engines and turbines	Gas engines	Oil and gasoline engines	Hydraulic turbines and water wheels	Electric motors	
							Operated by power owned	Operated by power purchased
Nova Scotia	No.	8	5	–	–	1	6	9
	H.P.	755	135	–	–	90	106	211
New Brunswick	No.	2	1	2	1	–	–	5
	H.P.	60	5	72	6	–	–	140
Quebec	No.	96	35	–	2	5	230	607
	H.P.	11,305	3,878	–	34	6,310	2,065	10,297
Ontario	No.	142	81	4	6	–	90	1,902
	H.P.	19,326	9,113	17	260	–	1,952	23,924
Manitoba	No.	13	7	–	–	–	9	85
	H.P.	955	520	–	–	–	72	1,638
Saskatchewan and Alberta	No.	–	1	–	–	–	8	5
	H.P.	–	8	–	–	–	47	81
British Columbia	No.	13	11	–	–	–	46	140
	H.P.	1,244	1,099	–	–	–	681	2,032
Canada	No.	**274**	**141**	**6**	**9**	**6**	**389**	**2,753**
	H.P.	**33,690**	**14,758**	**89**	**300**	**6,400**	**4,933**	**38,323**

Table 17.—Imports into Canada and Exports of Chemicals and Allied Products (a) for the Fiscal Year Ending March 31, 1914; (b) Five-Year Average for the Fiscal Years Ending March 31, 1920-1924; (c) for the Fiscal Year Ending March 31, 1925.

Item	Imports			Exports		
	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925
	$	$	$	$	$	$
(a) By Commodities						
ACIDS						
Inorganic acids—						
Acid, boracic in packages not less than 25 pounds	24,946	60,896	47,567	–	–	–
Acid, hydro-fluo-silicic	55,140	403	156	–	–	–
Acid, muriatic	12,312	6,276	4,585	–	–	–
Acid, nitric	14,107	12,766	12,544	–	–	–
Acid, sulphuric	4,789	25,580	6,594	37,413	99,690	116,608
Organic acids—						
Acid, acetic and pyroligneous	7,157	3,664	4,799	–	357,994	–
Acid, citric	–	–	78,684	–	–	–
Acid, oxalic	15,922	41,722	13,073	–	–	–
Acid, stearic	29,541	36,087	51,375	–	–	–
Acid stearic when imported by manufacturers of candles for use only in their own factories in the manufacture of candles	–	–	2,218	–	–	–
Acid, tannic	6,992	20,676	18,471	–	–	–
Tartaric acid, crystals	77,170	205,679	95,654	–	–	– m
Acids, others, n.o.p.	111,708	283,520	146,162	–	365,605	1,969,517
Total acids	359,784	697,269	481,882	37,413	823,289	2,086,125
ALCOHOLS—INDUSTRIAL						
Amyl alcohol or fusel oil	17	2,239	26,530	–	–	–
Ethyl alcohol	9,684	496,803	19,394	–	–	–
Methyl alcohol	28	14,406	110	256,869	298,896	150,456
Rum when imported by the Department of Customs and Excise or by a person licensed by the Minister of Customs and Excise to be denatured for use in the arts and industries	–	–	1,954	–	–	–
Other non-potable spirits, n.o.p.	–	–	–	–	11,304	437
Total alcohols	9,729	513,448	47,988	256,869	310,200	150,893

Table 17.—Imports into Canada and Exports of Chemicals and Allied Products: (a) for the Fiscal Year Ending March 31, 1914; (b) Five-Year Average for the Fiscal Years Ending March 31, 1920-1924; (c) for the Fiscal Year Ending March 31, 1925—Continued

Item	Imports			Exports		
	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925
(a) By Commodities—Continued	$	$	$	$	$	$
CELLULOSE PRODUCTS						
Celluloid, xylonite, xyolite, or manufactures of	214,981	1,038,600	1,099,222	-	-	-
Collodion for use in films for photo-engravings and for engraving copper rollers when imported by photo-engravers and manufacturers of copper rollers	1,092	2,809	2,735	-	-	-
Pyroxylin and wood naphtha, preparations of, for coating imitation leather and for the manufacture of leather belting	13,101	84,541	56,638	-	-	-
Total cellulose products	229,174	1,125,950	1,158,595	-	-	-
DRUGS, MEDICINAL AND PHARMACEUTICAL PREPARATIONS						
Alkaloids and their salts—						
Caffeine and salts of	-	34,107	14,293	-	-	-
Cocaine	1,479	25,779	5,390	-	-	-
Codeine and salts of	-	15,486	17,213	-	-	-
Morphine	8,390	56,138	25,241	-	-	-
Nicotine sulphate	-	20,562	34,494	-	-	-
Opium crude	18,922	42,021	6,329	-	-	-
Opium powdered	1,450	1,490	1,774	-	-	-
Quinine, salts of	29,155	113,131	55,191	-	-	-
Strychnine and salts of	-	99,097	33,645	-	-	-
Other medicinal and pharmaceutical preparations	1,583,080	2,455,253	2,423,671	-	604,837	526,024
Total drugs, medicinal and pharmaceutical preparations	1,642,476	2,863,064	2,617,241	-	604,837	526,024
DYEING AND TANNING MATERIALS						
Coal tar products—						
Aniline dyes in packages of less than one pound in weight	607	1,559	-	-	-	-
Aniline and coal-tar dyes soluble in water in bulk or packages of not less than 1 pound weight including alizarine and artificial alizarine	469,050	2,447,734	1,461,684	-	-	-
Aniline and coal-tar dyes, n.o.p.	-	3,653	7,588	-	-	-
Aniline oil crude	11,302	70,591	38,502	-	-	-
Aniline salts	10,660	5,978	747	-	-	-
Coal tar base or salt for use in the manufacture of coal tar dyes	5,397	37,337	39,494	-	-	-
Other dyeing and tanning materials—						
Annatto, liquid or solid	9,385	20,900	18,280	-	-	-
Camwood and sumac and extract thereof	12,810	14,759	17,081	-	-	-
Chemical compounds composed of two or more acids or salts soluble in water adapted for dyeing or tanning	-	50,035	149,997	-	-	-
Extract of hemlock bark	-	-	-	23,771	33,645	1,213
Indigo paste and extract of	23,648	83,820	24,153	-	-	-
Iron liquor, being solution of acetate or nitrate of iron adapted for dyeing and calico printing	2,770	4,764	6,861	-	-	-
Logwood and fustic ground and ground oak bark	426	8,504	1,851	-	-	-
Logwood and fustic, extract of	-	43,013	48,671	-	-	-
Logwood, fustic, oak and oak bark, and quebracho, extract of	863,564	756,965	-	-	-	-
Oak bark and quebracho, and similar extracts, n.o.p.	-	745,614	1,573,037	-	-	-
Red liquor being a crude acetate of aluminium prepared from pyroligneous acid and adapted for dyeing and calico printing	148	442	14,874	-	-	-
Terra japonica gambier or cutch	78,181	34,167	31,779	-	-	-
Turmeric	3,180	4,925	7,027	-	-	-
All other dyeing and tanning materials	172,220	383,217	79,392	-	-	-
Dye stuffs	-	-	-	6,583	-	-
Total dyeing and tanning materials	1,663,348	4,717,977	3,521,027	30,354	33,645	1,213

Table 17.—Imports into Canada and Exports of Chemicals and Allied Products: (a) for the Fiscal Year Ending March 31, 1914; (b) Five-Year Average for the Fiscal Year Ending March 31, 1920-1924; (c) for the Fiscal Year Ending March 31, 1925—Continued

Item	Imports			Exports		
	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925
(a) **By Commodities**—Continued	$	$	$	$	$	$
EXPLOSIVES						
Binitrotoluol, trinitrotoluol and perchlorate of ammonia when imported by manufacturers of explosives for use exclusively in the manufacture of such articles in their own factories	63,884	36,140	38,476	–	–	–
Nitrate compounds, n.o.p., adapted for use in the manufacture of explosives	300	150,569	37,843	–	–	–
Blasting and mining powder	32,026	12,301	1,274	–	–	–
Dynamite	–	–	–	–	103,663	248,607
Dynamite and nitro-glycerine	–	13,340	19,366	–	–	–
Explosives and fulminates, n.o.p.	–	–	–	228,312	1,228,779	31,940
Fireworks, firecrackers and torpedoes, all kinds	28,727	55,869	52,428	–	–	–
Fuses non-metallic	140,718	79,297	1,456	–	–	–
Gun, rifle, sporting, cannon, musket and canister powder	175,728	106,730	54,560	–	–	–
Giant powder nitro and other explosives, n.o.p.	90,007	118,472	131,107	–	–	–
Total explosives	531,390	572,721	336,510	228,312	1,332,442	280,547
FERTILIZERS						
Ammonia, sulphate of	10,849	22,054	19,315	–	1,219,240	548,891
Basic slag, crushed or ground	–	–	85,027	–	–	–
Cyanamide or lime nitrogen (From May 12, 1923)	–	15,390	318	–	2,896,809	3,460,845
Kainite and other crude German potash salts	2,042	43,331	60	–	–	–
Potash, muriate of, crude	–	176,527	289,268	–	–	–
Potash, sulphate of, crude	–	4,637	12,657	–	–	–
Potash, muriate and sulphate	274,209	225,091	–	–	–	–
Soda nitrate of or cubic nitre	1,618,376	857,924	1,051,697	–	–	–
Fertilizers, superphosphate or acid phosphate of lime	–	389,880	464,372	–	–	–
Fertilizers, compounded or manufactured, n.o.p.	602,142	664,556	465,256	*2,539,789	360,626	186,465
Total fertilizers	2,507,618	2,399,390	2,387,970	*2,539,789	4,476,675	4,196,201
PAINTS PIGMENTS AND VARNISHES						
Chemical pigments, lead—						
Litharge	57,207	165,842	87,483	–	–	–
Lead, red dry, and orange mineral	97,245	87,462	44,564	–	–	–
Lead, white, dry	46,126	7,222	16,168	–	†69,646	153,997
Lead white ground in oil	57,745	7,293	18,746	–	–	–
Other chemical pigments—						
Black, carbon	–	–	248,863	–	–	–
Blacks, lamp, bone, ivory and carbon	96,088	401,599	114,608	–	–	–
Blanc fixe	–	2,087	23,143	–	–	–
Blanc fixe and satin white	39,112	69,293	–	–	–	–
Brocade and bronze powders	26,132	51,709	42,634	–	–	–
Colours metallic viz.: Oxide of cobalt tin and copper, n.o.p.	83,046	81,221	87,828	–	–	–
Lithopone	–	–	333,919	–	–	–
Oxides, fire proofs, rough stuffs, fillers and colours dry, n.o.p.	300,526	480,067	394,000	–	–	–
Paris green, dry	201,234	19,239	28,454	–	–	–
Satin white	–	9,828	20,587	–	–	–
Ultramarine blue, dry or in pulp	26,200	74,850	58,048	–	–	–
Zinc white	502,858	1,325,452	927,702	–	–	–
Mineral earth pigments—						
Mineral pigments, iron oxides, ochres, etc.	–	–	–	19,638	58,532	38,841
Ochres, ochrey earths, siennas and umbers	43,456	92,621	75,651	–	–	–
Putty	11,145	19,901	17,335	–	8,574	5,810
Other paints and varnishes	636,882	730,083	760,778	133,356	827,618	374,511
Total paints, pigments and varnishes	2,225,002	3,625,772	3,300,511	152,994	964,370	473,159

*Included ammonium sulphate and cyanamide in 1914.
†Or in oil.

Table 17.—Imports into Canada and Exports of Chemicals and Allied Products: (a) for the Fiscal Year Ending March 31, 1914; (b) Five-Year Average for the Fiscal Years Ending March 31, 1920-1924; (c) for the Fiscal Year Ending March 31, 1925—Continued

Item	Imports			Exports		
	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925
(a) By Commodities—Continued	$	$	$	$	$	$
PERFUMERY, COSMETICS AND TOILET PREPARATIONS						
Alcoholic perfumes and perfumed spirits, bay rum, Cologne and lavender waters, hair, tooth and skin washes	243,998	248,013	188,805	-	-	-
Pomades French or flower odours, etc., imported in tins of not less than 10 pounds each	346	1,024	796	-	-	-
Hair oil, tooth and other powders and washes, pomatums, pastes and all other perfumed preparations, n.o.p., used for the hair, mouth or skin	539,491	748,945	821,743	-	-	-
Total perfumery, cosmetics and toilet preparations	783,835	997,982	1,011,344	-	-	-
SOAPS						
Castile soap	107,988	59,812	72,932	-	-	-
Common laundry soap	383,253	653,137	747,410	-	-	-
Common soft soap	17,371	7,312	-	-	-	-
Harness soap	895	955	1,207	-	-	-
Liquid soap	-	-	8,108	-	-	-
Soap, n.o.p.	-	-	-	27,400	263,332	36,705
Soap powders and powdered soap	-	-	31,663	-	-	-
Toilet soap, n.o.p.	404,822	497,831	237,902	-	198,164	557,354
Whale oil soap	2,138	3,979	3,523	-	-	-
Soap, n.o.p., including pumice, silver and mineral soaps, saponio and like articles	223,552	94,288	70,376	-	-	-
Pearline and other soap powders	122,991	37,557	-	-	-	-
Total soaps	1,323,010	1,354,871	1,173,121	27,400	461,496	594,059
INORGANIC CHEMICALS, N.O.P.						
Alum and compounds of aluminium and iron—						
Alum in bulk ground or unground but not calcined	193,770	144,971	88,381	-	-	-
Chloralum and chloride of aluminium	63	360	490	-	-	-
Sulphate of iron (copperas)	6,312	16,359	8,847	-	-	-
Sulphate of alumina or alum cake	-	331,797	354,490	-	-	-
Ammonia and its compounds—						
Ammonia, nitrate of	147,990	162,768	149,853	-	-	-
Sal ammoniac and sal ammoniac skimmings	41,542	122,069	111,088	-	-	-
Antimony, arsenic, copper, tin and zinc compounds—						
Antimony salts viz: tartar emetic, chloride and lactate (antimonine)	2,129	6,433	3,653	-	-	-
Arsenic, sulphide of	8,634	19,964	2,528	-	-	-
Arsenic	-	-	-	117,497	263,591	206,378
Arsenious oxide	1,064	27,673	6,152	-	-	-
(a)Copper sulphate of (blue vitriol) and (b) copper sulphate of, dehydrated for agricultural or spraying purposes from May 12, 1923	(a) 66,384	163,052	161,440	-	-	-
Tin bichloride of or tin crystals	8,642	16,719	25,587	-	-	-
Zinc, sulphate and chloride of	14,066	30,235	47,366	-	-	-
Copper sub-acetate of or verdigris dry	177	599	198	-	-	-
Bismuth and lead compounds—						
Bismuth salts	-	33,219	42,226	-	-	-
Lead acetate of, not ground	-	9,758	4,085	-	-	-
Lead, nitrate of, not ground	-	9,797	11,914	-	-	-
Lead, nitrate and acetate of, not ground	31,097	-	-	-	-	-
Bromine, Chlorine and Iodine Compounds—						
Bromine	63	197	146	-	-	-
Bromides crude	368	36	35	-	-	-
Chlorine liquid	-	180,128	261,007	-	-	-
Iodine crude	18,440	41,457	38,228	-	-	-
Calcium compounds—						
Calcium, acetate or acetate of lime (from Dec. 22, 1923)	-	-	-	316,481	166,179	143,460
Calcium chloride	-	61,835	89,595	-	-	-
Calcium carbide	-	-	-	161,026	2,720,062	1,199,248
Chloride of lime and hypochlorite of lime in packages	128,765	586,500	272,183	-	-	-

Table 17.– Imports into Canada and Exports of Chemicals and Allied Products: (a) for the Fiscal Year Ending March 31, 1914; (b) Five-Year Average for the Fiscal Years Ending March 31, 1920-1924; (c) for the Fiscal Year Ending March 31, 1925—Con.

Item	Imports			Exports		
	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925
(a) By Commodities—Concluded	$	$	$	$	$	$
INORGANIC CHEMICALS, N.O.P.—CON.						
Potash and potassium compounds, n.o.p.—						
Cream of tartar in crystals or argols	297,189	242,053	135,244	–	–	–
Potash and pearl ash in packages	11,281	11,240	5,586	–	–	–
Potash bicarbonate of	210	3,134	1,376	–	–	–
Potash bichromate of	20,348	12,690	23,133	–	–	–
Potash caustic in packages	26,316	28,886	18,272	–	–	–
Potash chlorate of not further prepared or ground	85,212	64,397	48,071	–	–	–
Potash, red and yellow prussiate of	20,022	13,410	4,370	–	–	–
Saltpetre or nitrate of potash	84,874	56,051	78,375	–	–	–
Potash compounds, n.o.p.	–	52,846	94,515	–	–	–
Potash crude	–	–	–	19,218	8,070	1,120
Soda and sodium compounds, n.o.p.—						
Baking powder	207,323	13,180	8,610	15,386	71,379	109,471
Borax in bulk of not less than 25 pounds	101,801	184,215	117,811	–	–	–
Salts, glauber	4,058	8,158	12,250	–	–	–
Soda, arseniate, binarseniate and stannate of	763	3,423	107	–	–	–
Soda ash or barilla	450,263	344,522	44,980	–	–	–
Soda, bicarbonate of	64,710	172,330	176,169	–	–	–
Soda, bichromate of	32,793	136,329	100,449	–	–	–
Soda, bisulphate of, or nitre cake (from May 12, 1923)	–	–	83,421	–	–	–
Soda, bisulphite of	10,292	52,164	28,294	–	–	–
Soda, caustic in packages or in solution	259,575	395,489	308,485	–	–	–
Soda, chlorate of	19,929	1,397	1,291	–	–	–
Soda, hyposulphite	12,465	34,130	20,747	–	–	–
Soda, nitrite of	23,697	2,454	791	–	–	–
Soda, peroxide of	7,606	32,028	48,572	–	–	–
Soda, prussiate and sulphite of	10,864	80,429	33,440	–	–	–
Soda sal	53,837	168,618	149,843	–	–	–
Soda, silicate of, in crystals or in solution	83,531	255,527	232,738	–	–	–
Soda, sulphate of, crude known as salt cake	136,811	711,981	607,781	–	–	–
Soda, sulphide of	20,692	93,225	49,351	–	–	–
Sodium compounds, n.o.p.	–	283,709	470,853	–	–	–
Soda and sodium compounds	–	–	–	–	1,751,412	3,641,659
Other inorganic chemicals—						
Acid, phosphate not medicinal	90,145	266,624	224,317	–	–	–
Barium, peroxide of	4,529	26,907	9,259	–	–	–
Carbon, dioxide or carbonic acid gas	–	1,054	103	–	–	–
Cobalt oxide and cobalt salts	–	–	–	–	780,674	1,119,109
Hydrogen, peroxide, solutions of	–	43,312	45,364	–	–	–
Lye	–	–	–	70,584	23,543	9,063
Magnesia, (magnesium oxide)	14,129	78,136	20,100	–	–	–
Magnesium, sulphate or Epsom salts	–	52,459	50,667	–	2,796	–
Mercury salts	–	13,647	11,137	–	–	–
Phosphorus	5,916	47,636	56,452	88,521	–	–
Radium	3,273	45,509	12,522	–	–	–
Thorium nitrate	–	15,788	27	–	–	–
Total inorganic chemicals, n.o.p.	2,833,960	6,015,019	5,014,205	788,713	5,787,706	6,429,508
OTHER DRUGS, DYES AND CHEMICALS, N.O.P.						
Acetone and amyl acetate	6,434	9,392	7,981	–	–	–
Blacking, shoe, and shoe makers' ink, shoe, harness and leather dressing, n.o.p.	133,047	252,803	214,992	–	–	–
Blueing, laundry	55,448	114,688	42,681	–	–	–
Camphor	21,074	94,545	47,004	–	–	–
Carbon bisulphide	–	7,243	4,065	–	–	–
Carbon tetrachloride	–	7,516	14,377	–	–	–
Chloroform and sulphuric ether	–	87,067	72,427	–	–	–
Creosote oil	–	–	–	59,186	155,157	146,460
Cyanide of potassium, cyanide of sodium and cyanogen bromide	243,907	354,485	306,018	–	–	–
Formaldehyde	–	2,386	95	–	–	–
Glycerine	1,007,278	361,719	560,765	–	*42,246	*112,574
Ink printing	104,926	201,279	210,996	–	–	–
Ink writing	53,813	40,107	41,036	–	–	–
Naphthalene, refined flakes and balls	–	28,401	19,801	–	–	–
Polish or composition, knife and other, n.o.p.	229,517	330,329	366,026	–	–	–
All other drugs, dyes, chemicals, n.o.p., (including nitrous ether, sweet spirits of nitre and aromatic spirits of ammonia)	1,041,916	2,112,866	1,801,579	768,883	1,480,543	1,213,057
Sulphuric ether, chloroform and solutions of peroxide of hydrogen	66,238	–	–	–	–	–
Total other drugs, dyes and chemicals, n.o.p.	2,963,598	4,004,886	3,709,843	828,069	1,677,946	1,472,091
Total chemicals and allied products	**17,072,924**	**28,888,349**	**24,760,237**	**4,889,913**	**16,472,606**	**16,209,820**

*Glycerine, crude only.

Table 17.—Imports into Canada and Exports of Chemicals and Allied Products: (a) for the Fiscal Year ending March 31, 1924; (b) Five-Year Average for the Fiscal Years Ending March 31, 1920-1924; (c) for the Fiscal Year Ending March 31, 1925—Continued.

Item	Imports			Exports		
	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925
	$	$	$	$	$	$
(b) By Countries						
BRITISH EMPIRE						
United Kingdom	4,276,936	4,255,555	4,146,061	573,799	2,705,986	3,805,628
Irish Free State	–	–	–	–	–	9,676
Africa British, East	–	–	–	68	2,642	855
Africa British, South	–	16,950	–	67,568	156,929	39,782
Africa British, West (3)	–	–	–	–	3,625	1,446
Bermuda	–	2	340	2,927	25,770	16,054
British East Indies—						
British India	168	8,788	17,919	7,626	54,931	58,163
Ceylon	–	–	–	–	10,941	524
Straits Settlements	157	130,166	1,701	50	88,626	1,820
Other	315	776	488	–	–	–
British Guiana	–	–	–	14,922	197,653	42,362
British Honduras	–	–	825	150	2,013	5,670
British West Indies	636	–	–	220,072	–	–
Barbados	–	107	–	–	279,876	172,892
Jamaica	–	538	6,285	–	48,844	42,911
Trinidad and Tobago	–	40	–	–	77,482	43,921
Other	–	22	588	–	41,684	44,724
Egypt and Sudan	–	–	–	–	78	3,096
Gibraltar	17	–	–	–	–	–
Hong Kong	10,144	80,122	70,729	1,988	29,509	3,525
Malta	–	–	–	–	319	–
Newfoundland	30	329	9	275,794	510,259	697,602
Oceania—						
Australia	33,681	3,487	2,456	92,858	124,058	98,687
Fiji	–	–	39	–	4,696	18
New Zealand	18	15	–	11,925	160,740	139,638
Other	–	–	–	–	373	–
Palestine	–	–	–	–	15	–
Total British Empire	4,322,102	4,496,897	4,247,440	1,269,747	4,527,049	*5,228,994
FOREIGN COUNTRIES						
Argentina	–	91,035	135,162	7,849	45,276	71,585
Austria and Hungary	4,899	452	730	893	208	–
Belgium	239,016	214,473	292,939	71,136	81,834	31,600
Bolivia	–	–	–	80	28,929	825
Brazil	–	2	–	1,853	4,007	11,970
Chile	767,265	84,974	392,255	34,653	89,162	37,782
China	9,596	13,986	16,431	257	52,353	42,697
Colombia	–	–	–	2,516	3,688	5,709
Costa Rica	–	–	–	1,969	3,065	18,452
Cuba	–	29,116	80	4,170	126,594	315,643
Czecho-Slovakia	–	2,337	440	–	–	–
Denmark	375	538	376	768	340	56
Danish West Indies	–	–	–	178	–	–
Ecuador	–	–	–	668	3,725	7,531
Esthonia	–	–	–	–	1,407	–
Finland	–	–	2,431	–	–	–
France	945,639	1,089,262	943,836	166,285	93,403	33,263
French Africa	–	–	–	–	–	165
French East Indies	–	–	–	–	209	–
French Guiana	–	–	–	–	34	–
French Oceania	–	–	–	–	35	–
French West Indies	–	–	–	23	24,334	6,054
St. Pierre and Miquelon	–	7	135	837	6,105	3,637
Germany	1,009,144	620,318	1,330,292	16,608	21,333	15,713
Greece	13	1,481	–	–	4,229	–
Guatemala	–	–	–	643	345	1,049
Hayti	–	–	–	88	345	733
Honduras	–	–	–	367	12,755	43,657
Italy	22,848	39,893	50,743	–	18,003	–
Japan	33,193	59,834	83,413	3,884	512,906	368,634
Korea	–	–	–	–	5,511	17,198
Lettonia	–	–	–	–	20,220	–
Mexico	–	–	–	3,174	861,876	1,730,052
Morocco	–	–	–	–	–	148
Netherlands	65,189	432,234	671,706	109,359	63,586	33,946
Dutch East Indies	–	5,567	–	–	91,397	2,984
Dutch Guiana	–	–	–	610	2,745	452
Dutch West Indies	–	–	–	59	569	2,734
Nicaragua	–	–	–	289	10,627	16,055
Norway	21,011	36,757	615	1,341	1,598	48
Panama	–	–	–	3,416	7,200	4,359

Table 17.—Imports into Canada and Exports of Chemicals and Allied Products: (a) for the Fiscal Year Ending March 31, 1914; (b) Five-Year Average for the Fiscal Years Ending March 31, 1920-1924; (c) for the Fiscal Year Ending March 31, 1925—Concluded.

Item	Imports			Exports		
	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925	Fiscal year ending March 31, 1914	5-yr average fiscal years 1920-1924	Fiscal year ending March 31, 1925
	$	$	$	$	$	$
(b) By Countries—Concluded						
FOREIGN COUNTRIES—Concluded						
Paraguay	–	–	26,281	50	–	–
Persia	–	3,764	–	–	–	–
Peru	–	–	–	3,842	22,849	1,069
Portugal	1	2,248	–	125	2,940	–
Portuguese Africa	–	–	–	–	37,599	179,379
Roumania	6	–	–	–	41,025	–
Russia	52	–	–	–	5,426	–
Salvador	–	–	–	228	3,376	13,845
San Domingo	–	–	–	3,197	5,622	19,048
Siam	–	–	–	–	2	17
Spain	449	16,222	3,638	255	40,989	28,910
Canary Islands	–	–	–	–	298	–
Sweden	1,313	40,283	17,261	650	19,826	18,850
Switzerland	53,914	186,524	144,443	–	4,004	–
Syria	–	13	–	–	–	–
Turkey	8,370	1,085	612	205	1,931	57
United States	9,568,529	21,418,770	16,366,165	3,168,518	9,505,252	7,826,076
Alaska	–	186	–	–	2,159	16
American Virgin Islands	–	91	76	–	326	574
Hawaii	–	–	–	424	9,337	1,319
Philippine Islands	–	–	32,737	432	11,730	20,810
Porto Rico	–	–	–	–	17,190	21,337
Uruguay	–	–	–	31	3,324	5,162
Venezuela	–	–	–	8,236	9,493	19,626
Total foreign countries	12,750,822	24,391,452	20,512,797	3,620,166	11,945,557	*10,980,826
Total	**17,072,924**	**28,888,349**	**24,760,237**	**4,889,913**	**16,473,606**	**16,209,820**

*Egypt included in British Empire.

Table 18.—Alphabetical List of Products Made in all the Industries Classified under Chemicals and Allied Products, in Canada, in 1924

(Includes intermediate products made for use)

Commodity	Producing industry numbers (See list at end of table)	Unit	Quantity	Total selling value
				$
Acetate (grey) of lime, 80%	18	lb.	10,889,845	283,990
Acetone	18	"	993,278	176,584
Acetone oils	18	"	219,361	39,378
Acetylene (compressed or dissolved)	3–4	cu. ft.	167,678,509	1,210,839
Acid hydrochloric (muriatic) 20°Be	3	lb.	5,190,032	79,697
Acid, mixed	5	"	2,342,043	79,105
Acid, nitric	5	"	7,616,979	510,128
Acid, nitric (40°–42° or 1·4 sp. gr.)	3	"	771,668	72,918
Acid, nitric, 38°	3	"	51,412	4,385
Acid, n.e.s. (includes phosphoric, hydrofluoric, arsenious and sulphurous)	3-27-28	–	–	81,379
Acid, recovered	5	"	9,475,721	150,134
Acid, sulphuric fuming 20% (oleum) 100%	3	"	52,303,329	494,897
Acid, sulphuric, 50° Be	3-9	"	18,246,400	76,619
Acid, sulphuric, 60° Be	3	"	12,859,213	101,146
Acid, sulphuric, 66° Be	3	"	64,956,885	615,382
Albumen, powdered	23	"	38,790	50,427
Ammonium nitrate	5	"	2,612,273	208,779
Amount received from custom work and repairs	6-16-28	–	–	24,057
Barium, sulphate	10	lb.	47,680	1,192
Bismuth, salts of	10	"	2,834	6,346
Blue, laundry	12-13	–	–	16,340
Bone, dissolved	9	lb.	219,344	2,412
Bullets, shot, dropped and moulded, and shot shell wads	6	–	–	334,824
Calcium oxide (quicklime)	3	lb.	133,324,360	568,618
Calcium compounds, n.e.s. (includes arsenate, carbide, chloride, cyanamide, bisulphate and hypochlorite)	3-27	–	–	12,858,330
Carbon dioxide	4	lb.	3,428,953	356,679
Catsup	23-27	–	–	6,908
Cement, granite	20	–	–	1,643

Table 18.—Alphabetical List of Produdts made in all the Industries Classified under Chemicals and Allied Products, in Canada, in 1924—Continued

(Includes intermediate products made for use)

Commodity	Producing industry numbers (See list at end of table)	Unit	Quantity	Total selling value
				$
Cement, roofing, and preservatives	1	lb.	2,724	107,144
Cement, rubber	20	gal.	72,277	73,355
Charcoal	18	bus.	2,892,404	715,351
Chemicals, n.e.s.	3	–	–	2,725
Cleaner, hand	12–24–27	–	–	178,680
Collodion	21	gal.	3,966	11,898
Colouring, butter and cheese	15–28	–	–	58,737
Colours, dry	11–16	–	–	374,270
Colours, food, distemper and show card	11–16–28	–	–	3,106
Colours in oil or japan	11	lb.	1,284,319	310,984
Colours, straw hat	15	–	–	11,020
Colouring, sugar	15	gal.	9,121	10,945
Compounds, boiler	22	–	–	211,221
Compounds, sweeping	24–25–27–28	–	–	73,360
Compounds, washing	12–13–24	–	–	169,630
Compounds, welding, degumming and bleaching	28	–	–	12,031
Confectionery, licorice and chocolate	10	–	–	184,667
Containers, boxes, etc	5–6	–	–	295,797
Cotton, rubberized	20	–	–	10,675
Cream of tartar	26	lb.	86,153	33,264
Creosote, cresylic	1	gal.	1,478,680	245,701
Creosote, wood	18	lb.	327,279	71,347
Disinfectants	2–10	–	–	132,588
Driers, linoleate	11	gal.	139,181	244,793
Driers, resinate	11	"	67,841	85,809
Dyes, n.e.s.	15	–	–	404,594
Dynamites, Div. I, Class III	5	lb.	9,172,523	1,390,960
Dynamites, gelatine, Div. I, Class III	5	lb.	18,381,624	2,911,295
Enamels	11–24	–	–	1,018,891
Extracts, flavouring, and essences	23	gal.	65,157	590,546
Explosives, n.e.s. (includes monobels, coalites, dried amatol, gunpowder, chlorate mixtures, nitrate mixtures, mercury fulminate and propellant powders)	5	–	–	682,277
Feeds, poultry and stock	9	–	–	51,754
Felts, tarred and sheathings	1	–	–	493,085
Fertilizers, complete	9	lb.	61,422,923	1,086,806
Fireworks, manufactured	7	–	–	123,201
Fish scrap	9–20	lb.	382,000	13,518
Fluids, embalming	2	–	–	1,080
Flour, bone (steamed)	9	lb.	338,160	8,840
Flour, corn, malt, doughnut and cake mix	15–20–23	"	220,482	31,195
Formaldehyde	18	"	1,398,989	200,395
Fuses, safety and electric, primers, safety cartridges, percussion caps and detonators	6	–	–	1,502,035
Glue, liquid	20	gal.	31,198	40,086
Glue, mucilage and paste	20	–	–	998,643
Glycerine, crude, sold as such	12	lb.	3,250,408	347,574
Glycerine, prepared	5	lb.	2,641,934	532,586
Glycerine, refined	12	"	3,367,899	690,295
Greases	20	"	928,413	59,691
Gums and paste powder	20	–	–	60,338
Hydrogen peroxide	3–10	–	–	54,266
Ink, printers'	11–16	–	–	1,351,008
Ink powder	17	–	–	1,537
Ink, writing, and adhesives	17–24	–	–	237,684
Innersoling, box toe goods, and shoecloth top facings	20	–	–	21,479
Insecticides	2–3–27	–	–	493,940
Iodine, resublimed	10	lb.	3,501	17,183
Japans and lacquers	11	gal.	294,225	417,326
Kalsomine	11	lb.	3,078,320	206,851
Lead arsenate	3–27	"	449,085	93,865
Lead, basic carbonate, white, dry	11	"	6,662,478	625,231
Lead, basic carbonate, white, in oil	11	"	14,406,356	1,656,244
Lead, red and litharge	11	"	6,174,850	547,996
Lye	12–26	–	–	411,472
Matches	8	–	–	1,674,001
Medicines, patent, and proprietary preparations	10	–	–	6,265,526
Methyl hydrate, crude, 95%	18	Imp. gal.	461,919	309,001
Methyl hydrate, pure	18	lb.	428,458	396,531
Mops	24	–	–	82,800
Mucilage	17	–	–	9,725
Nitroglycerine	5	lb.	8,317,487	1,500,180
Oil, core	11	gal.	38,185	27,493
Oil, creosote and special	1	"	1,991,287	395,733
Oils, boiled linseed, paint and spray	11	–	–	295,330
Oil, stand, blown or enamel	11	gal.	39,447	78,002
Oil, n.e.s.	17–23–3–28	–	–	149,188
Oxygen	4	cu. ft.	68,331,575	893,688
Paints, asphaltic and tar	11	gal.	98,259	115,580
Paints, mixed ready for use	11	gal.	2,398,109	6,903,281
Paints, n.e.s., and enamels	11–16	lb.	1,928,492	156,965
Paints, paste	11	"	5,383,839	824,200

Table 18.—Alphabetical List of Products made in all the Industries Classified under Chemicals and Allied Products, in Canada, in 1924—Concluded

(Includes intermediate products made for use)

Commodity	Producing industry numbers (See list at end of table)	Unit	Quantity	Total selling value
				$
Paper, carbon	17	-	-	20,698
Pastes	11-16-17	lb.	186,300	12,853
Perfumes	12-14	-	-	276,038
Phosphate, acid (superphosphate)	9	lb.	7,150,222	73,140
Pigments, iron oxide	11	"	380,300	19,063
Pitch	1	"	50,594,779	369,188
Polish, furniture	24	-	-	195,658
Polish, harness	24	-	-	11,768
Polish, metal	24	-	-	16,836
Polish, pastes and shoe dressings	24	-	-	485,591
Polish, stove	24	-	-	181,888
Polish, n.e.s.	24	-	-	48,626
Potassium iodide	10	lb.	6,523	23,529
Powder, ammonia	12-13-28	-	-	143,379
Powder, baking	23-26	lb.	6,825,212	1,774,381
Powder, ice cream	23	"	42,464	12,961
Powder, jelly	23	"	1,998,485	484,547
Powder, lemonade and orangeade	23-28	-	-	7,202
Powder or preparations, other cleaning and scouring	12-13	lb.	1,556,901	172,129
Powder, prepared pudding, custard and junket	23-28	-	-	31,502
Powder, soap	12-20	lb.	12,442,762	984,976
Preparations, pharmaceutical	2-10-23	-	-	3,785,504
Preparations, toilet	10-12-14-23	-	-	3,738,092
Products, celluloid	21	-	-	711,241
Products, not separately itemized	1-2-3-5-6-9-10-11-12-13-14-16-17-20-21-23-24-26-27-28	-	-	2,569,612
Putty and other fillers	11	lb.	5,951,563	322,315
Pyroxylin compounds and thinners	11	-	-	102,259
Removers, paint and varnish	11	-	-	34,921
Resin, prepared and size	11-20	-	-	125,983
Rollers, printers'	16	-	-	205,774
Shellac	11	gal.	130,654	532,446
Shells, dynamite, cartridge, primed cartridge, empty shot, loaded shot	6	-	-	1,240,197
Signals, railway	6-7	-	-	126,303
Silver nitrate	10-21	lb.	3,657	28,273
Soap, foots	12	"	137,287	11,426
Soap, household	12	"	41,075,620	3,107,893
Soap, laundry and soap chips	12	"	43,026,334	4,150,022
Soap, liquid	2-12-14-27	-	-	50,125
Soap, polishing and scouring	12	lb.	2,189,883	166,717
Soap, all other hard	12-14	"	3,262,558	249,288
Soap, soft	12-13	"	909,961	60,501
Soap, toilet	12-14	"	15,905,020	2,642,719
Soap, n.e.s.	3-28	"	238,861	26,369
Sodium bisulphate (nitre cake)	3-5	"	5,198,087	8,641
Sodium sulphate (saltcake)	3	-	-	42,402
Sodium sulphate (glauber's salt)	3	lb.	2,916,622	36,602
Sodium compounds, n.e.s. (includes arsenate, bicarbonate, bisulphite, carbonate, cyanide, hydroxide and silicate)	3-5-11-17-26-27	-	-	5,440,181
Solution, anti-freeze	11-24-28	-	-	7,773
Solution, lime-sulphur	27	-	-	59,074
Stains	11-16-24	-	-	673,871
Substitute, egg	23	lb.	65,226	52,816
Tallow, refined	12-14	-	-	26,040
Tankage	9	-	-	6,800
Tar, refined	1	gal.	1,602,140	113,913
Tar, road	1	"	1,178,258	103,544
Tar, tarvia and protective covering	1	lb.	1,068,029	420,021
Varnishes, all kinds	11-16-24	-	-	4,351,956
Water, javelle	13-25-26	-	-	186,647
Wax, floor and polishes	11-24	-	-	237,889
Wines, medicated	10	-	-	46,533
Wire, connecting and covered for fuses	6	-	-	71,912
Zinc, zinc oxide and zinc dust	11-21	-	-	22,422
Products of 1 or 2 firms not included elsewhere (includes acetaldehyde, acetylene black, acetic acid, aqua and anhydrous ammonia, chlorine, copper arsenic dusts, dextri-maltose, nitrous ether, fabrikoid products, ferrosilicon, nitrogen, phosphorus, wheat pickle, cheese rennet, size, columnian spirits, casein spreader, turpentine, sealing wax, satin white and yeast	-	-	-	5,473,162
Total	-	-	-	**108,217,237**

Key to the Numbered Industries

Coal Tar and its Products—

1. Coal Tar Distillation.
2. Disinfectants.

Acids, Alkalies, Salts and Compressed Gases—

3. Acids, Alkalies and Salts.
4. Compressed Gases.

Explosives, Ammunition, Fireworks and Matches—

5. Explosives.
6. Ammunition.
7. Fireworks.
8. Matches.
9. Fertilizers
10. Medicinal and Pharmaceutical Preparations.
11. Paints, Pigments and Varnishes.

Soaps, Washing Compounds and Toilet Preparations—

12. Soaps.
13. Washing Compounds.
14. Toilet Preparations.

Inks, Dyes and Colours—

15. Dyes and Colours.
16. Printing Ink.
17. Writing Ink.

Wood Distillates and Extracts—

18. Wood Distillation.
19. Wood Extracts.

Miscellaneous Chemical Products—

20. Adhesives.
21. Cellulose Products.
22. Boiler Compounds.
23. Flavouring Extracts.
24. Polishes and Dressings.
25. Sweeping Compounds.
26. Baking Powder.
27. Insecticides.
28. Chemical Products, N.E.S.

CHAPTER TWO

COAL TAR AND ITS PRODUCTS

General.—Coal tar is a black foul-smelling oily mixture which separates from the gases formed in the destructive distillation of coal. In industry, the production of tar is never the chief object of the distillation of coal but it is a valuable by-product of the coke and the illuminating and fuel gas industries.

Tar is little used in the crude state, but is refined by removing the water and more or less oil by distillation. In this condition it is used to saturate roofing felt, to coat roofs laid with plain tar felt, as a cheap paint, and as a preservative of wood. With more oil removed it is used as a binder in asphalt, and mixed with water is used to sprinkle macadam roads. The distillate may be fractioned further to yield a great number of products valuable in industry as intermediates for the preparation of explosives, aniline dyes, synthetic perfumes and essences, disinfectants and medicinal preparations.

The yield of tar depends on the variety of coal used and the temperature of its destructive distillation. In the gas industry the chief aim is to obtain a large yield of gas, hence a high retort temperature is used, resulting in the cracking of some of the oils to form a permanent gas. Thus, although the tar produced has a higher percentage of pitch and heavy constituents, the total yield is less than in the coke industry where a lower temperature is used giving a larger quantity of tar containing less pitch and more light oils and ammonia liquor.

In America, the usual practice of distilling, is to fraction as light oil until the distillate commences to sink in water (about 200°C) and as heavy or creosote oil from that point to soft pitch (about 270°C). If the distillation is carried until the anthracene and anthracene oils are distilled off, a hard pitch results; if some of these heavy oils are allowed to remain the pitch is soft. Common practice is to charge the tar into a horizontal iron still, hot from the previous run. The fire is lighted when the charging is about half completed and carefully regulated until the rumbling and cracking in the still ceases, indicating that all the water has been driven off. The firing can then be pushed so that the distillate runs at the rate of 200-400 gallons per hour. When the desired grade of pitch has been obtained, the fire is drawn and the pitch run to coolers from which it is run directly into barrels for shipment or for storage. This results in a separation into fractions which are themselves complex mixtures and which may or may not be further separated according to the uses to which they are to be put.

Coal tar products are used extensively in the manufacture of disinfectants and so the latter industry has been included under the general heading "Coal Tar and Its Products." However separate statistics are shown wherever it has been deemed of advantage to readers of this report.

Table 19.—Summary Statistics of the Coal Tar and Its Products Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel and *electricity	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
Coal Tar Distillation—									
1920	4	1,272,153	129	38,750	144,088	77,063	482,627	1,817,831	1,335,204
1921	4	1,411,618	88	33,433	92,288	69,694	420,498	1,088,789	668,291
1922	3	1,122,029	62	24,118	53,503	40,330	269,146	792,923	523,777
1923	8	3,087,937	213	78,355	223,206	102,342	1,351,498	3,088,411	1,736,913
1924	8	2,926,207	176	55,991	186,301	89,542	1,090,421	2,519,489	1,429,068
Disinfectants—									
1920	7	112,859	32	13,668	20,408	128	132,736	217,203	84,467
1921	5	91,052	26	19,782	8,196	410	35,076	94,341	58,365
1922	5	115,048	28	22,852	9,553	543	44,195	93,435	49,240
1923	6	117,843	26	25,085	8,319	1,116	30,226	77,680	47,463
1924	6	173,698	32	20,352	18,084	1,146	47,076	118,084	71,008
Total—									
1920	**11**	**1,385,012**	**161**	**52,418**	**164,496**	**77,191**	**615,363**	**2,035,034**	**1,419,671**
1921	**9**	**1,502,670**	**114**	**53,215**	**100,484**	**70,104**	**456,474**	**1,183,130**	**726,656**
1922	**8**	**1,237,077**	**90**	**46,970**	**63,056**	**40,873**	**313,341**	**886,358**	**573,017**
1923	**14**	**3,205,780**	**239**	**103,440**	**231,525**	**103,458**	**1,381,724**	**3,166,109**	**1,784,376**
1924	**14**	**3,099,995**	**208**	**76,343**	**204,385**	**90,688**	**1,137,497**	**2,637,573**	**1,500,076**

*Electricity not included in 1920, 1921 and 1922.

Capital Employed.—(a) Coal Tar Distillation.—In 1924, the 8 plants in Canada engaged in the distillation of coal tar were located as follows: 1 in Nova Scotia, 2 in Quebec, 3 in Ontario, 1 in Manitoba, and 1 in British Columbia. Of these plants, 4 produced refined tar and tar distillates as the main products while the remaining 4 reported tarred felts and sheathings as the principal product. Capital employed amounted to $2,926,297 of which $1,808,683 was tied up in lands, buildings, fixtures, machinery and tools; $518,797 in materials on hand and stocks in process; and $598,817 in cash trading and operating accounts. This was slightly below the figure for 1923 which in turn was 175 per cent over 1922 when there were only 3 plants reporting. Data for 1923 and 1924 are more complete than in previous years as it has been possible to secure from some of the larger plants a separation of statistics between the departments manufacturing prepared roofings and those in which coal tar distilling operations only, are carried on.

(b) Disinfectants.—In the disinfectant industry, there was considerable improvement in 1924. Although the number of reporting firms remained the same, capital employed rose to $173,698 from $117,843 in 1923, there being an increase of $32,608 in the value of lands, buildings, machinery and tools, $3,836 in materials on hand and stocks in process, and $19,411 in cash, trading and operating accounts. Of the 6 reporting firms, 3 were located in Ontario, 2 in Quebec and 1 in Manitoba.

Table 20.—Capital Employed in the Coal Tar and Its 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
	$	$	$	$	$	$	$	$
Coal Tar Distillation—								
Ontario	602,330	130,196	152,271	884,797	582,366	120,384	94,486	797,236
*Canada	1,839,162	457,047	791,728	3,087,937	1,808,683	518,797	598,817	2,926,297
Disinfectants—								
Ontario	11,695	26,196	14,468	52,359	44,360	34,761	34,010	113,131
*Canada	29,962	71,044	16,837	117,843	62,570	74,880	36,248	173,698
Total—								
Quebec	**736,940**	**195,067**	**474,421**	**1,406,428**	**730,191**	**259,288**	**417,833**	**1,407,315**
Ontario	**614,025**	**156,392**	**166,739**	**937,156**	**626,726**	**155,145**	**128,196**	**910,367**
***Canada**	**1,869,124**	**528,091**	**808,565**	**3,205,780**	**1,871,253**	**593,677**	**635,065**	**3,099,995**

*Where there are fewer than 3 firms reporting in any one province the figures for this province are not shown but they are included in the Canada total for the industry.

Employment.—(a) Coal Tar Distillation.—Employment in the coal tar distillation industry fell away slightly, there being a total of 176 employees in 1924 as compared to 213 in 1923. Wage-earners numbered 149 and the yearly wage-roll totalled $186,301 giving an average income of $1,250 to each worker. In January there were 132 wage-earners on the roll and monthly figures indicate a gradual increase to a peak of 214 in May, and then a decline, until in December a minimum of 110 was reached.

All plants operated on full time throughout the year of 304 working days.

(b) Disinfectants.—The disinfectant industry afforded employment to 11 salaried workers and 21 wage-earners, making a total of 32 employees as compared to 26 in the previous year. Wages totalled $18,084 thus giving to each labourer an average income of $861 as against $693 in 1923.

Table 21.—Employment, Salaries and Wages Paid in the Coal Tar and Its Products Industry in Canada, 1923 and 1924

	1923			1924		
	Coal tar distillation	Disinfectants	Total	Coal tar distillation	Disinfectants	Total
(a) NUMBER OF EMPLOYEES—						
Salaried employees	31	14	45	27	11	38
Wage-earners, by months—						
January	149	7	156	132	16	148
February	146	9	155	145	19	164
March	169	9	178	159	26	185
April	218	18	236	190	26	216
May	266	17	283	214	23	237
June	206	11	217	170	18	188
July	202	12	214	152	18	170
August	178	9	187	111	22	133
September	180	8	188	144	20	164
October	163	17	180	140	23	163
November	127	9	136	135	26	161
December	171	9	180	110	16	126
Average	182	12	194	149	21	170
Total employees	213	26	239	176	32	208
(b) SALARIES AND WAGES—						
Salaries $	78,355	25,085	103,440	55,991	20,352	76,343
Wages $	223,206	8,319	231,525	186,301	18,084	204,385
Total $	301,561	33,404	334,965	242,292	38,436	280,728
(c) AVERAGE YEARLY EARNING of each wage-earner $	1,226	693	1,194	1,250	861	1,202
(d) AVERAGE NUMBER OF DAYS on which plants in this industry operated during the year	304	300	302	304	225	270
(e) LABOUR TURNOVER—						
Total number of different wage-earners employed during the year	–	–	–	238	44	282
Average number of wage-earners employed within the year	–	–	–	149	21	170
Difference	–	–	–	89	23	112
Apparent labour turnover (per cent.)	–	–	–	59·7	109·5	65·9

Table 22.—Distribution of Employment in the Coal Tar and Its Products Industry in Canada, according to the Average Number of Hours Worked per Day, by Provinces, 1924

Province	Number of wage-earners working			
	8 hours or less per day	9 hours	10 hours	Over 10 hours
Nova Scotia	47	4	–	25
Quebec	55	7	–	31
Ontario	40	–	–	30
Manitoba	15	–	–	–
British Columbia	21	–	–	–
Canada	178	11	–	86

Table 23.—Fuel and Electricity Used in the Coal Tar and Its Products Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Anthracite coal	short ton	30	470	1,027	15,662
Bituminous coal	"	11,542	79,277	7,304	46,383
Fuel oil	gallon	104,205	6,598	244,364	17,703
Gas	M. cu.ft.	45	60	20	23
Wood	cord	1,003	4,293	1,813	6,253
Other fuel	–	–	6,087	–	–
Electric power	k.w.h.	–	6,673	179,503	4,664
Total	–	–	103,458	–	90,688

Table 24.—Power Employed in the Coal Tar and Its Products 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	13	1,540	15	1,671
Engines—				
(a) Steam	10	120	10	130
Electric motors—				
(a) Operated by purchased power	20	216	22	207

Materials Used.—(a) Coal Tar Distillation.—Crude tar constituted the bulk of the raw materials used. In 1924 the distillation plants used 13,257,122 gallons of tar worth $683,057. This constituted 53 per cent of the total, the remaining $407,364 being paid for building paper, felt, sulphuric acid, caustic soda, oils and various other miscellaneous materials not otherwise listed.

(b) Disinfectants.—Materials used in the disinfectant industry in 1924 cost $47,076 at the factories as compared with $30,226 in 1923 and $44,195 in 1922. Extensive use was made of creosote oils, lubricating oil, mineral and vegetable oils. Metal salts such as lead nitrate and zinc chloride with distinctive disinfecting properties were also used. Many of the metarials were used in such small quantities as to prevent giving a detailed list in the accompanying tables.

Table 25.—Materials Used in the Coal-Tar and Its Products Industry in Canada, 1923 and 1924

Materials used	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
Coal Tar Distillation—					
Coal tar, crude	gal.	17,249,426	830,421	13,257,122	683,057
Other materials	–	–	521,077	–	407,364
Total[1]	–	–	1,351,498	–	1,090,421
Disinfectants—					
Total[2]	–	–	30,226	–	47,076
Total	–	–	**1,381,724**	–	**1,137,497**

[1] Includes crude oil tar, dry felt and sheathings.
[2] Includes essential oils, vegetable oils, mirbane oil, creosote oil, lubricating oil, mineral oils, petrol oil, potash, wood turpentine, cresylic acid, soap, paradichloro benzine and other materials.

Products.—(a) Coal Tar Distillation.—The 8 tar distilling units in operation in 1924 produced nearly 2 million gallons of creosote and special oils, 50·5 million pounds of pitch, 3·2 million gallons of tars which with considerable quantities of tarred felts and sheathing, cresylic acid and other products aggregated to a total value of $2,519,489. In the case of each item listed the production was below that of 1923 when the total output was valued at $3,088,411.

(b) Disinfectants.—The disinfectant industry showed considerable improvement in 1924 with a productiion of $118,084 as against $77,689 in the previous year. The various disinfectant preparations were worth $77,052 as compared with $52,937 in 1923 and the by-products showed a corresponding increase in value over the previous year.

Table 26.—Products of the Coal-Tar and Its Products Industry in Canada, 1923 and 1924

Product	Unit of measure	1923		1924	
		Quantity	Selling Value	Quantity	Selling Value
			$		$
COAL TAR DISTILLATION—					
Creosote oils and special oils	gal.	2,169,222	425,447	1,991,287	395,733
Pitch	lb.	63,427,049	830,058	50,594,779	369,188
Refined tar	gal.	1,651,943	126,483	1,602,140	113,913
Other tars	"	3,758,150	641,815	2,591,731	575,381
All other products[1]	-	-	1,064,608	-	1,065,274
Total	-	-	3,088,411	-	2,519,489
DISINFECTANTS—					
Disinfectants	-	-	52,937	-	77,052
Liquid soaps	gal.	-	18,243	32,027	24,411
All other products[2]	-	-	6,509	-	16,621
Total	-	-	77,689	-	118,084
Total	-	-	**3,166,100**	-	**2,637,573**

[1] Includes cresylic acid, tarred felt, roofing cement, and various other products.
[2] Includes insecticides, polishes, machine oils, pharmaceutical preparations and embalming fluid.

CHAPTER THREE

ACIDS, ALKALIES, SALTS AND COMPRESSED GASES

General.—The manufacture of industrial chemicals such as sulphuric and nitric acids, caustic soda, salt cake, calcium carbide, cyanamide, phosphorus, and compressed gases such as oxygen, hydrogen, and acetylene, forms the basic chemical industry in Canada. In 1924, a total of 41 plants in this group representing a capital investment of $34,298,071 and employing 2,413 persons, produced chemicals valued at $26,241,722. Of this total, $24,190,274 represented the production of the acids, alkalies and salts industry and $2,051,448 the output of industrial gases. For purposes of review, separate statistics are given for each of these industries.

Of prime importance, is the production of sulphuric acid which meets such wide industrial application and is essential in the production of such materials as fertilizers, explosives, textiles, dyestuffs, and in petroleum refining and metallurgical processes. It is made from water, oxygen and sulphur dioxide in the presence of certain catalytic agents. There are two general types of processes known as the chamber process and the contact process. In either process the first step is the production of sulphur dioxide from natural sulphur or by the oxidation of the sulphur in certain metallic minerals, usually pyrites. In the chamber process, sulphur dioxide is brought into contact with oxygen (air) and water in the presence of nitrous oxides; these nitrous oxides are made by the decomposition of Chile saltpetre by strong sulphuric acid and function as oxygen carriers to promote the formation of the acid. In the contact process, sulphur dioxide and oxygen are combined in the presence of ferric oxide or specially prepared finely divided platinum as a catalyst to form sulphur tri-oxide, which is subsequently dissolved in water to form the acid.

In 1924, there were 8 plants in Canada producing sulphuric acid ; 2 plants produced acid for the manufacture of ammonium sulphate as a by-product in connection with the operation of by-product coke installations; 4 made sulphuric acid for commercial distribution; 1 plant in British Columbia made acid for use in the metallurgy of zinc and 1 other in that province made its own sulphuric acid for use in the manufacture of fertilizer. The Mond Nickel Co. at Sudbury has installed an acid plant with a capacity of 25,000 tons to utilize the waste gases from the smelter at that point. The consumption of sulphuric acid in Canada was estimated at 57,526 tons in 1924.

Nitric acid also finds wide industrial application and is necessary in the manufacture of fertilizers, explosives, dyestuffs, artificial silk and many other products, It is usually prepared by the action of sulphuric acid on Chile saltpetre. Nitric acid is also made by the fixation of

atmospheric nitrogen and oxidation of ammonia but has not been produced on a commercial scale in Canada by either of these methods. In 1924, there were 3 plants in Canada producing nitric acid located as follows; 2 in Ontario, and 1 in Quebec.

Calcium carbide was the major product of 2 firms in Canada during 1924. It is an electric furnace product, made by the fusion of lime and coke at a high temperature and finds many uses in industry.

Calcium cyanamide is prepared by fusing ground calcium carbide in an atmosphere of pure nitrogen, obtained from the air by compression and fractional distillation. It is important as a fertilizer itself and as a base for the production of other important products of industrial use. When fused with common salt in an electric furnace, it gives sodium cyanide which finds application in the metallurgy of gold and silver, in electroplating, and for insecticides. In 1924, one plant in Canada made large quantities of calcium cyanamide and sodium cyanide.

Compressed gases manufactured in Canada include acetylene, carbon dioxide, oxygen, ammonia and nitrogen, which represented the products of 21 different establishments in 1924.

Acetylene is used for illuminating purposes, oxy-acetylene welding, and for small lighting plants for lighting railway coaches, marine signals, etc. It is made from calcium carbide and water and was produced for commercial distribution by 11 plants in 1924.

Oxygen for industrial purposes can be made by the fractional distillation of liquid air. It is also made by the electrolysis of water, being recovered at the same time as the hydrogen. It was produced by 10 different plants in 1924 and meets various uses in industry.

Carbon dioxide was produced in 6 plants in Canada in 1924. It is prepared by the use of coke and copper oxide. Carbon monoxide is first prepared by passing air through the heated fuel in a retort, and the resultant gas is passed through a second retort, containing heated copper oxide which converts it into carbon dioxide. The copper oxide is regenerated by alternately passing air over it.

Nitrogen, aqua ammonia and an hydrous ammonia were each produced by 1 firm in 1924.

Table 27.—Summary Statistics of the Acids, Alkalies, Salts, and Compressed Gases Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel and electricity*	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
ACIDS, ALKALIES AND SALTS—									
1920	25	28,439,339	3,033	737,734	4,037,121	1,018,351	4,448,870	16,736,068	12,287,198
1921	24	29,945,120	1,496	576,609	1,919,407	495,200	5,034,729	11,867,268	6,832,539
1922	21	30,811,922	1,880	650,918	1,786,926	516,516	5,885,803	14,970,998	9,085,195
1923	24	31,963,419	2,488	683,867	2,634,812	1,957,997	11,147,443	21,747,517	10,600,105
1924	20	30,182,113	2,121	701,801	2,324,197	1,747,137	11,214,692	24,100,274	12,975,582
COMPRESSED GASES—									
1920	25	4,033,677	446	281,710	387,410	54,054	362,664	1,993,141	1,629,477
1921	26	4,218,484	318	295,673	213,259	35,405	301,839	2,001,898	1,700,059
1922	25	4,351,232	309	300,071	179,446	31,057	280,666	1,908,269	1,627,603
1923	23	4,472,896	300	279,456	182,308	92,541	488,879	2,165,445	1,676,566
1924	21	4,115,958	292	276,982	166,040	89,614	401,951	2,051,148	1,649,197
Total—									
1920	**50**	**32,473,016**	**3,479**	**1,019,444**	**4,424,531**	**1,072,408**	**4,812,534**	**18,729,209**	**13,916,675**
1921	**50**	**34,163,604**	**1,814**	**872,282**	**2,132,666**	**530,605**	**5,336,568**	**13,869,166**	**8,532,598**
1922	**46**	**35,163,154**	**2,189**	**950,989**	**1,966,372**	**547,573**	**6,166,469**	**16,879,267**	**10,712,798**
1923	**47**	**36,436,315**	**2,788**	**963,323**	**2,817,120**	**2,050,538**	**11,636,321**	**23,912,962**	**12,276,671**
1924	**41**	**34,298,071**	**2,413**	**978,483**	**2,490,837**	**1,836,751**	**11,616,643**	**26,211,722**	**14,625,079**

*Electricity not included for 1920, 1921 and 1922.

Capital Employed.—(a) ACIDS, ALKALIES AND SALTS.—In 1924 the capital employed by the 20 operating plants in this industry amounted to $30,182,113, a decrease of 1·8 million dollars from 1923 when reports were received from 24 establishments. The bulk of the industry was located in Ontario which accounted for 21·5 million dollars or 71 per cent of the total capital invested in the industry; Quebec accounted for most of the remainder.

(b) Compressed Gases.—In the same year there were 21 firms employing a capital of $4,115,958 manufacturing compressed gases. This was also slightly below 1923 when the working capital amounted to $4,472,896. The 8 plants in Ontario accounted for 2 million dollars or nearly 50 per cent of the total. There were also 4 plants in Quebec, 4 in Manitoba, 1 in Alberta and 2 in each of the provinces of British Columbia and Nova Scotia.

Table 28.—Capital Employed in the Acids, Alkalies, Salts and Compressed Gases Industry in Canada, by Classes and 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 account	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand and stocks in process	Cash trading and operating account	Total
	$	$	$	$	$	$	$	$
Acids, Alkalies and Salts Industry—								
Quebec	6,715,167	1,497,938	466,042	8,679,147	6,106,527	1,653,231	365,762	8,125,520
Ontario	17,228,540	2,598,266	2,967,362	22,794,168	15,561,855	2,445,252	3,541,153	21,548,260
Canada[1]	24,394,193	4,135,822	3,433,404	31,963,419	22,118,851	4,156,347	3,906,915	30,182,113
Compressed Gases Industry—								
Quebec	576,221	234,453	82,361	893,035	604,364	184,904	77,335	866,603
Ontario	1,059,188	711,921	567,436	2,338,545	1,004,697	651,899	345,271	2,001,867
Manitoba	371,977	96,560	35,091	503,628	403,534	127,053	28,308	558,895
Canada[2]	2,372,426	1,339,884	760,586	4,472,896	2,359,989	1,239,117	516,852	4,115,958
Total—								
Nova Scotia	289,799	133,177	37,936	460,912	296,518	126,606	33,658	456,782
Quebec	7,291,388	1,732,391	548,403	9,572,182	6,710,891	1,838,135	443,097	8,992,123
Ontario	18,287,728	3,310,187	3,534,798	25,132,713	16,566,552	3,097,151	3,886,424	23,550,127
Manitoba	371,977	96,560	35,091	503,628	403,534	127,053	28,308	558,895
Canada[3]	26,766,619	5,175,786	4,193,990	36,436,315	24,478,840	5,395,464	4,423,767	34,298,071

[1]Includes 2 firms in British Columbia and 1 in Nova Scotia.
[2]Includes 2 firms in British Columbia, 1 in Alberta and 2 in Nova Scotia.
[3]Includes 1 firm in Alberta and 4 in British Columbia.

Employment.—(a) Acids, Alkalies and Salts.—In 1924 the acids, alkalies and salts industry in Canada afforded employment to 2,121 persons of whom 321 were salaried employees and 1,800 wage-earners. This was a decrease of 15 per cent from the previous year due to the fact that there were 4 less reporting plants. During the year $701,801 was paid in salaries and $2,324,197 in wages making a total disbursement for the year of over 3 million dollars in salaries and wages. Plants in this industry operated on the average on 330 days during the year.

(b) Compressed Gases.—One hundred and seventy-one salaried employees and 121 wage-earners were, engaged in the preparation of compressed gases in 1924; this was but a slight decrease from the previous year. Salaries and wages totalled $443,322 as compared to $461,764 in the previous year. All plants in this industry operated full time during the year.

Table 29.—Employment, Salaries and Wages Paid in the Acids, Alkalies, Salts and Compressed Gases Industry in Canada, 1923 and 1924

	1923			1924		
	Acids, alkalies and salts	Compressed Gases	Total	Acids, alkalies and salts	Compressed gases	Total
(a) Number of employees:						
Salaried employees	339	181	520	321	171	492
Wage-earners, by months:						
January	1,913	115	2,028	1,866	123	1,989
February	1,964	114	2,078	1,840	121	1,961
March	2,072	114	2,186	1,755	119	1,874
April	2,187	116	2,303	1,750	120	1,870
May	2,334	119	2,453	1,759	128	1,887
June	2,341	120	2,561	1,786	126	1,912
July	2,329	124	2,453	1,864	125	1,989
August	2,099	120	2,219	1,834	126	1,960
September	2,158	118	2,276	1,782	120	1,902
October	2,138	122	2,260	1,789	118	1,907
November	2,074	118	2,192	1,816	114	1,930
December	2,029	118	2,147	1,747	111	1,858
Average	2,149	119	2,268	1,800	121	1,921
Total employees	**3,488**	**300**	**2,788**	**2,121**	**292**	**2,413**
(b) Salaries and wages:—						
Salaries $	683,867	279,456	963,323	701,801	276,682	978,483
Wages $	2,634,812	182,308	2,817,120	2,324,197	166,640	2,490,837
Total $	**3,318,679**	**461,764**	**3,780,443**	**3,025,998**	**443,322**	**3,469,320**
(c) Average yearly earnings of each wage-earner $	1,226	1,532	1,242	1,291	1,377	1,297
(d) Average number of days on which plants in this industry operated during the year	307	249	–	330	306	318
(e) Labour turnover—						
Total number of different wage-earners employed during the year	–	–	–	2,745	187	2,932
Average number of wage-earners employed within the year	2,149	119	2,268	1,800	121	1,921
Difference	–	–	–	945	66	1,011
Apparent labour turnover (per cent)	–	–	–	53	55	53

Table 30.—Distribution of Employment in the Acids, Alkalies, Salts and Compressed Gases Industry in Canada, according to the Average Number of Hours Worked per Day, by Provinces, 1924

Province	Number of wage-earners working			
	8 hours or less per day	9 hours	10 hours	Over 10 hours
Nova Scotia	14	1	2	4
Quebec	207	315	68	11
Ontario	722	813	63	39
Manitoba	10	1	4	4
Saskatchewan and Alberta	5	–	–	–
British Columbia	26	6	7	7
Canada	**984**	**1,136**	**144**	**65**

Table 31.—Fuel and Electricity Used in the Acids, Alkalies, Salts and Compressed Gases Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Anthracite coal	short ton	1,101	8,479	1,233	8,329
Bituminous coal	"	81,111	527,465	89,010	450,697
Coke	"	27,960	265,488	9,240	74,871
Fuel oil	Gallon	73,330	7,048	68,893	6,222
Gasoline	"	15,415	4,456	15,534	3,970
Gas	M. cu. ft.	48,131	4,494	255	228
Wood	cord	40	255	7	14
Other fuel	.....	-	-	-	173
Electric power	K.W.H.	-	1,232,853	555,276,553	1,292,247
Total	.....	-	**2,050,538**	-	**1,836,751**

Table 32.—Power Employed in the Acids, Alkalies, Salts and Compressed Gases 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	46	8,224	41	7,989
Engines—				
(a) Steam	49	7,797	39	7,630
(b) Oil and gasoline	1	225	1	225
Hydraulic turbines or water wheels	3	6,000	3	6,000
Electric motors—				
(a) Operated by purchased power	1,036	24,043	1,018	23,655
(b) Operated by power generated by the establishment	161	2,588	159	2,523

Materials Used.—(a) Acids, Alkalies and Salts.—Materials used including purchased materials and intermediates reached a total cost of $11,214,692 in 1924 as compared to $11,147,442 in the previous year. Intermediate products used as materials increased in value from $6,642,135 in 1923 to $7,425,916 in 1924 but in the same time purchased materials declined from $4,505,307 to $3,788,776. Principal purchased materials included sulphur, limestone, coke, carbon electrodes, Chile saltpetre and pyrites. Intermediates included sulphuric acid, lime, calcium carbide, calcium cyananide and nitre cake.

(b) Compressed Gases.—Raw materials valued at $401,951 were used to produce $2,051,448 worth of industrial gases in 1924. The principal materials were acetylene, calcium carbide, coke, acetone, ammonia liquor and lime.

Table 33.—Materials Used in the Acids, Alkalies, Salts and Compressed Gases Industry in Canada, 1923 and 1924

Materials used	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
ACIDS, ALKALIES, AND SALTS		No.	$	No.	$
Purchased materials used—					
Acids—					
Hydrochloric	lb.	73,150	1,844	3,520	157
Nitric	"	58,140	5,129	20,524	1,453
Sulphuric, 66° Bé	"	2,106,200	30,077	2,457,699	30,207
Other acids[1]	-	-	22,309	-	259
Ammonia, anhydrous and ammonia liquor	lbs. NH_3	128,936	22,768	199,764	31,183
Ammonium compounds[2]	lb.	62,770	3,739	872	32
Barium peroxide	-	-	20,138	-	1,393
Calcium carbonate (limestone)	ton	-	338,628	223,107	417,151
Calcium oxide and hydroxide (quick and slaked lime)	"	9,540	106,377	3,106	34,168
Calcium compounds, n.e.s.[3]	-	-	159,775	-	685,195
Carbon electrodes	lb.	-	306,697	5,827,316	303,783
Coke	ton	68,646	752,774	73,156	624,533
Copper sulphate	lb.	138,265	7,898	48,506	2,547
Iron sulphide (pyrites)	ton	18,615	89,287	19,706	91,202
Silica	"	-	68,767	14,283	49,839
Sodium carbonate (soda ash)	lb.	1,079,839	22,001	608,804	10,643
Sodium chloride, including brine	-	-	170,989	-	111,538
Sodium hydroxide	ton	163	13,164	146	14,189
Sodium nitrate (Chile saltpetre)	lb.	1,325	81,089	854	62,806
Sodium sulphate (salt cake)	-	52,405	899	33,559	699
Sodium compounds, n.e.s.[4]	-	-	14,037	-	6,627
Sulphur (brimstone)	ton	21,564	434,687	15,880	290,276
Containers	-	-	611,630	-	501,251
All other materials[5]	-	-	1,220,613	-	460,045
Total	-	-	4,505,307	-	3,788,776
Intermediate products used as materials—					
Sulphuric acid, 66° Bé	lb.	15,924,212	113,056	5,532,303	42,165
Materials, n.e.s.[6]	-	-	6,529,079	-	7,383,751
Total	-	-	6,642,135	-	7,425,916
Total	-	-	11,147,442	-	11,214,692
COMPRESSED GASES					
Acetylene	cu. ft.	10,714,078	64,781	9,825,956	60,514
Acetone	lb.	78,472	20,484	65,342	17,173
Calcium carbide	ton	1,240	101,917	1,068	85,507
Coke	"	1,879	30,251	4,434	39,606
Cylinders purchased during year	No.	5,584	154,688	3,331	72,763
Other containers, boxes, carboys, etc	-	-	3,514	-	500
All other materials[7]	-	-	113,244	-	125,888
Total	-	-	488,879	-	401,951
Total	-	-	**11,636,321**	-	**11,616,643**

[1] Includes acetic glacial, phosphoric, arsenious, boric, etc.
[2] Includes nitrate and sulphate.
[3] Includes calcium acetate, chloride, carbide, cyanamide, fluoride, and hypochlorite.
[4] Includes bichromate chlorate, cyanide, nitrite, silicate, sulphide, etc.
[5] Includes iron sulphide, nickel sulphate, phosphate rock, oils, greases, petroleum, bauxite, arsenic, litharge, and other materials.
[6] Includes nitre cake, phosphorus, lime, calcined salt cake, nitric acid, hydrogen sulphide, calcium carbide, calcium cyanamide and nitrogen.
[7] Includes ammonia liquor, potassium carbonate, lime and other materials.

Products.—(a) ACIDS, ALKALIES AND SALTS.—In 1924, products made in the acids, alkalies and salts industry reached a total value of $24,190,274, an increase of 2·5 millions over the previous year. Products made for sale were valued at 16·7 million and intermediate products at 7·4 million dollars, an increase in each case over the corresponding figures for 1923. A great many of the commodities were the products of only one or two firms and are not shown separately but grouped with other items or included under the general heading "other products."

(b) COMPRESSED GASES.—Products of this industry included acetylene worth $485,839, carbon dioxide valued at $356,679, oxygen worth $893,688 and various other gases to make a total production of $2,051,448.

Table 34.—Products of the Acids, Alkalies, Salts and Compressed Gases Industry in Canada, 1923 and 1924

Products	Unit of measure	1923		1924	
		Quantity	Selling Value	Quantity	Selling Value
		No.	$	No.	$
ACIDS, ALKALIES AND SALTS					
Products made for sale—					
Acids—					
Hydrochloric—20° Bé	lb.	6,702,437	101,872	5,190,032	79,697
Nitric (40–42° or 1·4 sp. gr.)	"	793,495	83,594	771,668	72,918
Sulphuric	ton	79,188	1,408,265	68,753	1,232,079
Calcium compounds[1]	–	–	4,618,685	–	5,917,146
Sodium sulphate (Glauber's salts)	ton	2,332	62,027	1,458	36,602
Sodium sulphate (salt cake)	"	2,376	57,621	1,648	32,948
Sodium compounds, n.e.s.[2]	–	–	5,231,310	–	5,259,637
All other products[3]	–	–	3,542,350	–	4,122,174
Total	–	–	15,105,724	–	16,753,201
Intermediate products made for use—					
Sulphuric acid, 66° Bé	ton	7,962	113,056	2,698	44,265
Products, n.e.s.[4]	–	–	6,528,767	–	7,392,808
Total	–	–	6,641,823	–	7,437,073
Total	–	–	21,747,547	–	24,190,274
COMPRESSED GASES					
Acetylene	cu. ft.	21,729,109	523,015	19,229,042	485,839
Carbon dioxide	lb.	3,355,628	353,387	3,428,953	356,679
Oxygen	cu. ft.	72,637,943	964,905	68,331,575	893,688
Other products[5]	–	–	324,138	–	315,242
Total	–	–	2,165,445	–	2,051,448
Total	–	–	**23,912,992**	–	**26,241,722**

[1] Includes bisulphite, oxide, arsenate, cyanamide made by American Cyanamide Co., hypochlorite (bleach) made by the Canadian Salt Co., and carbide made by Canada Carbide Co. and the Union Carbide Company of Canada, Ltd.
[2] Includes nitre cake, bisulphite, carbonate, hydroxide, and cyanide.
[3] Includes acet aldehyde, acetylene, acetic acid made by Grasseli Chemical Co., Ltd., acetic glacial made by Canadian Electro Products Co., phosphorus made by the Electric Reduction Co., Ltd., hydrofluoric acid, phosphoric acid, sulphurous acid, liquid chlorine made by the Canadian Salt Co., copper sulphate, iron phosphide, paraldehyde, hydrogen peroxide, acetylene black, filter alum, nitrated iron, ferro-silicon, lead arsenate, insecticides and various other products.
[4] Includes nitre cake, phosphorus, lime, calcined salt cake, nitric acid, calcium carbide, and crude cyanamide.
[5] Includes ammonia aqua, ammonia anhydrous, nitrogen and other products.

CHAPTER FOUR

EXPLOSIVES, AMMUNITION, FIREWORKS AND MATCHES

General.—An explosive may be defined as a substance or mixture, solid or liquid, capable of undergoing extremely rapid combustion or decomposition with the production of gaseous substances which occupy a volume many times as great as the explosive itself. The release of these gases results in a sudden increase in pressure and is usually accompanied by shock. Each explosive is a chemical product or a mixture of chemical products which must be prepared with accuracy and precision. The manufacturing of these products is, therefore, a highly specialized industry.

The most important classes of commercial explosives are: (1) black powder and similar mixtures, (2) nitrocellulose explosives, (3) nitroglycerine explosives, (4) various aromatic nitro compounds such as picric acid and trinitrotoluene, (5) fulminates, primers and detonators.

Black powder or ordinary gunpowder is an intimate mixture of potassium nitrate, wood charcoal and sulphur. Powders containing potassium chlorate as oxygen carrier are more powerful than those containing nitrates but are somewhat more sensitive and dangerous to handle.

Nitrocellulose, or more properly speaking, cellulose nitrate, is now the chief material used in the manufacture of military and sporting powders. It is made by subjecting cellulose to the action of strong nitric acid under certain definite conditions.

Nitroglycerine is formed by the action of nitric acid on glycerine. Explosives consisting wholly or in part of nitroglycerine or closely related substances are the most important of industrial explosives. Nitroglycerine is a heavy oily liquid and in this form has but a limited applic-

ability. For convenience in use and handling it is absorbed by various porous bodies such as infusional earth, wood pulp or keiselguhr. In this form it may be loaded into paraffined paper cartridges and is known as dynamite. Other nitration products of glycerine are used to manufacture low freezing dynamites.

Picric acid is prepared from phenol by the action of a mixture of sulphuric and nitric acids. It is the most powerful explosive known and is used as a bursting charge in high calibre guns.

Trinitrotoluene is obtained by nitrating toluene with a mixture of concentrated nitric and sulphuric acid. It is comparatively stable and safe to handle but is still too expensive for wide industrial application.

Fulminate of mercury is the most important of the detonators. It is made by dissolving mercury in nitric acid in the presence of alcohol and finds wide application for industrial, sporting and military purposes. Its manufacture and handling are very dangerous.

The explosive factories in Canada are engaged largely in making products suitable for use in the mining of coal and metallic ores, in quarrying, for small arms ammunition, fireworks and signals, and considerable military explosives. In 1924, reports were received from 14 firms that were licensed to manufacture explosives. Of these, 7 plants manufactured gunpowder, nitrate mixtures and dynamite as principal products, 3 produced ammunition, and 4 made fireworks and railway signals. Of these factories 6 were located in Quebec, 6 in Ontario and 2 in British Columbia.

The match industry is also included in this statistical group. In 1924 there were 4 firms making matches, 2 in Ontario and 2 in Quebec.

Table 35.—Summary Statistics of the Explosives, Ammunition, Fireworks and Matches Industry in Canada, 1920-1924

—	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel and electricity*	Cost of materials	Selling value of products	Value added by manufacturing
Explosives—		$		$	$	$	$	$	$
1920	8	7,210,422	791	234,860	961,356	188,065	2,941,381	6,810,907	3,869,526
1921	10	6,265,010	455	169,377	452,740	180,218	4,204,118	6,401,452	2,197,334
1922	9	6,826,543	498	154,336	498,959	87,726	6,076,366	7,963,225	1,886,859
1923	7	5,371,865	548	159,992	558,449	106,195	5,333,969	7,540,730	2,206,761
1924	7	12,203,156	570	235,036	558,222	135,056	6,007,787	8,502,682	2,494,895
Ammunition—									
1920	4	4,476,619	1,013	101,563	899,863	127,029	1,359,119	2,873,688	1,514,569
1921	5	4,503,012	825	132,471	614,305	129,610	777,160	2,285,373	1,508,213
1922	3	3,202,561	592	84,786	502,844	50,400	1,329,824	2,708,342	1,378,518
1923	3	3,707,397	664	95,974	548,713	52,814	2,540,011	3,929,902	1,389,891
1924	3	3,385,076	631	154,237	503,324	64,975	1,699,021	2,936,960	1,237,936
Fireworks—									
1920	5	217,111	70	35,316	33,539	3,914	155,658	320,123	164,465
1921	5	173,508	52	30,593	32,900	2,833	74,879	194,233	119,354
1922	4	147,417	47	38,884	28,290	2,838	68,535	193,093	124,558
1923	4	163,518	49	38,298	28,703	4,191	93,105	242,808	149,703
1924	4	127,026	47	33,390	28,777	2,427	66,193	196,672	130,479
Matches—									
1920	4	2,785,356	757	57,568	534,347	53,841	1,315,532	2,698,125	1,382,593
1921	2	2,700,327	439	58,903	331,073	43,404	1,055,043	2,118,786	1,063,743
1922	4	2,168,775	986	86,367	637,311	54,082	1,419,015	2,923,998	1,504,983
1923	4	4,577,322	1,029	132,639	569,229	65,864	1,303,556	2,714,950	1,411,394
1924	4	4,742,182	926	65,447	481,209	75,696	1,014,388	1,674,001	659,613
Total—									
1920	**21**	**14,689,508**	**2,631**	**429,307**	**2,429,105**	**372,849**	**5,771,690**	**12,702,843**	**6,931,153**
1921	**22**	**13,641,857**	**1,771**	**400,344**	**1,431,018**	**356,065**	**6,201,200**	**10,999,844**	**4,798,644**
1922	**20**	**12,345,296**	**2,123**	**364,373**	**1,666,504**	**195,046**	**8,893,740**	**13,788,658**	**4,894,918**
1923	**18**	**13,820,102**	**2,290**	**426,903**	**1,705,094**	**229,064**	**9,270,641**	**14,428,390**	**5,157,749**
1924	**18**	**20,457,440**	**2,174**	**488,110**	**1,571,532**	**277,554**	**8,787,392**	**13,310,315**	**4,522,923**

*Electricity not included for 1920, 1921 and 1922.

Capital Employed.—(a) Explosives Industry.—Capital employed reached a high point for the industry in 1924 when $4,584,085 was tied up in lands, buildings and plant equipment, $1,369,220 in materials on hand and stocks in process, and $6,249,851 in cash, trading and operating accounts, making thus a total investment of $12,203,156 for the year. In 1923, the total capital employed amounted to $5,371,865, and to $7,210,422 in 1920.

(b) Ammunition Industry.—In 1924 there was a slight decline in working capital from that of the previous year although the same number of plants were in operation. In 1924 the

capital employed in the 3 plants stood at $3,385,076 and at $3,707,397 in 1923. In the former year $2,249,013 or 66 per cent of the total represented primary investment in lands, buildings and plant equipment. All the plants in operation were located in Quebec.

(c) Fireworks Industry.—Capital employed in 1924 amounted to $127,026 as compared to $163,518 in the previous year. An increase is noted in the investment in lands, buildings, machinery and tools but this is more than offset by the declines in value of the materials on hand and in process, and in the cash, trading and operating accounts.

(d) Matches Industry.—In 1924 capital invested in the 4 plants totalled $4,742,182 of which 70 per cent or $3,325,009 was tied up in lands, buildings and plant equipment. In 1923 the total investment amounted to $4,577,322.

Table 36.—Capital Employed in the Explosives, Ammunition, Fireworks and Matches 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 account	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating account	Total
Explosives—	$	$	$	$	$	$	$	$
Ontario	67,415	13,131	1,246	81,792	67,415	14,361	745	82,521
Canada[1]	3,173,705	1,011,964	1,186,196	5,371,865	4,584,085	1,369,220	6,249,851	12,203,156
Ammunition—								
Quebec	2,180,292	1,141,901	376,204	3,707,397	2,249,013	991,817	144,246	3,385,076
Canada	2,180,292	1,141,901	376,204	3,707,397	2,249,013	991,817	144,246	3,385,076
Fireworks—								
Canada[2]	34,070	57,651	71,797	163,518	55,071	28,788	43,167	127,026
Matches—								
Canada[3]	3,436,983	663,695	476,644	4,577,322	3,325,009	585,920	831,253	4,742,182
Total—								
Quebec	**7,097,747**	**2,082,976**	**1,146,227**	**10,326,950**	**6,968,047**	**2,083,372**	**3,361,486**	**12,412,905**
Ontario	**580,082**	**386,316**	**420,816**	**1,387,211**	**902,629**	**336,076**	**602,242**	**1,840,947**
Canada	**8,834,050**	**2,875,211**	**2,110,811**	**13,820,102**	**10,213,178**	**2,975,745**	**7,268,517**	**20,457,440**

[1] Includes 2 firms in Quebec and 2 in British Columbia.
[2] Includes 3 firms in Ontario and 1 in Quebec.
[3] Includes 2 firms in Ontario and 2 in Quebec.

Employment.—(a) Explosives Industry.—In 1924 there were 94 salaried employees and 476 wage-earners on the rolls as compared to 89 and 459 respectively in 1923, giving, thus, a net increase of 22 employees or 4 per cent over the previous year. Monthly figures indicate a distinct seasonal trend. In January there were 410 wage-earners on the payroll, in February only 403 and then a gradual improvement until a maximum of 512 was reached in June; then there was a gradual decline to 483 in August, and to 397 in December. Salaries and wages amounted to $793,258 as compared to $718,441 in 1923. On the average, plants operated on 201 days during the year.

(b) Ammunition Industry.—An average of 631 persons was engaged in the manufacture of small arms and military ammunition in 1924 as compared to 664 in the previous year. The first months of the year marked the period of maximum employment as there were 421 male and 198 female employees on the roll in March, but then there was a gradual decline to 352 male and 161 female wage-earners at the end of the year. On the average, 378 male and 184 female wage-earners received $503,324 in wages during the year, thus giving an average yearly income of $896 to each wage-earner on the payroll.

(c) Fireworks Industry.—In 1924 wage-earners numbered 38, of whom 23 were male and 15 female; 9 salaried employees brought the total for the year to 47 as against 49 in 1923. Wages totalled $28,777 and salaries amounted to $33,390, making a total of $62,167 paid in salaries and wages during the year.

(d) Matches Industry.—The matches industry afforded employment to 926 persons in 1924, of whom 49 were salaried employees and 877 wage-earners. Of the latter, 447 or over 50 per cent of the total were female workers. There was a distinct falling off in employment in October when the number on the roll dropped about 50 per cent below that of September, but it recovered somewhat before the end of the year. The plants in this industry operated on 278 days in the year.

Table 37.—Employment, Salaries and Wages Paid in the Explosives, Ammunition, Fireworks and Matches Industry in Canada, 1923

—	Explosives		Ammunition		Fireworks		Matches		Total
	Male	Female	Male	Female	Male	Female	Male	Female	
(a) Number of employees—									
Salaried employees	81	8	42	2	11	2	104	9	259
Wage-earners, by months—									
January	337	4	437	202	24	17	470	518	2,009
February	370	4	445	208	27	19	418	415	1,906
March	336	4	444	201	25	15	461	472	1,958
April	411	4	433	199	25	14	450	456	1,992
May	416	5	426	194	20	14	445	453	1,973
June	270	7	430	190	19	11	456	442	1,925
July	385	5	425	192	19	11	479	527	2,043
August	403	4	412	183	18	11	496	496	2,023
September	447	5	416	185	20	11	479	493	2,056
October	504	8	428	184	22	10	470	485	2,111
November	399	8	420	187	23	14	394	423	1,868
December	468	9	408	184	23	15	388	396	1,891
Average	452	7	427	193	22	14	451	465	2,031
Total employees		**548**		**664**		**49**		**1,029**	**2,290**
(b) Salaries and wages—									
Salaries $		159,992		95,974		38,298		132,639	426,903
Wages $		558,449		548,713		28,703		569,229	1,705,094
Total $		**718,441**		**644,687**		**67,001**		**701,868**	**2,131,997**
(c) Average yearly earnings of each wage-earner $		1,217		885		797		621	849
(d) Average number of days on which plants in this industry operated during the year		307		297		213		255	254

Table 38.—Employment, Salaries and Wages Paid, in the Explosives, Ammunition, Fireworks, and Matches Industry in Canada, 1924

—	Explosives		Ammunition		Fireworks		Matches		Total
	Male	Female	Male	Female	Male	Female	Male	Female	
(a) Number of employees—									
Salaried employees	86	8	63	6	6	3	40	9	221
Wage-earners, by months—									
January	403	7	403	188	20	17	392	411	1,841
February	395	8	416	200	20	17	400	407	1,863
March	426	9	421	198	20	14	374	394	1,856
April	431	9	396	199	21	14	423	395	1,888
May	504	5	388	195	22	14	406	377	1,911
June	506	6	385	195	23	13	426	404	1,958
July	484	8	380	192	24	12	453	413	1,966
August	475	8	358	192	25	14	427	399	1,898
September	477	7	339	177	22	11	428	360	1,821
October	448	7	346	154	11	9	206	172	1,353
November	408	7	352	154	12	10	269	327	1,539
December	390	7	352	161	13	11	265	446	1,645
Average	467	9	378	184	23	15	430	447	1,953
Total employees		**570**		**631**		**47**		**926**	**2,174**
(b) Salaries and wages—									
Salaries $		235,036		154,237		33,390		65,447	488,110
Wages $		558,222		503,324		28,777		481,209	1,571,532
Total $		**793,258**		**657,561**		**62,167**		**546,656**	**2,059,642**
(c) Average yearly earnings of each wage-earner $		1,173		896		757		549	805
(d) Average number of days on which plants in this industry operated during the year		201		264		246		278	239
(e) Labour turnover—									
Total number of different wage-earners employed during the year		902		698		47		1,163	2,810
Average number of wage-earners employed during the year		476		562		47		877	1,953
Difference		426		136		–		286	857
Apparent labour turnover (per cent)		89		24		–		33	44

Table 39.—Distribution of Employment in the Explosives, Ammunition, Fireworks and Matches Industry in Canada, according to the Average Number of Hours Worked per Day, by Provinces, 1924

Province	Number of wage-earners working			
	8 hours or less per day	9 hours	10 hours	Over 10 hours
Quebec	249	1,142	327	47
Ontario	21	23	272	12
British Columbia	3	120	7	16
Canada	**273**	**1,285**	**606**	**75**

Table 40.—Fuel and Electricity Used in the Explosives, Ammunition, Fireworks and Matches Industry in Canada, 1923 and 1924

Description	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Anthracite coal	short ton	3,376	24,130	7,864	53,389
Bituminous coal	"	21,182	160,725	16,842	113,355
Coke	"	118	2,204	180	2,611
Fuel oil	gallon	779,755	33,287	750,047	40,931
Gasoline	"	1,454	413	1,718	526
Gas	M. cu. ft.	3,459	5,002	28,140	10,429
Wood	cord	899	3,303	798	2,566
Other fuel	.....	-	-	-	9,257
Electricity	k.w.h.	-	50,425	3,538,837	44,490
Total	.....	-	**279,489**	-	**277,554**

Table 41.—Power Employed in the Explosives, Ammunition, Fireworks and Matches 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	25	4,809	25	4,809
Engines—				
(a) Steam	15	2,962	15	2,928
(b) Oil and gasoline	2	21	2	21
Hydraulic turbines or water wheels	2	250	1	200
Electric motors—				
(a) Operated by purchased power	275	2,759	273	3,167
(b) Operated by power generated by the establishment	81	1,553	166	1,622

Materials Used.—(a) Explosives Industry.—Materials used in this industry in 1924 reached a total cost of $6,007,786, of which $2,507,003 represented the cost of purchased materials and $3,500,783 the estimated value of the intermediate products used as materials by the reporting plants. Purchased materials included glycerine worth $620,757, nitrocotton valued at $252,668, Chile saltpetre worth $660,228, oleum worth $118,139 and 66° Bé sulphuric acid costing $61,562. Intermediate products used as materials included nitroglycerine, mixed and recovered acids, ammonium nitrate and various other products.

(b) Ammunition Industry.—In 1924, materials used in the manufacture of small arms and military ammunition reached a total cost of $1,699,024 as compared to $2,540,011 in 1923. Purchased materials including powder, shot, cordite, cartridge cases, etc., amounted to $905,190 and intermediates consisting largely of shot shells and containers were worth $793,834.

(c) Fireworks Industry.—Materials used in the manufacture of fireworks included powder, sulphur, strontiun salts, potassium salts and a variety of other materials which aggregated $66,193 in 1924 as against $93,105 in the previous year.

(d) MATCHES INDUSTRY.—Lumber and splints reaching a total value of $353,391 accounted for about one-third of the total cost of materials used, which in 1924 amounted to $1,014,388. The principals chemicals used were ammonium phosphate, potassium chlorate and phosphorus sesquisulphide. Containers, boxes, etc., formed a considerable item and in 1924 cost $170,476.

Table 42.—Materials Used in the Explosives, Ammunition, Fireworks, and Matches Industry in Canada, 1923 and 1924

Materials used	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
EXPLOSIVES					
Ammonium nitrate	lb.	3,094,684	210,072	2,283,806	132,397
Ammonium perchlorate	"	15,500	1,400	47,100	4,773
Calcium carbonate	"	308,086	3,052	323,627	2,225
Charcoal	"	243,406	6,891	281,254	7,837
Corn meal	"	173,842	4,715	155,743	4,280
Corn starch	"	227,881	10,456	268,596	13,262
Dinitrotoluene (DNT)	"	144,178	20,609	150,879	16,493
Flour	.....	761,411	15,239	815,724	15,628
Glycerine	lb.	3,570,305	637,314	3,702,854	620,757
Graphite	"	3,316	285	3,238	292
Keiselguhr	.....	–	–	20,729	591
Mixed acids	lb.	2,173,150	66,872	–	–
Nitric acid	"	3,422,860	242,872	382,126	32,537
Nitrocotton (Pyrocotton)	"	127,729	62,344	1,233,635	252,668
Oleum	.....	–	–	9,538,349	118,139
Petrolatum	lb.	14,658	893	12,935	841
Petroleum products (chiefly paraffine wax)	"	503,952	17,686	185,256	10,236
Sawdust	"	–	–	751,820	3,616
Sodium carbonate (soda ash)	"	296,247	6,174	292,855	6,467
Sodium chloride (salt)	"	750,457	6,914	431,367	3,442
Sodium nitrate (Chile salpetre)	"	22,555,441	594,310	25,465,414	660,228
Sulphur	"	–	–	590,566	7,985
Sulphuric acid (66° Be)	"	–	–	4,677,457	61,562
Trinitrotoluene (TNT)	"	120,112	21,240	109,774	20,383
Wood pulp	"	953,672	22,995	1,236,880	28,675
Containers, boxes, cartons, etc	.....	–	–	–	151,052
All other materials[1]	.....	–	657,715	–	327,637
Total	.....	–	2,610,048	–	2,507,003
Intermediate products used as materials[2]	.....	–	2,723,921	–	3,500,783
Total	.....	–	5,333,969	–	6,007,786
AMMUNITION					
Purchased materials used[3]	.....	–	975,051	–	905,190
Intermediate products used as materials[4]	.....	–	1,564,960	–	793,834
Total	.....	–	2,540,011	–	1,699,024
FIREWORKS					
Total	.....	–	93,105	–	66,193
MATCHES					
Ammonium phosphate	lb.	–	–	53,931	7,233
Glue	"	651,535	69,068	152,533	35,462
Lumber and splints	ft.	–	500,276	5,692,454	353,391
Phosphorus sesquisulphide	lb.	93,351	47,588	15,023	1,278
Potassium chlorate	"	1,086,653	73,102	841,025	54,532
Powdered glass	.....	432,984	9,013	265,818	6,541
Wax	lb.	1,389,504	50,150	963,124	45,605
Containers, boxes, cartons, etc	.....	–	233,260	–	170,476
All other materials	.....	–	321,099	–	339,870
Total	.....	–	1,303,556	–	1,014,388
Total	.....	–	**9,270,641**	–	**8,787,392**

[1]Includes aluminum powder, ammonia liquor, ammonium sulphate, magnesium oxide, mercury, potassium nitrate, sodium perchlorate, acetone, alcohol, amatol, cartridge paper and various other materials.

[2]Includes nitric acid, mixed acids, recovered acids, ammonium nitrate, nitroglycerine, ground sulphur, dried amatol and dynamite cartridge shells and cases.

[3]Includes wax, potassium chlorate, mercury fulminate, corn meal, powder, shot, paper, cordite and various other materials.

[4]Includes empty shot shell cases and wads, fuse, detonators, primers and bullets

Products.—(a) Explosives Industry.—By the regulations provided for under the Explosives Act, which was assented to in 1914 and finally brought into force on March 1, 1920, explosives in Canada were divided into 7 main classes as follows: (1) gunpowder, (2) nitrate mixtures, (3) nitro compounds, (4) chlorate mixtures, (5) fulminates, (6) ammunition, (7) fireworks. Production data, therefore, has been arranged in accordance with this classification, but the last two classes are treated as separate industries.

In 1924 explosives made for sale were valued at $5,001,899, the bulk of which consisted of dynamites and gelatine dynamites. Gunpowder and nitrate mixtures were also produced in considerable quantities. Intermediate products which were used as materials consisted of mixed acids, nitroglycerine, nitric acid, etc., and had an estimated selling value of $3,500,783.

Ammunition Industry.—Safety cartridges, safety fuses for blasting, railway signals, loaded shot shells, electric fuses and detonators formed the large part of the products made for sale, which in 1924 reached a total value of $2,143,126.

Intermediate products worth $793,834 brought the total production value for the year to $2,936,960. In 1923 the production was valued at $3,929,902.

Fireworks Industry.—Manufactured fireworks and railway fog signals to the value of $196,672 were the main products of this industry in 1924.

Matches Industry.—Production of matches in 1924 amounted to $1,674,001 as compared to $2,714,950 in 1923. This value does not include the government excise tax.

Table 43.—Products of the Explosives, Ammunition, Fireworks, and Matches Industry in Canada, 1923 and 1924

Products.	Unit of measure	1923		1924	
		Quantity	Selling value	Quantity	Selling value
Explosives			$		$
(a) Products made for sale.					
Class I—					
Gun powder	lb.	1,084,895	249,260	1,439,843	242,429
Class II—					
Nitrate mixtures	"	237,075	24,520	490,875	48,400
Class III—Nitro compounds—Division 1—					
Dynamites	"	9,912,793	1,519,574	9,172,523	1,390,960
Gelatine dynamites	"	15,029,660	2,400,720	18,381,624	2,911,295
Monobels	"	2,114,188	341,822	1,587,036	257,155
Propellants	"	9,642	16,291	25,321	43,046
Total powder and blasting explosives in bulk	.....	–	4,552,197	–	4,893,285
Other products and by-products[1]	.....	–	264,612	–	108,614
Total	.....	–	4,816,809	–	5,001,899
(b) Intermediate products made for use.					
Ammonium nitrate	lb.	399,396	38,779	2,612,273	208,779
Mixed acids	"	5,091,815	195,023	–	–
Nitric acid	"	7,320,713	566,032	7,616,979	510,128
Nitroglycerine	"	7,350,539	1,508,273	8,317,487	1,500,180
Recovered acids	"	7,803,110	109,003	8,747,777	147,405
All other intermediate products	.....	–	306,811	–	1,134,291
Total	.....	–	2,723,921	–	3,500,783
Total	.....	–	7,540,730	–	8,502,682
Ammunition					
(a) Products made for sale[2]	.....	–	2,364,942	–	2,143,126
(b) Intermediate products made for use	.....	–	1,564,960	–	793,834
Total	.....	–	3,929,902	–	2,936,960
Fireworks					
Class VII—Fireworks—Division 2—					
Manufactured fireworks	.....	–	230,842	–	123,201
All other products	.....	–	11,966	–	73,471
Total	.....	–	242,808	–	196,672
Matches					
Total	.....	–	2,714,950	–	1,674,001
Total	.....	–	**14,428,390**	–	**13,310,315**

[1]Includes recovered acids, nitre cake, chlorate mixtures, mercury fulminate and other products.
[2]Includes shells, finished fuse, safety cartridges, safety fuses, railway fog signals, percussion caps, loaded and empty shot shells, electric fuses, detonators, and other products.

CHAPTER FIVE

FERTILIZERS

General.—Artificial fertilizers form a group of chemical products that are of prime importance to the agricultural industry of Canada. Such products are essential to intensive farming and to increased food production. Broadly speaking, there are two classes of fertilizer materials; "true fertilizers" which are in themselves a plant food, and "stimulant fertilizers" which by their action tend to make more available the plant food present in the former class of fertilizers or naturally present in the soil. The first class includes all materials that supply the chief plant foods, nitrogen, phosphorus and potash; and the second class includes such materials as lime, gypsum and common salt which are useful but not indispensable.

All commercial "true fertilizers" owe their value to the kind, quality, and amount of nitrogen, phosphorus and potash they contain. They are made by mixing more or less of several kinds of raw materials furnishing the desired ingredients and to these may be added sulphuric acid to render phosphorus more available and a filler to make up the desired formula.

Nitrogen in fertilizers is always combined with other elements and may be present as inorganic nitrogen in the form of nitrate of soda, sulphate of ammonia, and cyanamide, or in the organic form as found in animal matter such as dried blood, tankage, fish scrap or in vegetable matter such as cottonseed meal. Chile saltpetre is the world's chief supply of inorganic nitrogen; ammonium sulphate, a by-product in the manufacture of coke and gas, is next in importance; and cyanamide obtained by heating calcium carbide in an atmosphere of nitrogen is an important source of nitrogen for plant food. Organic nitrogen is supplied by the waste materials from the slaughtering and meat packing industry and from the fish curing plants.

Phosphorus comes from bones, mineral phosphates and basic slags from smelters, in all of which it occurs in combination with lime or potash. Nearly all the mineral phosphate used in this country is imported from the United States. Apatite was mined in considerable quantities in Canada but it is now unable to compete with the high grade deposits in Florida and very little has been mined in recent years. Basic converter slags from the steel industry are high in tricalcium phosphate and when ground make a valuable fertilizer without further treatment. Animal bones from which the fat has been extracted is also a good fertilizer material. Superphosphates made by treating rock phosphate with the proper proportion of sulphuric acid is also of prime importance.

Potash salts produced from natural deposits in Germany were used in considerable quantities prior to 1914, but in recent years when this supply has not been available, the production of potash salts from kelp and other sources, and the recovery from flue dusts in large cement plants has been attempted on a large scale. Wood ashes contain low percentages of potash but the production is small. Methods for recovering potash from natural occurring silicates, notably orthoclase feldspar, have met with but little commercial success.

Gypsum and limestone as stimulant fertilizers occur naturally in large deposits in Canada and are produced in small quantities for this purpose.

The present report for 1924 covers those plants producing fertilizers as a major product. There is also included in this section some account of the fertilizers made in those plants whose major product necessitates their inclusion in one of the other industrial groups.

In 1924, there were 14 fertilizer plants in operation located as follows: 7 in Ontario, 3 in British Columbia, 2 in New Brunswick and 1 in each of Nova Scotia and Manitoba. This was 4 below the number reporting in the previous year as 1 firm in Quebec, 1 in Ontario, and 2 in Nova Scotia did not operate during 1924.

Table 44.—Summary Statistics of the Fertilizers Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel and electricity*	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1920	16	3,839,923	402	137,940	299,498	51,436	2,388,818	3,788,027	1,399,209
1921	15	3,209,240	274	152,608	217,045	46,639	1,696,205	2,677,735	981,530
1922	17	3,935,467	344	148,214	200,665	42,353	1,098,230	1,981,418	883,188
1923	18	3,616,001	329	152,134	158,307	39,638	831,470	1,487,244	655,774
1924	14	2,072,488	166	64,176	95,134	24,872	730,158	1,277,145	546,987

*Electricity not included in 1920, 1921 and 1922.

Capital Employed.—Employing slightly over 2 million dollars of capital in fixed and current assets at the end of 1924, the industry showed a distinct falling away from the previous year when the capital investment amounted to $3,616,001. But, in the same time, production declined only 14 per cent to $1, 277,145. Although one-half of the operating plants were located in Ontario only $638,474 or about one-third of the total capital was employed in these plants. New Brunswick, Nova Scotia and British Columbia accounted for the large part of the remainder.

Table 45.—Capital Employed in the Fertilizers 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 account	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating account	Total
	$	$	$	$	$	$	$	$
Nova Scotia	402,139	298,724	687,834	1,388,697	–	–	–	–
Ontario	362,385	195,639	377,044	935,068	294,763	101,325	242,386	638,474
British Columbia	–	–	–	–	100,322	79,520	8,176	188,018
Canada[1]	**953,609**	**770,117**	**1,892,275**	**3,616,001**	**567,281**	**445,261**	**1,059,943**	**2,072,485**

[1] Includes 1 plant in Nova Scotia in 1924, 2 in New Brunswick in 1923 and 1924, 2 in Quebec in 1923, 1 in Manitoba in 1923 and 1924, and 2 in British Columbia in 1923.

Employment.—Corresponding with the decrease in capital invested the number of persons employed fell to 166 from 329 in the previous year. In 1924, there were 51 salaried employees and 115 wage-earners on the roll as compared to 98 and 231 in 1923. Salaries fell from $152,134 in 1923 to $64,176 in 1924 and wages dropped from $158,307 to $95,134 in the same time. On the average, the plants operated on 257 days during the year.

Table 46.—Employment, Salaries and Wages Paid in the Fertilizers Industry in Canada, 1923 and 1924

	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees—						
Salaried employees	84	14	98	38	13	51
Wage-earners, by months—						
January	215	1	216	91	–	91
February	269	1	270	108	–	108
March	312	2	314	165	–	165
April	347	3	350	166	–	166
May	299	3	302	137	–	137
June	158	1	159	104	–	104
July	165	1	166	85	–	85
August	169	1	170	86	–	86
September	163	1	164	110	–	110
October	182	1	183	95	–	95
November	193	1	194	114	–	114
December	227	1	228	102	–	102
Average	229	2	231	115	–	115
Total	**313**	**16**	**329**	**153**	**13**	**166**
(b) Salaries and wages—						
Salaries $	–	152,134	–	–	64,176	–
Wages $	–	158,307	–	–	95,134	–
Total $	–	310,441	–	–	159,310	–
(c) Average yearly earnings of each wage-earner .. $	–	685	–	–	827	–
(d) Average number of days on which plants in this industry operated during the year	–	251	–	–	257	–
(e) Labour turnover—						
Total number of different wage-earners employed during the year	–	–	–	–	297	–
Average number of wage-earners employed within the year	–	231	–	–	115	–
Difference	–	–	–	–	182	–
Apparent labour turnover (per cent.)	–	–	–	–	158	–

Table 47.—Distribution of Employment in the Fertilizers Industry in Canada, according to the Average Number of Hours Worked per Day, by Provinces, 1924

Province	Number of wage-earners working			
	8 hours or less per day	9 hours	10 hours	Over 10 hours
Nova Scotia	–	45	–	7
New Brunswick	2	–	2	1
Ontario	19	14	56	1
Manitoba	1	–	–	–
British Columbia	14	–	6	–
Canada	**36**	**59**	**64**	**9**

Table 48.—Power Employed in the Fertilizers 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	4	685	2	55
Engines—				
(a) Steam	9	893	3	90
(b) Gas	3	78	2	72
(c) Oil and gasoline	–	–	2	8
Hydraulic turbines or water wheels	1	75	–	–
Electric motors—				
(a) Operated by purchased power	35	676	25	475
(b) Operated by power generated by the establishment	6	135	3	75

Table 49.—Fuel and Electricity Used in the Fertilizers Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
			$		$
Anthracite coal	short ton	153	1,637	123	1,657
Bituminous coal	"	4,894	32,912	1,710	14,135
Coke	"	18	252	–	–
Gasoline	gallon	3,400	1,070	3,800	1,045
Wood	cord	201	867	230	954
Other fuel	-	–	450	–	225
Electric power	k.w.h.	–	2,450	221,405	6,856
Total	-		**39,638**	-	**24,872**

Materials Used.—Raw materials used in the fertilizer industry cost $730,158 at the works in 1924 as compared with $831,470 in 1923. This was a decline of 12 per cent. Some of the materials such as sodium nitrate, ammonium sulphate, and potash salts are soluble and readily available as plant food and require no special treatment but are mixed in the proper proportions to meet requirements. Consumption of sodium nitrate was 914 tons or only about half of the amount used in 1923. More ammonium sulphate was used but from the point of value was slightly lower than in the previous year. Consumption of phosphate rock was only one-third and of tankage one-half that of the previous year, while ammonium phosphate, basic slag, bone flour and lime were used in much less quantities. Cyanamide, wood ashes and dried blood were used in larger quantities.

Table 50.—Materials Used in the Fertilizers Industry in Canada, 1923 and 1924

Materials used	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
Acid phosphate (superphosphate)	lb.	27,977,215	234,383	29,762,555	205,029
Ammonium phosphate	"	319,859	4,662	54,300	568
Ammonium sulphate	"	1,271,528	58,600	2,188,643	50,899
Basic slag	"	16,480,304	8,387	940,920	1,216
Bone ash (char)	"	232,065	868	414,108	1,214
Bone flour, and bone dissolved	"	1,370,420	22,397	604,920	6,008
Bone meal (crude)	"	1,253,067	16,778	939,151	13,931
Calcium cyanamide	"	266,407	8,244	399,458	11,863
Dried blood	"	147,762	4,185	486,290	11,653
Fillers	"	779,800	1,602	1,563,189	1,705
Fish scrap, dried and acidulated	"	657,760	8,522	482,325	7,994
Kainit and other crude potash salts	"	353,620	1,467	88,050	526
Lime or land plaster	"	3,225,243	5,773	2,166,818	2,865
Potassium carbonate or wood ashes	"	251,125	3,498	898,690	8,098
Potassium chloride (muriate)	"	3,738,355	72,185	4,052,470	69,820
Potassium sulphate	"	1,642,530	13,381	362,457	9,778
Phosphate rock (crude)	"	8,529,101	47,712	2,969,328	17,803
Sodium nitrate	"	3,201,921	84,907	1,827,049	35,419
Sulphur	"	–	–	370,000	4,825
Sulphuric acid, 50° Bé	"	–	1,036	695,570	5,250
Tankage	"	13,449,146	107,072	6,499,349	77,164
All other materials		–	–	–	135,201
Containers, etc		–	125,751	–	51,329
Total	–	–	**831,470**	–	**730,158**

Products.—While capital employed and the number of employees fell to about half that of the previous year, production declined only 14 per cent. Products made in the fertilizer industry in 1924 had a sales value of $1,277,145 as compared with $1,487,244 in the previous year. This total does not include commodities from the fisheries, slaughtering and meat packing and other industries which are used as fertilizer material.

In 1924 complete fertilizers constituted 85 per cent of the total production. A complete fertilizer is made by mixing the required amounts of materials bearing nitrogen, phosphorus and potash in order that a sufficient quantity of these plant foods may be present to meet the particular needs of the soil for the crop to be grown. There were 61 million pounds of complete fertilizer made in 1924 as compared with 58 million in 1923, but the production value was less at $1,086,806 as against $1,113,857 in the previous year.

Several manufacturers sold portions of superphosphate after treatment or dilution with a filler to meet requirements. Over 7 million pounds of superphosphate was sold in 1924 as against 4·6 million in 1923, and the total selling value rose to $73,140 from $53,507 in the previous year.

One firm in British Columbia made sulphuric acid from sulphur and Chile saltpetre using part of the output in the manufacture of fertilizer and marketing the remainder as 50° Bé acid.

Supplementing the table on production is a compilation showing the production of fertilizer in other industries. In 1924 this amounted in value to $5,421,957 as against $5,853,800 in 1923.

Table 51.—Products of the Fertilizers Industry in Canada, 1923 and 1924

Products	Unit of measure	1923		1924	
		Quantity	Selling value	Quantity	Selling value
			$		$
Acid phosphate (superphosphate)	lb.	4,583,050	53,507	7,150,222	73,140
Bone flour and meal	"	418,125	9,773	338,160	8,840
Bone dissolved	"	305,094	4,378	219,344	2,412
Complete fertilizer	"	58,011,637	1,113,857	61,422,923	1,086,806
All other products[1]	–	–	305,729	–	105,947
Total	–	–	**1,487,244**	–	**1,277,145**

[1] Includes acidulated fish scrap, agricultural lime, wheat pickle, sulphuric acid and various other products.

Table 52.—Production of Fertilizers and Fertilizer Materials, in other Industries 1923 and 1924

Industry	Product	Unit of measure	1923		1924	
			Quantity	Selling value	Quantity	Selling value
				$		$
Cyanamide	Calcium cyanamide	ton	58,655	3,214,294	72,491	3,303,984
Slaughtering and meat packing	Animal tankage	"	14,760	543,042	15,594	537,151
	Bone, raw, ground	"	9,776	309,545	3,677	130,601
	Complete fertilizer	"	8,581	252,486	7,415	452,197
Fisheries	Fish and whale fertilizers	"	9,725	142,894	-	132,486
Chemical	Mixed fertilizers	"	710	32,393	-	-
Coke and gas	Ammonium sulphate	"	21,519	1,268,146	17,343	865,538
Total		-	-	**5,853,800**	-	**5,421,957**

CHAPTER SIX

MEDICINAL AND PHARMACEUTICAL PREPARATIONS

General.—In 1924, there were 104 plants in Canada manufacturing patent and proprietary medicines, pharmaceuticals and toilet preparations, and various associated products of lesser importance. Firms reporting in this group ranged from small one-man concerns compounding certain patent medicines in private homes to firms with a production in excess of half a million dollars. Individual pharmacists thoughout the country who compound medicines but who in the main conduct a retail business, are not included.

The industry continued to be centered in Ontario and Quebec there being 66 active plants in the former and 28 in the latter province. There were also 6 plants in this industry located in Manitoba, 2 in Nova Scotia and 1 in each of the provinces of New Brunswick and British Columbia.

During the last five years, there has been but little change in the number of reporting firms. Returns were received from 100 establishments in 1920, from 109 in 1922, and from 104 in each of 1923 and 1924.

Table 53.—Summary Statistics of the Medicinal and Pharmaceutical Preparations Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel and electricity*	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1920	100	12,191,155	2,838	1,493,296	1,471,520	79,588	7,029,594	15,728,224	8,698,630
1921	103	12,903,071	2,230	1,347,716	1,182,182	93,008	4,466,001	11,945,435	7,479,434
1922	109	13,905,461	2,302	1,517,488	1,235,192	66,456	4,145,298	11,532,530	7,387,238
1923	104	14,655,699	2,271	1,541,560	1,126,181	91,895	4,474,487	12,256,608	7,782,121
1924	104	15,156,479	2,193	1,444,065	1,222,992	93,391	4,895,352	13,350,347	8,454,995

*Electricity not included for 1920, 1921 and 1922.

Capital Employed.—Capital invested in the medicinal and pharmaceutical preparations industry in 1924 amounted to $15,156,479 representing an increase of half a million dollars over the previous year although the number of reporting plants remained the same. The value of lands, buildings, fixtures, machinery, and tools rose 1·4 million dollars to $5,331,381 but this was offset by a decline of nearly a million dollars in the cash, trading and operating account which stood at $5,790,132. Materials on hand and stocks in process were valued at $4,034,966. Ontario accounted for 9·8 millions of the total investment, Quebec 2·7 millions, Manitoba 2·5 millions, and the remainder was divided between Nova Scotia, New Brunswick and British Columbia.

Table 54.—Capital Employed in the Medicinal and Pharmaceutical Preparations 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	612,022	552,157	1,284,122	2,449,201	1,227,572	722,635	806,785	2,756,992
Ontario	2,668,496	2,501,026	3,909,315	9,078,837	3,390,715	2,449,378	3,939,462	9,779,555
Manitoba	637,979	925,662	1,162,838	2,726,479	691,368	838,913	1,003,674	2,533,955
Canada*	**3,941,122**	**4,002,365**	**6,712,212**	**14,655,699**	**5,331,381**	**4,031,966**	**5,790,132**	**15,156,479**

*Includes 2 firms in Nova Scotia, 1 firm in New Brunswick and 1 in British Columbia.

Employment.—In 1924 the medicinal and pharmaceutical preparations industry afforded employment to 661 salaried employees and 1,532 wage-earners making a total of 2,193 as compared to 2,271 in 1923. Much of the work in this industry is of such a nature as to permit employment of a large number of girls and women. In 1924 female employees numbered 1,109, or 50 per cent of the total, of whom 222 were on a salary basis and 887 earning wages. The total number of employees for 1924 is shown as less than for 1923, but the decline is confined to the salaried class as the number of wage-earners increased from 1,461 in 1923 to 1,532 in 1924, while the salaried employees declined from 810 to 661 in the same time.

During the year 4,449 different persons were employed at one time or another so that taking the difference between the total number of persons hired and the average number on the rolls there was apparently a turnover of 2,917 persons on an operating staff of 1,532. Labour turnover, therefore, amounted to 190 per cent.

Table 55.—Employment, Salaries and Wages Paid in the Medicinal and Pharmaceutical Preparations Industry in Canada, 1923 and 1924

	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees—						
Salaried employees	552	258	810	439	222	661
Wage-earners, by months—						
January	594	745	1,339	639	848	1,487
February	593	799	1,392	646	849	1,495
March	602	857	1,459	668	891	1,559
April	610	837	1,447	634	858	1,492
May	613	823	1,436	632	849	1,481
June	602	814	1,416	621	829	1,450
July	585	790	1,375	628	862	1,490
August	611	872	1,483	635	870	1,505
September	626	905	1,531	661	964	1,625
October	632	914	1,546	658	962	1,620
November	623	922	1,545	648	919	1,567
December	598	806	1,404	639	862	1,501
Average	620	841	1,461	645	887	1,532
Total	**1,172**	**1,099**	**2,271**	**1,084**	**1,109**	**2,193**
(b) Salaries and wages—						
Salaries $	–	–	1,511,560	–	–	1,444,005
Wages $	–	–	1,126,181	–	–	1,222,992
Total	–	–	**2,667,741**	–	–	**2,666,997**
(c) Average yearly earnings of each wage-earner $	–	–	771	–	–	798
(d) Average number of days on which plants in this industry operated during the year $	–	–	256	–	–	257
(e) Labour turnover—						
Total number of different wage-earners employed during the year	–	–	–	–	–	4,449
Average number of wage-earners employed within the year	–	–	1,461	–	–	1,532
Difference	–	–	–	–	–	2,917
Apparent labour turnover (per cent.)	–	–	–	–	–	190

Table 56.—Distribution of Employment in the Medicinal and Pharmaceutical Preparations Industry in Canada, according to the Average Number of Hours Worked per Day, by Provinces, 1924

Province	Number of wage-earners working			
	8 hours or less per day	9 hours	10 hours	Over 10 hours
Nova Scotia	7	4	–	–
New Brunswick	17	–	–	–
Quebec	267	213	32	–
Ontario	607	551	–	1
Manitoba	78	21	–	3
British Columbia	4	–	–	–
Canada	**880**	**789**	**32**	**4**

Table 57.—Fuel and Electricity Used in the Medicinal and Pharmaceutical Preparations Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
			$		$
Anthracite coal	short ton	1,178	11,301	1,194	11,308
Bituminous coal	"	5,600	44,798	6,302	44,581
Coke	"	–	–	4	48
Fuel oil	gallon	225	48	28,501	2,939
Gasoline	"	7,165	900	1,076	269
Gas	M. cu. ft.	4,371	3,634	11,355	3,866
Wood	cord	118	728	251	516
Other fuel		–	1,764	–	2,005
Electric power	k.w.h.	–	28,722	1,397,877	27,859
Total	–	–	**91,895**	–	**93,391**

Table 58.—Power Equipment Employed in the Medicinal and Pharmaceutical Preparations 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	18	1,144	22	1,442
Engines—				
(a) Steam	5	363	5	290
(b) Gas	3	48	2	7
(c) Oil and gasoline	1	3	–	–
Electric motors—				
(a) Operated by purchased power	310	1,236	325	1,228
(b) Operated by power generated by the establishment	14	48	8	29

Materials Used.—Materials used in the medicinal and pharmaceutical preparations industry are of such a variety that it is impossible to provide for the various items on the schedules. This results in the bulk of the materials used being reported under the general item, " other materials ".

In 1924, materials used in this industry cost $4,895,352 delivered at the plant as compared with $4,474,487 in the previous year. Probably the most striking item listed is that of " containers, boxes, etc." which represents such a high proportion, 32 per cent, of the total cost of materials. This is explained by the fact that most of the products are sold in small packages and bottles.

Table 59.—Materials Used in the Medicinal and Pharmaceutical Preparations Industry in Canada, 1923 and 1924

Materials used	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
Barium peroxide	lb.	15,300	2,754	54,319	6,382
Bismuth metal	"	35	72	3,937	8,104
Bismuth salts	"	2,344	7,959	–	–
Caffeine	"	2,505	7,915	8,480	26,013
Ethyl alcohol (65, o.p)	proof gal.	–	541,611	145,240	377,902
Iodine crude	lb.	444	1,751	11,219	44,295
Iodine, resublimed	"	1,631	8,836	–	–
Silver bullion	oz.	–	–	16,040	11,454
Other materials	–	–	2,503,760	–	2,848,122
Shipping containers (boxes, cartons, bottles, etc.)	–	–	1,399,829	–	1,575,080
Total	–	–	**4,474,487**	–	**4,895,352**

Products.—The products of this industry are also of a great variety and are largely marketed under individual trade names. The major part of the production in 1924 was listed as patent and proprietary medicines, which had a total value of $6,265,526; medicinal and pharmaceutical preparations came next at $3,783,044, while toilet preparations were valued at $1,503,594 and disinfectants at $55,536, making a total production value of $13,350,347 which was 8 per cent above the figure for 1923.

Table 60.—Products of the Medicinal aud Pharmaceutical Preparations Industry in Canada, 1923 and 1924

Products	Unit of measure	1923		1924	
		Quantity	Selling value	Quantity	Selling value
			$		$
Patent medicines and proprietary preparations	–	–	5,997,029	–	6,265,526
Medicated wines	–	–	121,158	–	46,533
Pharmaceutical preparations	–	–	3,518,911	–	3,783,044
Toilet preparations (including perfumes, hair tonics, etc.)	–	–	718,493	–	1,503,594
Disinfectants	–	–	61,326	–	55,536
Hydrogen peroxide	–	–	–	–	49,510
Iodine resublimed	lb.	–	–	3,501	17,183
Potassium iodide	"	–	–	6,523	23,529
Silver nitrate	"	–	–	1,639	12,733
All other products[1]		–	1,839,694	–	1,593,159
Total	–	–	**12,256,608**	–	**13,350,347**

[1] Includes barium sulphate, bismuth salts, nitrous ether, and various other products.

CHAPTER SEVEN

PAINTS, PIGMENTS AND VARNISHES

General.—The paints, pigments and varnishes industry in Canada ranks next in importance to the manufacture of acids, alkalies and salts. Products of this industry find wide application and are essential for the protection and preservation of all building materials such as wood, concrete or metal, as well as to decorate and beautify the surfaces. They are also used in the making of printing inks, oilcloths for table and floor, linoleum, leather dressing, wall papers, window shades and rubber goods.

Paints conceal the surface to which they are applied and develop a new surface coloured or tinted in accordance with the composition of the particular paint used. They consist essentially of a liquid vehicle carrying solid pigments in suspension. Varnishes are transparent liquids which by oxidation form a thin, colourless, elastic coating on the surface to which they are applied. Enamels or varnish paints are paints which dry with a surface similar to that of varnish but also impart a definite colour to the finished surface. Stains carry just enough colour or pigment to colour the wood or other surface but not enough to obscure the grain or structure. If the product does not obscure the surface to which is it applied it is termed a lacquer.

Raw linseed oil is used as the vehicle or pigment carrier for the majority of paints. When spread on in a thin layer this oil absorbs large quantities of oxygen from the air becoming solidified in a rubber-like mass. The addition of pigments to the oil effects the formation of stronger films and at the same time imparts the desired colour to the surface to which it is applied. When rapid drying paints are required, liquid driers are added to accelerate the drying of the oil. These driers are prepared by dissolving in hot oil considerable quantities of oxygen-carrying substances such as the oxides of lead and manganese, and subsequently thinning the mixture with turpentine or benzine. Cheaper forms of drier are prepared by hardening resin with lime and lead oxide and reducing the resinate with benzine or other volatile liquid. Boiled linseed oil is used to impart a glossy surface; it is made by heating raw linseed oil to a high temperature and then incorporating small percentages of metallic oxides. Turpentine and benzine are used to thin paints to the required consistency for application. This thinner, which volatilizes during drying of the paint, allows the paint to penetrate the pores of the surface to which it is applied. The white pigments used in paints are either of the opaque type such as basic carbonate of lead, sublimed white lead, zinc oxyde of lithopone, or the transparent type such as barytes, china clay, silica or asbestine. The colour pigments may be natural earth colours or chemically precipitated colours either of organic or inorganic origin.

Basic carbonate of lead is a compound consisting of carbonate of lead and hydrate of lead in chemical union. It is prepared by subjecting pig lead to the corroding gases produced by the fermentation of the refuse tan bark in the presence of acetic acid. When the bark ferments, carbon dioxide and heat are liberated. The heat causes the acetic acid to evaporate and its fumes attack the pig lead to form basic acetate of lead. The carbon dioxide then decomposes the basic acetate producing the basic carbonate or white lead. The white lead is then separated from the remaining metallic lead by grinding and screening; then it is water-ground, settled, and ground in linseed oil to produce the commercial white lead paste. Newer methods consist of precipating hydrated carbonate of lead from a solution of lead by means of carbon dioxide.

Sublimed white lead is a furnace product made from the sublimation at a very high temperature of galena or sphalerite. Mixed with zinc oxide it forms a very valuable paint pigment.

Lithopone is a mixture of zinc sulphide and barium sulphate. When solutions of these materials are mixed in proper proportions a heavy flocculent precipitate is formed. This precipitate as such has no body or covering power and when washed and dried is totally unfit for paint purposes, but when heated to dull redness and suddenly plunged into water in its pulp state its characteristics are totally changed and it makes a very effective and durable paint pigment.

Only a few paint manufacturers in Canada make any of their own pigments or colours. For the most part, they purchase all ingredients ready made and devote their attention to grinding, blending and mixing, and to the treatment of the different vehicles used.

In 1924, there were 55 plants in Canada manufacturing paints, pigments and varnishes; this was 2 less than in 1923 as 1 plant went out of business and 1 was absorbed by a larger company. Of the 55 operating plants, 14 were in Quebec, 26 in Ontario, 4 in Manitoba and 1 in each of Nova Scotia and Alberta and 9 in British Columbia. Of these, 4 had a production in excess of a million dollars, 13 others were above half a million; and the output of 9 others exceeded the quarter million mark.

Table 61.—Summary Statistics of the Paints, Pigments, and Varnishes Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel and electricity*	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
1920	48	20,320,851	2,568	1,737,154	1,693,910	320,947	15,931,923	27,042,098	11,110,173
1921	49	20,330,951	2,231	1,893,278	1,406,311	248,446	9,714,521	18,044,325	8,329,804
1922	53	21,073,706	2,451	1,899,135	1,522,081	244,507	11,354,903	20,230,545	8,875,642
1923	57	20,806,909	2,591	2,050,381	1,615,442	288,617	10,754,273	21,553,158	10,798,885
1924	55	20,587,856	2,287	1,632,342	1,411,886	282,654	11,674,837	20,200,824	8,525,987

*Electricity not included in 1920, 1921 and 1922.

Capital Employed.—Capital employed in the paint industry has remained at about the same figure for the last five years. In 1924, capital employed amounted to $20,587,856 which was but slightly below 1923 when it stood at $20,806,909. Fixed assets as represented by lands, buildings, fixtures, machinery and tools increased in value by half a million dollars but the value of materials on hand and stock in process declined a corresponding amount. The cash, trading and operating accounts was only slightly below that for the previous year. Plants in Quebec employed $11,214,334 or 55 per cent of the total, while Ontario accounted for 71 per cent of the remainder.

Table 62.—Capital Employed in the Paints, Pigments, and Varnishes 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 account	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash trading and operating accounts	Total
	$	$	$	$	$	$	$	$
Quebec	4,541,312	3,502,236	3,572,426	11,615,974	4,517,619	2,987,397	3,709,318	11,214,334
Ontario	2,366,500	1,960,354	2,212,435	6,539,289	2,698,899	1,807,358	2,185,580	6,691,837
Manitoba	333,577	291,311	21,716	646,604	467,075	399,200	21,491	887,766
British Columbia	593,163	438,429	386,700	1,118,292	587,854	364,339	243,098	1,195,291
Canada[1]	8,171,261	6,332,181	6,303,467	20,806,909	8,616,235	5,741,253	6,230,368	20,587,856

[1]Includes 1 firm in Nova Scotia, and 1 in Alberta.

Employment.—The total number of persons employed in 1924 dropped to 2,287 or 13 per cent below 1923. In the former year, employment was afforded to 774 salaried employees and 1,513 wage-earners as compared to 928 and 1,663 respectively in the latter year. Salaries and wages showed a corresponding decline to $3,044,228 from $3,665,823 in 1923.

In 1924, employment was greater in the fore part of the year with the maximum being reached in March when there were 1,621 wage-earners on the roll, and the minimum in September when 1,395 wage-earners were employed. In each month the number was below that of the same month in 1923. In that year the peak of employment was reached in May when there were 1,793 persons on the wage roll, and the low point came in August when only 1,581 wage-earners were employed. In each year female workers made up about 12 per cent of the total.

To keep an average of 1,513 wage-earners on the roll, 3,361 different persons were hired during the year. The difference of 1,848, therefore, on an average staff of 1,513 represents an apparent labour turnover of 122 per cent.

Table 63.—Employment, Salaries and Wages Paid in the Paints, Pigments and Varnishes Industry in Canada, 1923 and 1924

—	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees—						
Salaried employees	698	230	928	599	175	774
Wage-earners, by months—						
January	1,406	180	1,586	1,328	175	1,503
February	1,458	187	1,645	1,382	176	1,558
March	1,491	199	1,690	1,429	192	1,621
April	1,517	207	1,724	1,413	185	1,598
May	1,581	212	1,793	1,415	178	1,593
June	1,539	213	1,752	1,393	178	1,571
July	1,476	196	1,672	1,365	175	1,540
August	1,399	182	1,581	1,260	169	1,429
September	1,411	172	1,583	1,241	154	1,395
October	1,427	185	1,612	1,261	154	1,415
November	1,435	187	1,622	1,286	164	1,450
December	1,428	202	1,630	1,288	165	1,453
Average	1,467	196	1,663	1,340	173	1,513
Total	2,165	426	2,591	1,939	348	2,287

Table 63.—Employment, Salaries and Wages Paid in the Paints, Pigments and Varnishes Industry in Canada, 1923 and 1924—Concluded

—	1923			1924		
	Male	Female		Male	Female	
(b) SALARIES AND WAGES—						
Salaries...$	–	2,050,381	–	–	1,632,342	–
Wages...$	–	1,615,442	–	–	1,411,886	–
Total...$	–	**3,665,823**	–	–	**3,044,228**	–
(c) AVERAGE YEARLY EARNINGS of each wage-earner...$	–	971	–	–	933	–
(d) AVERAGE NUMBER OF DAYS on which plants in this industry operated during the year...	–	286	–	–	300	–
(e) LABOUR TURNOVER—						
Total number of different wage-earners employed during the year...	–	–	–	–	3,361	–
Average number of wage-earners employed within the year...	–	1,663	–	–	1,513	–
Difference...	–	–	–	–	1,848	–
Apparent labour turnover (per cent)...	–	–	–	–	122	–

Table 64.—Distribution of Employment in the Paints, Pigments and Varnishes Industry in Canada, according to the Average Number of Hours Worked per Day, by Provinces, 1924

Province	Number of wage-earners working			
	8 hours or less per day	9 hours	10 hours	Over 10 hours
Nova Scotia...	–	58	–	–
Quebec...	216	579	87	13
Ontario...	161	310	11	36
Manitoba...	53	6	45	–
British Columbia...	121	–	–	–
Canada...	**551**	**953**	**143**	**49**

Table 65.—Power Employed in the Paints, Pigments, and Varnishes 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...	28	1,912	38	2,797
Engines—				
(a) Steam...	20	1,555	20	1,903
Hydraulic turbines or water wheels...	1	90	1	90
Electric motors:				
(a) Operated by purchased power...	345	3,882	317	3,057
(b) Operated by power generated by the establishment...	10	190	21	293

Table 66.—Fuel and Electricity Used in the Paints, Pigments and Varnishes Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
			$		$
Anthracite coal...	Short ton	435	5,162	670	5,217
Bituminous coal...	"	22,459	171,150	18,008	131,434
Coke...	"	3,128	42,949	2,556	29,841
Fuel oil...	gallon	248,108	20,165	478,461	27,548
Gasoline...	"	9,100	2,639	9,982	2,965
Gas...	M.cu.ft.	983	1,094	1,703	1,114
Wood...	cord	581	2,038	530	2,124
Other fuel...	.....	–	1,511	–	4,279
Electric power...	k.w.h.	–	41,909	5,604,649	78,132
Total...	.....	–	**288,617**	–	**282,654**

Materials Used.—Raw materials rose in cost from $10,754,273 in 1923 to $11,674,837 in 1924. The cost of purchased materials at $9,778,525 fell slightly below the previous year when it was $9,965,145 but the value of intermediate products used as materials was more than doubled rising from $789,128 in 1923 to $1,896,312 in 1924.

The same 4 plants as in 1923 corroded pig lead for the production of basic carbonate white lead, but the quantity of pig lead used, fell from 19,824,306 pounds in 1923 to 18,420,212 pounds in 1924.

Basic carbonate of white lead retained its place as the most important pigment the consumption of 10·4 million pounds being 2·2 million above that of last year. Lithopone was used extensively and in slightly larger quantities than in 1923 when 4·7 million pounds were used in this industry. Other pigments and fillers included 3·3 million pounds of barytes, 1·9 million pounds of zinc oxide and 9 million pounds of chalk as well as large quantities of various other materials.

Gums and resins were the most important of the driers used. In 1924 there were 1,413,588 pounds of gums and 4,452,111 pounds of resins used for this purpose. Waxes of various kinds, cobalt salts, and manganese salts were also used extensively.

Linseed oil was the most important of the pigment carriers. In 1924, the various plants used 1·8 million pounds worth in the neighbourhood of 2 million dollars as against 1·4 million pounds worth 1·5 million dollars in 1923. China wood oil (tung oil) worth $670,559 was also an important item. Petroleum distillate, turpentine and alcohol were also used extensively, but in less quantities than in the previous year.

Intermediate products used as materials included 4,231,703 pounds basic carbonate made by firms corroding pig lead and used by them in the manufacture of paints. Of more importance from the point of value was 576,789 gallons of varnishes worth $1,206,179. Intermediates are listed in more detail than in previous years.

Table 67.—Materials Used in the Paints, Pigments and Varnishes Industry in Canada, 1923 and 1924

Materials used	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
PURCHASED MATERIALS			$		$
Pigments, colours and fillers—					
Asbestine	lb.	3,130,899	41,006	2,513,168	34,018
Barytes	"	4,113,508	82,967	3,322,059	64,364
Basic carbonate white lead, dry	"	5,756,015	545,573	4,577,681	432,332
Basic carbonate white lead, in oil	"	1,958,267	208,603	1,571,135	172,757
Basic sulphate white lead (sublimed lead)	"	310,373	29,794	208,805	23,615
Blanc fixe	"	43,503	2,137	88,347	5,056
Coal tar lakes (all colours)	"	14,714	15,975	67,542	15,320
Graphite	"	343,906	13,728	184,260	7,861
Kaolin or china clay	"	1,210,136	16,784	1,172,649	14,543
Iron oxide ore	"	163,615	5,238	64,609	3,514
Iron oxide pigments	"	2,209,302	94,083	1,790,097	59,451
Lampblack and other carbon blacks	"	342,113	60,367	275,300	46,031
Leaded zinc oxide and zinc leads	"	1,787,997	127,167	1,737,363	128,585
Litharge	"	931,205	84,164	788,442	73,501
Lithopone	"	4,691,088	301,310	4,839,934	308,309
Ochres, siennas and umbers	"	1,686,311	82,703	1,490,582	63,818
Pig lead	"	19,824,306	1,399,726	18,420,212	1,375,346
Prussian blue	"	11,404	7,941	15,930	6,510
Red lead	"	724,278	70,799	587,344	55,915
Satin white or gypsum	"	334,423	4,839	333,438	4,294
Silica, silex or infusorial earth	"	1,091,403	20,325	901,214	17,059
Ultramarine	"	201,087	38,424	113,364	24,363
Whiting or chalk	"	10,035,338	115,171	9,033,362	98,409
Zinc and zinc ore	"	512,846	21,487	398,200	16,970
Zinc oxide, pure	"	2,510,347	222,416	1,940,250	182,915
All other pigments and dry colours	.....	.....	285,863	-	380,336
DRIERS—					
Cobalt salts	lb.	2,581	2,673	2,642	2,016
Gums	"	1,630,052	419,657	1,413,588	314,847
Linoleate driers purchased	"	11,528	10,380	8,851	5,686
Manganese salts	"	45,168	3,839	39,348	3,698
Resins	"	5,643,143	164,381	4,452,111	150,252
Resinate driers purchased	"	41,439	18,284	55,306	8,363
Waxes	"	65,496	11,872	45,546	10,363

Table 67.—Materials Used in the Paints, Pigments and Varnishes Industry in Canada, 1923 and 1924—Concluded

Materials used	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
OILS AND SOLVENTS—					
Alcohol	proof gal.	138,952	137,856	108,921	101,423
Acetone	lb.	.....	25,199	74,469	40,170
Asphaltum	"	589,941	32,531	1,569,899	52,608
China wood oil (tung oil)	gal.	436,566	659,827	625,557	679,559
Coal tar naphtha and benzol	"	91,183	38,695	252,699	61,998
Coal tar pitch	lb.	49,697	1,241	187,301	4,063
Creosote	gal.	65,334	18,701	65,143	21,762
Fish oils	"	48,400	42,226	41,034	34,741
Linseed oil, raw	"	1,177,101	1,239,163	1,480,936	1,494,332
Linseed, oil, boiled	"	253,036	274,365	320,622	335,423
Petroleum distillate	"	1,735,618	449,211	1,127,712	264,504
Soya bean oil	"	21,047	18,281	38,101	44,214
Turpentine (gum spirits)	"	386,678	550,760	230,068	267,843
Wood turpentine	"	11,928	21,634	140,873	62,104
Other oils and solvents	.....	-	-	-	78,611
Other chemicals	.....	-	-	-	100,820
Cans, cases, barrels, etc	.....	-	1,269,263	-	1,433,708
All other materials	.....	-	656,516	-	590,225
Total	.....	-	9,965,145	-	9,778,525
INTERMEDIATES USED AS MATERIALS					
Basic carbonate white lead, dry	lb.	-	-	3,702,526	291,488
Basic carbonate white lead, in oil	"	442,367	52,135	529,177	57,374
All other pigments and dry colours	"	656,033	24,743	323,783	68,671
Japans and lacquers	gal.	16,256	15,348	12,671	32,634
Lead, babbitt, etc	lb.	-	-	64,952	4,382
Coal tar pitch	"	-	-	14,000	280
Enamels	gal.	-	-	3,546	12,496
Linoleate diers	lb.	-	1,757	16,753	42,891
Linseed oil, boiled	gal.	-	-	17,535	22,202
Mixed paints	"	-	-	12,860	19,006
Paste paints	lb.	79,080	8,003	75,260	7,963
Resins	"	86,472	5,305	86,301	5,196
Resinate driers	"	-	24,042	30,069	22,697
Varnishes	gal.	285,511	531,021	576,789	1,206,179
All other intermediates	.....	-	126,774	-	102,853
Total	.....	-	789,128	-	1,896,312
Total	.....	-	**10,754,273**	-	**11,674,837**

Products.—The total production of the paints, pigments and varnishes industry in 1924 amounted to $20,200,824 which was 6 per cent below that of 1923. The value of products made for sale fell to $18,187,681 from $20,938,802 in the previous year, but the value of intermediates used, rose to $2,013,143 from $614,356 in the same time.

From the point of value, mixed paint ready for use was the chief product with varnishes of next importance and basic carbonate white lead in oil, enamels, paste paints, stains and shellac following in order. Colours in oil and japan, dry colours, dry basic carbonate, japans and lacquers were also among the important products.

In 1924, the 4 firms corroding pig lead produced 6,662,478 pounds dry basic carbonate, 13,039,756 pounds of basic carbonate in oil, 1,390,835 pounds of red lead and 4,758,715 pounds of litharge. All the dry basic carbonate made in the industry was made by these 4 firms, but some plants bought the dry carbonate, ground it in oil and sold it as basic carbonate in oil bringing the total production of this commodity for sale and for intermediate use to 14,406,356 pounds.

In the accompanying table products listed by only one or two firms are included under all other products.

Table 68.—Products of the Paints, Pigments and Varnishes Industry in Canada, 1923 and 1924

Products	Unit of measure	1923		1924	
		Quantity	Selling value	Quantity	Selling value
PRODUCTS MADE FOR SALE—			$		$
Asphaltic and tar paints	gal.	–	212,445	97,509	113,705
Basic carbonate white lead, dry	lb.	8,347,772	802,992	2,917,053	273,581
Basic carbonate white lead, in oil	"	14,670,310	1,744,657	13,920,078	1,603,589
Colours in oil and japan	"	–	461,547	1,269,109	306,877
Dry colours	"	2,938,046	577,719	1,388,205	242,623
Enamels	gal.	–	18,818	251,205	971,314
Floor waxes and polishes	lb.	–	57,457	113,855	36,849
Inks, printing	gal.	–	754,510	1,484	2,158
Iron oxide pigments	lb.	582,000	23,285	380,300	19,063
Japans and lacquers	gal.	178,301	323,884	281,554	384,233
Linoleate driers	"	–	101,153	118,359	199,360
Linseed oil, boiled	"	129,797	161,022	86,758	107,164
Mixed paints, ready for use	"	3,161,656	8,916,759	2,385,249	6,878,367
Red lead	lb.	1,194,980	106,371	1,416,135	126,643
Resinate driers	gal.	–	77,560	37,632	62,946
Paste, paints	lb.	–	168,831	5,308,579	813,716
Paint and varnish removers	–	–	–	–	34,921
Putty and other fillers	lb.	5,551,346	417,163	5,949,286	322,231
Stand, blown or enamel oils	gal.	139,399	188,904	9,695	33,374
Shellac	"	446,112	632,323	129,521	525,648
Stains	"	322,264	584,624	357,601	650,249
Varnishes, all kinds	"	1,681,347	3,832,768	1,572,047	3,013,782
All other products[1]	–	–	774,010	–	1,465,288
Total	–	–	20,938,802	–	18,187,681
INTERMEDIATE PRODUCTS MADE FOR USE—					
Basic carbonate white lead, dry	lb.	28,200	2,749	3,745,425	351,650
Basic carbonate white lead, in oil	"	442,367	52,135	486,278	52,655
Dry colours	"	120,673	21,426	323,783	68,671
Japans and lacquers	gal.	16,256	15,348	12,671	33,093
Linolenate driers	"	2,432	4,413	20,822	45,433
Linseed oil, boiled	"	17,035	19,451	17,535	22,202
Resinate driers	"	12,481	24,042	30,209	22,863
Varnishes, all kinds	"	216,588	405,624	594,765	1,246,705
All other intermediates[2]	–	–	69,168	–	169,871
Total	–	–	614,356	–	2,013,143
Total	–	–	**21,553,158**	–	**20,200,824**

[1] Includes litharge, lampblack and other carbon blacks, pyroxylin compounds and thinners, kalsomine, cold water paint, shot dropped and moulded, paint oil, paste, size, satin white, solvent, aluminum paint, graded leads, roofing cement and preservative, core oil, antifreeze, waterglass and other products.

[2] Includes putty and other fillers, paste paints, mixed paints, enamels, colours in oil, shellac, asphaltic and tar paints, stand, blown or enamel oils, pyroxylin compounds, resins, and other products.

CHAPTER EIGHT

SOAPS, WASHING COMPOUNDS AND TOILET PREPARATIONS

General.—Statistics for the soaps, washing compounds and toilet preparations industry in 1924 cover the operation of 66 different plants having a combined working capital of $16,367,069. This group includes 33 plants manufacturing soap as the major product, 9 establishments producing washing compounds, and 24 engaged in the preparation of perfumes, cosmetics and other toilet essentials. For statistical purposes, these three allied industries are included under one classification but separate data are shown where it is of value.

Soap is made by the saponification of animal and vegetable oils and fats. Saponification consists of treating the fat with alkali of soda or potash. Fats, for the large part, are glycerides of the fatty acids and the caustic alkali decomposes the glyceride to form the corresponding alkali salt of the fatty acid which is commonly known as soap. Hard soap is made with caustic soda and soft soap with caustic potash.

Soap is made for such a variety of purposes that the choice of stock and mode of preparation must necessarily vary. In general, however, the process is much the same. The soap stock is melted out of the drums in which it is received, by means of steam, then separated from the water of condensation by settling and pumped to the storage or boiling tanks. Then it is boiled with 18° caustic soda which is admitted through a separate line in just sufficient quantities to nearly but not quite complete saponification. Free glycerine is formed during the

process and is separated by "graining" which consists of adding common salt or brine the effect of which is to render the soap insoluble so that it floats to the top as a curdy mass, the briny solution of glycerine being drawn off at the bottom. The saponification is then completed by more additions of lye and more boilings until the desired texture of soap is obtained. Straight tallow soaps have slow lathering properties so a softening agent such as oil or rosin must be added to increase the solubility. Then the soap is allowed to settle, mixed throughly in a crutcher, drawn off into frames and allowed to harden after which it is cut into cakes pressed and wrapped for sale. Toilet soaps are made from a vegetable oil base, the soap being chipped, mixed and pressed with the desired colour and perfume.

Soft soaps are prepared from alkali of potash and an oil high in oleic acid such as saponified red oil, linseed oil, cottonseed oil, etc. Liquid soaps are made like soft soaps with the addition of glycerine or alcohol to make it liquid.

Floating soaps are prepared in the same manner as other soaps, but the mixing is conducted at a high rate of speed to fill the soap full of minute air bubbles which lowers the specific gravity below that of water.

Washing powders are mixtures of soda ash, soap and water. Scouring powders contain varying amounts of silex, and sometimes sal ammoniac, mixed with the soap powder. They are usually made from a cocoanut oil base.

Table 69.—Summary Statistics of the Soaps, Washing Compounds, and Toilet Preparations Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel and electricity*	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
Soaps—									
1920	26	14,858,770	1,481	629,525	1,135,789	428,524	11,831,566	17,410,826	5,579,260
1921	28	14,499,010	1,456	780,263	956,826	334,783	7,695,474	13,211,414	5,515,940
1922	32	13,881,099	1,447	776,877	975,539	336,538	7,534,475	13,132,200	5,597,815
1923	33	13,774,170	1,591	885,508	1,080,407	332,071	8,455,229	14,939,786	6,484,557
1924	33	14,497,596	1,464	810,047	1,038,282	264,451	7,824,844	13,187,267	5,362,423
Washing compounds—									
1920	12	157,543	84	42,500	46,067	2,222	129,800	318,176	186,376
1921	15	256,111	77	55,929	49,044	2,175	117,230	340,107	222,877
1922	13	274,660	85	75,966	47,711	2,180	124,625	351,328	229,703
1923	11	283,851	83	66,583	46,671	2,040	103,725	348,801	245,076
1924	9	251,829	67	82,636	52,981	3,494	108,295	334,470	226,175
Toilet preparations—									
1920	20	1,222,603	431	236,815	176,356	7,754	963,497	2,077,813	1,114,316
1921	20	1,359,544	338	179,382	138,622	6,444	670,000	1,756,300	1,086,300
1922	23	1,625,485	341	174,602	164,621	9,659	825,576	2,355,287	1,529,711
1923	26	1,610,571	408	193,456	187,030	13,533	841,798	2,620,424	1,778,626
1924	24	1,617,644	373	200,772	174,302	12,159	848,946	2,443,581	1,594,635
Total—									
1920	**58**	**16,238,916**	**1,996**	**908,840**	**1,358,212**	**438,500**	**12,924,863**	**19,804,815**	**6,879,952**
1921	**63**	**16,114,665**	**1,871**	**1,015,574**	**1,144,492**	**343,402**	**8,482,704**	**15,307,821**	**6,825,117**
1922	**68**	**15,781,244**	**1,873**	**1,027,445**	**1,187,871**	**348,377**	**8,484,676**	**15,841,905**	**7,357,229**
1923	**70**	**15,668,592**	**2,082**	**1,145,547**	**1,314,108**	**347,644**	**9,400,752**	**17,909,011**	**8,508,259**
1924	**66**	**16,367,069**	**1,904**	**1,093,495**	**1,265,565**	**280,104**	**8,782,085**	**15,965,318**	**7,183,233**

*Electricity not included in totals for 1920, 1921 and 1922.

Capital Employed.—(a) Soaps.—An examination of statistics relating to the soap industry reveals a tendency towards concentration in large factories. The number of establishments manufacturing soap in Canada in 1880 was 78 while in 1924 the number was only 33 but the value of output has increased tenfold in that period. Of the 33 plants operating in 1924, there were 4 with a production in excess of a million dollars, and 12 others with an output valued above $200,000.

In 1924, the capital employed as represented by fixed assets, materials on hand and in process, and cash and trading accounts amounted to $14,497,596 representing an increase of three-quarter million dollars over 1923 although the number of reporting plants remained the same. Ontario continued to lead with 16 plants employing $9,993,794, or 69 per cent of the total capital invested, as compared to $1,974,319 in the 9 plants in Quebec. There was also 1 firm in New Brunswick, 2 in Manitoba, 1 in Saskatchewan, 2 in Alberta, and 2 in British Columbia.

(b) Washing Compounds.—In 1924 this group included 9 firms employing a capital of $251,829 as compared to 11 firms and a working capital of $283,851 in the previous year. Ontario reported 4 active plants engaged primarily in the manufacture of washing compounds, this being a loss of 2 small concerns from 1923; Quebec had 3 plants, and Alberta and British Columbia 1 each. These were all comparatively small firms producing javelle water, ammonia powder and a variety of similar preparations. Washing compounds were also manufactured in the soap industry by many firms that produce soap as the major part of their output.

(c) Toilet Preparations.—Although considerable quantities of perfumes, cosmetics and toilet preparations were made as minor products of several other industries, in 1924 these commodities represented the principal products of 24 establishments having a combined output valued at 2·4 million dollars. Of these plants, 13 were located in Ontario, 8 in Quebec and 1 in each of the provinces of Manitoba, Alberta and British Columbia.

Capital employed at $1,617,644 remained at about the same figure as for the two preceding years although the number of reporting plants was 2 less than in 1923. The industry continued to be centered in Ontario and Quebec, the former accounting for 44 per cent and the latter for 54 per cent of the total capital investment.

Table 70.—Capital Employed in the Soaps, Washing Compounds, and Toilet Preparations Industry in Canada, by Classes and by Provinces, 1923 and 1924

Province	1923 Capital employed as represented by				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	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating accounts	Total
	$	$	$	$	$	$	$	$
Soaps—								
Quebec	729,004	262,378	298,681	1,290,063	1,119,025	371,376	483,918	1,974,319
Ontario	5,704,211	2,882,307	1,219,013	9,805,531	5,445,553	3,216,549	1,331,692	9,993,794
Canada[1]	7,875,502	3,882,078	2,016,590	13,774,170	8,013,298	4,329,609	2,154,689	14,497,596
Washing compounds—								
Quebec	107,081	26,228	1,693	135,002	123,637	12,536	1,320	137,493
Ontario	48,488	60,954	38,802	148,244	47,686	36,847	28,953	113,486
Canada[2]	155,649	87,507	40,095	283,851	171,673	49,733	30,423	251,829
Toilet preparations—								
Quebec	243,628	446,227	214,922	904,777	244,889	430,997	217,778	893,664
Ontario	187,611	231,791	277,147	696,549	232,967	278,775	202,917	714,659
Canada[3]	432,373	684,513	493,685	1,610,571	479,648	715,953	422,043	1,617,644
Total—								
Quebec	**1,079,713**	**734,833**	**515,296**	**2,329,842**	**1,487,551**	**814,909**	**703,016**	**3,005,476**
Ontario	**5,940,310**	**3,175,052**	**1,534,962**	**10,650,324**	**5,726,206**	**3,532,171**	**1,563,562**	**10,821,939**
Canada	**8,463,524**	**4,654,098**	**2,550,970**	**15,668,592**	**8,664,619**	**5,095,295**	**2,607,155**	**16,367,069**

[1] Totals for Canada include data for 1 firm in New Brunswick, 2 in Manitoba, 1 in Saskatchewan, 2 in Alberta and 2 in British Columbia.
[2] Totals for Canada include data for 1 firm in Alberta and 1 firm in British Columbia.
[3] Totals for Canada include data for 1 firm in each of Manitoba, Alberta and British Columbia.

Employment.—(a) Soaps.—Employees in the soap industry numbered 1,464 of whom 469 were salaried employees and 995 were wage-earners. This total is slightly below that for 1923 which stood at 1,591. Salaries and wages showed a corresponding decline although the average yearly income of each wage-earner increased slightly from 997 in 1923 to 1,043 in 1924. Monthly statistics indicate a gradual decline in business throughout the year as the number of employees fell steadily from 1,087 at the beginning of the year to 943 at the close. Female employees averaged 214 or about 21 per cent of the total number of wage-earners.

(b) Washing Compounds.—Employees in this industry totalled 67 which represented a decline of 20 per cent from 1923 when there were 83 on the roll. Female labour averaged slightly over 15 per cent of the total. Salaries amounted to $82,636 and wages to $52,981 giving a total disbursement for the year of $135,617 in salaries and wages.

(c) Toilet Preparations.—Employment was quite regular during 1924 there being 110 salaried employees and an average of 263 wage-earners on the rolls throughout the year. This was a decrease of about9 per cent from last year when the employees totalled 408. Female workers far outnumbered the male and comprised nearly 70 per cent of the total number on the pay roll.

Table 71.—Employment, Salaries and Wages Paid in the Soaps, Washing Compounds and Toilet Preparations Industry in Canada, 1923 and 1924

—	1923				1924			
	Soaps	Washing compounds	Toilet preparations	Total	Soaps	Washing compounds	Toilet preparations	Total
(a) Number of employees—								
Salaried employees	507	30	109	646	469	22	110	601
Wage-earners, by months—								
January	990	44	274	1,308	1,087	43	241	1,371
February	1,037	49	278	1,364	1,047	44	251	1,342
March	1,051	50	280	1,381	1,050	45	266	1,361
April	1,074	51	279	1,404	992	46	278	1,316
May	1,097	49	286	1,432	958	45	258	1,261
June	1,099	55	295	1,449	942	45	249	1,236
July	1,073	53	284	1,410	978	46	247	1,271
August	1,099	54	298	1,451	980	45	245	1,270
September	1,126	54	329	1,509	991	46	277	1,314
October	1,137	62	315	1,514	988	46	274	1,308
November	1,066	55	316	1,437	954	45	266	1,265
December	1,153	55	290	1,498	943	45	260	1,248
Average	1,084	53	299	1,436	995	45	263	1,303
Total	**1,591**	**83**	**408**	**2,082**	**1,464**	**67**	**373**	**1,904**
(b) Salaries and wages—								
Salaries $	885,508	66,583	193,456	1,145,547	810,087	82,636	200,772	1,093,495
Wages $	1,080,407	46,671	187,030	1,314,108	1,038,282	52,981	174,302	1,265,565
Total $	**1,965,915**	**113,254**	**380,486**	**2,459,655**	**1,848,369**	**135,617**	**375,074**	**2,359,060**
(c) Average yearly earnings of each wage-earner $	997	881	626	915	1,043	1,177	663	971
(d) Average number of days on which plants in this industry operated during the year	–	–	–	–	297	258	282	286
(e) Labour turnover—								
Total number of different wage-earners employed during the year	–	–	–	–	1,314	54	362	1,730
Average number of wage-earners employed within the year	1,084	53	299	1,436	995	45	263	1,303
Difference	–	–	–	–	319	9	99	427
Apparent labour turnover (percent.)	–	–	–	–	32	20	38	33

Table 72.—Distribution of Employment in the Soaps, Washing Compounds and Toilet Preparations Industry in Canada, according to the Average Number of Hours Worked per Day, by Provinces, 1924

Province	Number of wage-earners working			
	8 hours or less per day	9 hours	10 hours	Over 10 hours
New Brunswick	–	43	–	–
Quebec	85	103	100	5
Ontario	275	611	17	21
Manitoba	60	5	–	–
Saskatchewan and Alberta	34	–	–	1
British Columbia	59	1	–	–
Canada	**513**	**763**	**117**	**27**

Table 73.—Fuel and Electricity Used in the Soaps, Washing Compounds and Toilet Preparations Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Anthracite coal	short ton	532	5,011	579	5,999
Bituminous coal	"	43,725	293,266	37,476	224,591
Lignite coal	"	.....	.....	21	189
Coke	"	71	868	167	655
Fuel oil	gal.	.....	.....	10	3
Gasoline	"	4,450	1,435	10,445	3,244
Gas	M. cu. ft.	577	430	511	419
Wood	cord	67	311	83	412
Other fuel	.....	.....	5,790	.....	7,761
Electric power	k.w.h.	.....	41,266	3,561,738	36,831
Total	.....	.....	**348,377**	.....	**280,104**

Table 74.—Power Employed in the Soaps, Washing Compounds and Toilet Preparations 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	53	6,426	50	6,948
Engines:				
(a) Steam	21	1,276	15	832
(b) Oil and gasoline	2	18	2	18
Electric motors:				
(a) Operated by purchased power	466	3,378	394	2,522
(b) Operated by power generated by the establishment	18	187	14	112

Materials Used.—(a) Soaps.—Materials used in the soap industry include a wide range of substances which aggregated to cost in the neighbourhood of eight million dollars. Tallow, grease and other fats were used in greater quantities than other materials since they naturally yield hard soap on saponification with caustic soda. Cottonseed oil, corn oil and similar oils that produce only a soap of soft consistency may be rendered suitable as a base for a good hand soap by the process of hydrogenation, whereby hydrogen, in the presence of a catalyst, is made to combine with the olein or other liquid fat with the resultant production of a hard fat such as stearin. Fish oil and linseed oil similarily may be rendered suitable for soap making. It is interesting to note the extensive use of cocoanut oil as a base for soap making. In 1923, nearly a million dollars' worth of this material was used and nearly as much in 1924.

(b) Washing Compounds.—Soda ash and soap stock such as tallow and grease constitute the major raw materials that are specified in the washing compound industry. The cost of shipping containers amounted to $29,299 or 27 per cent of the total cost of materials.

(c) Toilet Preparations.—Raw materials for this industry are many and varied. The machinery for collection of data does not provide for the specification of the various substances which results in the majority being reported under "other materials". Essential oils, glycerine and petrolatum are the chief items that are specified. In this industry, also, the cost of containers constitutes a large part of the total, and in 1924 amounted to $362,110 or over 40 per cent of all the raw materials used.

Table 75.—Materials Used in the Soaps, Washing Compounds and Toilet Preparations Industry in Canada, 1923 and 1924

Materials used	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
SOAPS—					
Castor oil	lb.	40,072	5,924	3,251	595
Cocoanut oil	"	10,610,230	946,689	9,431,213	868,115
Corn oil	"	.....	34,678	156,478	16,387
Cottonseed oil	"	133,572	10,473	144,570	11,981
Essential oils	.....	.....	81,779	.....	152,397
Fatty acids—stearic, etc.	lb.	257,896	26,108	878,948	60,952
Feldspar	ton	750	24,565	700	23,082
Foots (cottonseed, olive, etc.)	.....	.....	150,479	.....	179,794
Glycerine, crude, purchased	lb.	3,072,201	318,106	2,597,854	290,906
Glycerine, refined, purchased	"	31,020	6,663	35,751	7,294
Linseed oil	gal.	.....	18,194	47,381	21,000
Olive oil	lb.	600	138	3,485	361
Palm oil	"	3,133,848	266,430	2,605,204	216,272
Peanut oil	"	377,162	36,258	358,271	35,357
Perfumes	.....	.....	137,346	.....	108,118
Petrolatum	"	.....	.....	55,582	2,260
Potash, caustic	lb.	713,228	29,551	123,484	8,400
Rosin	"	9,149,956	309,171	8,508,417	266,916
Silica sand	ton	2,621	61,569	2,599	72,049
Soap powder	lb.	.....	.....	37,373	4,748
Soda ash	"	7,133,213	146,629	6,971,436	135,277
Soda, caustic, dry	"	7,318,688	295,861	5,834,054	216,295
Soda, caustic, in solution	lb. soda	3,587,561	132,340	4,031,965	178,512
Sodium chloride (common salt)	lb.	2,220,060	13,490	2,381,653	14,273
Sodium silicate (waterglass)	"	10,664,232	99,847	9,132,675	83,315
Soya bean oil	"	7,339,517	527,883	2,247,504	167,545
Talc	"	319,687	4,891	262,292	3,495
Tallow, grease, and other soap stock	"	35,795,735	2,836,017	41,630,805	3,322,277
All other materials	.....	.....	286,902	.....	241,520
Shipping containers (boxes, cartons, etc.)	.....	.....	1,647,230	.....	1,115,351
Total	.....	.....	8,455,229	.....	7,824,844
WASHING COMPOUNDS—					
Calcium chloride	lb.	655,315	12,839	524,403	12,438
Petrolatum	"	.....	.....	5,625	450
Rosin	"	.....	.....	7,660	230
Soda ash	"	1,445,565	28,149	1,308,726	26,442
Soda, caustic, dry	"	.....	.....	80,000	3,200
Sodium silicate (water glass)	"	.....	.....	13,530	183
Tallow, grease, and other soap stock	"	.....	.....	135,147	13,464
All other materials	.....	.....	39,015	.....	22,589
Shipping containers (boxes, cartons, etc.)	.....	.....	23,722	.....	29,299
Total	.....	.....	103,725	.....	108,295
TOILET PREPARATIONS—					
Cocoanut oil	lb.	10,351	1,201	9,865	1,196
Ethyl alcohol	proof gal.	42,954	47,937	13,199	9,012
Essential oils	.....	.....	110,632	.....	104,670
Fatty acids—stearic, etc.	lb.	57,033	9,735	62,112	10,209
Glycerine, refined	"	201,728	40,599	258,732	54,278
Perfumes	.....	.....	3,087	.....	3,181
Petrolatum	lb.	212,256	39,475	198,276	34,278
Potash, caustic	"	14,291	930	11,669	907
Soda, caustic	"	1,293	85	1,342	86
Talc	"	264,418	5,218	346,384	7,637
Tallow, grease, and other soap stock	"	.....	.....	22,268	6,091
All other materials	.....	.....	105,408	.....	255,291
Shipping containers (boxes, cartons, etc.)	.....	.....	477,491	.....	362,110
Total	.....	.....	841,798	.....	848,946
Total	.....	.....	**9,490,752**	.....	**8,782,085**

Products Made.—(a) SOAPS.—Products of the soap industry in 1924 reached a total value of $13,187,267, a decrease of 12 per cent from the output value of the previous year. Household, toilet and laundry soaps worth 9·7 million dollars were the principal products, but the production of soap powder nearly reached the million dollar mark. Glycerine, crude and refined, amounted to over a million dollars in value.

(b) WASHING COMPOUNDS.—Javelle water worth $183,083 constituted a little over half of the entire production of this industry while the value of ammonia powder accounted for about half of the remainder. The total output in 1924 amounted in value to $334,470, thus maintaining the production of the previous year.

(c) Toilet Preparations.—Preparations produced for trade by firms in this industry are many and varied so that it is impossible to list them all. Therefore the main groups only are shown. In 1924 the entire production amounted to $2,443,581 of which toilet essentials comprised about 92 per cent, soaps 6 per cent, and miscellaneous products 2 per cent.

Table 76.—Products of the Soaps, Washing Compounds and Toilet Preparations Industry in Canada, 1923 and 1924

Products	Unit of measure	1923		1924	
		Quantity	Selling value	Quantity	Selling value
			$		$
Soaps—					
Hard soaps—					
Household soaps	lb.	46,884,007	3,513,458	41,075,620	3,107,893
Laundry soaps and soap chips	"	38,121,723	4,144,913	43,026,334	4,150,022
Toilet soaps	"	14,747,966	3,745,022	15,766,134	2,495,248
Polishing and scouring soap	"	.....	289,943	2,189,883	166,717
Soap powder	"	12,961,679	1,125,283	12,440,062	984,814
Foots soap	"	.....	.....	137,287	11,426
All other hard soaps	"	3,839,880	293,664	3,254,558	248,488
Liquid soaps	"	.....	.....	280,275	22,713
Soft soaps	"	1,121,657	71,981	901,461	59,651
Cleaning preparations :					
Ammonia powder	"	1,264,383	74,262	1,125,497	71,067
Lye	"	666,455	89,107	724,101	96,925
Washing compounds	"	1,923,259	43,892	2,134,345	57,979
Other cleaning preparations	"	1,027,282	52,205	1,343,041	159,249
Glycerine, crude, sold as such	"	3,201,787	333,428	3,250,408	347,574
Glycerine refined	"	3,710,589	715,766	3,367,899	690,295
Toilet preparations	.....	.....	278,289	.....	213,279
Perfumes	.....	.....	53,947	.....	46,443
All other products*	.....	.....	114,626	.....	256,584
Total	.....	.....	14,939,786	.....	13,187,267
Washing Compounds—					
Ammonia powder	lb.	.....	61,810	1,094,326	69,100
Javelle water	.....	.....	183,058	.....	183,083
Washing compounds	.....	.....	64,926	202,940	47,167
All other products	.....	.....	39,007	.....	35,120
Total	.....	.....	348,801	.....	334,470
Toilet Preparations—					
Toilet preparations, including hair tonics, perfumes, etc.	.....	.....	2,390,460	.....	2,243,045
Toilet soaps	lb.	.....	133,823	138,886	147,471
Liquid soaps	"	.....	.....	16,280	2,244
All other products	.....	.....	96,141	.....	50,821
Total	.....	.....	2,620,424	.....	2,443,581
Total	.....	.....	**17,909,011**	.....	**15,965,318**

*Includes laundry blue, hand cleaner, refined tallow and various other products.

CHAPTER NINE

INKS, DYES AND COLOURS

General.—In 1924, reports were received from 24 firms engaged in the manufacture of inks, dyes and colours; this was 2 less than in 1923 as 1 dye plant in Quebec and 1 plant in Ontario manufacturing writing inks did not operate during the year. Of the 24 active plants, 11 were located in Ontario, 6 in Quebec, 3 in British Columbia, 2 in Manitoba, 1 in New Brunswick and 1 in Alberta. Only 4 firms had a production in excess of $200,000 each, while 5 others valued their output above $100,000 each.

This group includes 3 distinct but allied industries classified according to main products, namely: dyes and colours which in 1924 covered the operations of only 4 plants; printing ink, the largest industry of the group, with 13 plants; and writing ink, which included 7 plants. In previous reports statistics covered the groups as a whole and while group totals are still shown in the compilations, separate details are given for each industry wherever available.

Printing ink is composed of an oil or varnish mixed with a pigment of the required colour. Printing inks must possess certain qualifications which are summarized by Thorpe as follows: (1) it must distribute over the type freely and easily and break cleanly; (2) it must not have too much tenacity for the type but must come off freely on the paper; (3) it must dry almost immediately on the paper, but not dry at all on the type or rollers; (4) it should be proof against the effects of time and chemicals and never change colour.

The oil most commonly used is a fine quality of linseed oil and the pigment is usually calcined lamp black with a little indigo or prussian blue to relieve the brown tinge of lamp black alone. Resin or soap is added to give a body to the ink and to furnish it with a medium which will be readily taken up by the damped sheet of paper. Coloured inks are made by the addition of dry colours well ground and assimilated with the varnish.

Writing ink is commonly prepared by the addition of a substance containing tannin to a solution of copperas. This forms a blue-black precipitate which remains suspended in the water. A proportion of gum is added for the purpose of keeping the precipitate suspended evenly throughout the solution and of preventing its deposit. Dyestuffs and dry colours are used to impart the desired colours.

Table 77.—Summary Statistics of the Inks, Dyes and Colours Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel and electricity*	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
Dyes and colours—									
1920	7	412,878	109	76,328	45,836	1,387	374,961	760,839	385,878
1921	7	408,358	79	66,109	25,897	3,710	203,688	459,207	255,519
1922	6	409,780	74	67,979	30,186	3,574	227,581	531,469	303,888
1923	5	446,168	68	40,939	32,184	4,600	208,571	591,125	382,554
1924	4	372,613	46	38,099	27,154	3,482	140,120	457,726	317,606
Printing inks—									
1920	12	1,267,429	228	222,789	190,231	11,799	1,068,795	2,144,683	1,075,888
1921	12	1,399,468	210	241,589	178,322	8,418	720,777	1,764,933	1,044,156
1922	12	1,521,956	202	294,547	197,474	9,662	703,942	1,896,605	1,192,663
1923	13	1,538,621	272	296,999	206,430	16,711	826,310	1,955,467	1,129,157
1924	13	1,741,378	268	272,921	225,111	22,421	652,746	1,889,242	1,236,496
Writing inks—									
1920	7	251,398	75	41,747	36,153	2,880	200,235	383,142	182,907
1921	7	215,871	64	35,997	34,296	2,158	129,730	309,340	179,610
1922	8	215,217	80	40,672	37,861	1,964	138,764	327,932	189,168
1923	8	267,581	75	44,334	38,450	1,682	106,221	329,755	223,534
1924	7	277,868	63	36,807	32,515	2,846	149,459	309,432	159,973
Total—									
1920	**26**	**1,931,705**	**412**	**340,864**	**272,220**	**16,066**	**1,643,991**	**3,288,664**	**1,644,673**
1921	**26**	**2,083,697**	**353**	**343,695**	**238,515**	**14,286**	**1,051,195**	**2,533,480**	**1,479,285**
1922	**26**	**2,146,953**	**416**	**403,198**	**265,521**	**15,200**	**1,070,287**	**2,756,006**	**1,685,719**
1923	**26**	**2,252,370**	**415**	**382,272**	**277,064**	**22,993**	**1,141,102**	**2,876,347**	**1,735,245**
1924	**24**	**2,391,859**	**377**	**347,827**	**284,780**	**28,749**	**942,325**	**2,656,400**	**1,714,075**

* Does not include electricity in 1920, 1921 and 1922.

Capital Employed.—(a) Dyes and Colours.—The 4 plants manufacturing dyes and colours as a major products in 1924 employed a capital of $372,613, a decrease of 17 per cent from 1923. The decline can be largely accounted for by the fact that 1 plant in Quebec did not operate in 1924.

(b) Printing Inks.—In 1924, working capital as represented by lands, buildings and plant equipment, materials on hand and in process, and cash trading and operating accounts

amounted to $1,741,378 an increase of $200,000 over 1923 although the same firms are included in each year. Of the 13 firms in this industry, the 7 in Ontario represented over 95 per cent of the total capital investment; there were also 2 establishments in Quebec, and 1 in each of the province of New Brunswick, Manitoba, Alberta and British Columbia.

(c) Writing Inks.—Capital employed in this industry in 1924 amounted to $277,868 as compared to $267,581 in the previous year. Ontario had 3 operating plants, Quebec 1, the largest, Manitoba 1, and British Columbia 2, making a total of 7 for the industry.

Table 78.—Capital Employed in the Inks, Dyes and Colours 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 account	Total	Lands, buildings, fixtures, machinery and tools	Materials on hand, and stocks in process	Cash, trading and operating account	Total
	$	$	$	$	$	$	$	$
Dyes and colours—								
Canada[1]	145,057	73,055	228,056	446,168	137,802	62,183	172,628	372,613
Printing inks—								
Ontario	787,169	346,832	332,433	1,466,434	917,612	345,278	401,482	1,664,372
Canada[2]	827,904	360,191	350,526	1,538,621	959,434	358,076	423,268	1,741,378
Writing inks—								
Ontario	16,052	21,977	37,878	75,907	67,364	21,585	10,490	99,439
Canada[3]	53,333	100,016	108,232	267,581	98,175	106,662	73,031	277,868
Total—								
Quebec	**152,247**	**129,619**	**211,886**	**493,752**	**140,955**	**113,763**	**167,287**	**422,005**
Ontario	**835,000**	**374,660**	**462,039**	**1,671,099**	**1,016,027**	**376,242**	**490,246**	**1,882,515**
British Columbia	**3,835**	**8,700**	**6,295**	**18,830**	**4,110**	**10,981**	**5,149**	**20,270**
Canada	**1,026,294**	**539,263**	**688,814**	**2,252,370**	**1,195,411**	**527,521**	**668,927**	**2,391,859**

[1] Includes 3 firms in Quebec and 1 firm in Ontario.

[2] Includes 2 firms in Quebec and 1 in each of New Brunswick, Manitoba, Alberta and British Columbia.

[3] Includes 1 firm in Quebec, 1 in Manitoba, and 2 in British Columbia.

Employment.—(a) Dyes and Colours.—Plants in this industry operated on full time throughout 1924 and afforded employment to 46 persons of whom 15 were salaried employees and 31 wage-earners. The decline of 33 per cent from 1923 was largely due to the closing of one plant in Quebec. Salaries and wages totalled $65,253 of which $27,154 was paid to the 31 wage-earners, giving a mean yearly income of $876 to each. On the average, there were 20 female and 11 male wage-earners on the rolls.

(b) Printing Inks.—Employment in the printing ink industry in 1924 remained at about the same figure as in 1923; in the latter year there were 272 persons on the rolls and in the former there were 81 salaried employees and 187 wage-earners, a total of 268 to whom almost half a million dollars was paid in wages and salaries. Employment was steady throughout the year.

(c) Writing Inks.—Sixty-three persons were employed in manufacturing writing inks in 1924. This number included 18 salaried employees and 45 wage-earners; of the latter 25 were male and 20 female workers. Payments for salaries and wages totalled $69,322 during the year.

Table 79.—Employment, Salaries and Wages Paid in the Inks, Dyes and Colours Industry in Canada, 1923 and 1924

—	1923				1924			
	Dyes and colours	Printing inks	Writing inks	Total	Dyes and colours	Printing inks	Writing inks	Total
(a) Number of Employees—								
Salaried employees	22	95	25	142	15	81	18	114
Wage-earners, by months—								
January	45	174	52	271	37	185	46	268
February	47	172	52	271	33	186	47	266
March	49	174	51	274	34	187	48	269
April	49	175	52	276	38	190	48	276
May	51	175	53	279	32	186	46	266
June	47	175	50	272	30	186	46	262
July	44	172	44	260	24	185	47	256
August	45	176	48	269	26	185	43	254
September	42	179	54	275	32	184	46	262
October	40	180	49	279	32	185	50	267
November	39	179	47	265	29	188	42	259
December	47	181	50	278	29	186	41	256
Average	46	177	50	273	31	187	45	263
Total	68	272	75	415	46	268	63	377
(b) Salaries and wages—								
Salaries $	40,939	296,099	44,334	382,272	38,090	272,921	36,807	347,827
Wages $	32,184	206,430	38,450	277,064	27,154	225,111	32,515	284,780
Total $	73,123	503,429	82,784	659,336	65,253	498,032	69,322	632,607
(c) Average yearly earnings of each wage-earner $	700	1,166	769	1,015	876	1,204	723	1,083
(d) Average number of days on which plants in this industry operated during the year.	301	256	239	260	307	294	274	291
(e) Labour turnover—								
Total number of different wage-earners employed during the year	–	–	–	–	44	227	59	330
Average number of wage-earners employed within the year	46	177	50	273	31	187	45	263
Difference	–	–	–	–	13	40	14	67
Apparent labour turnover (percent.)	–	–	–	–	42	21	31	25

Table 80.—Distribution of Employment in the Inks, Dyes and Colours Industry in Canada, according to the Average Number of Hours Worked per Day, by Provinces, 1924

Province	Number of wage-earners working			
	8 hours or less per day	9 hours	10 hours	Over 10 hours
Quebec	26	38	1	–
Ontario	142	71	–	–
Manitoba	1	8	–	–
British Columbia	3	–	–	–
Canada	172	117	1	–

Table 81.—Fuel and Electricity Used in the Inks, Dyes and Colours Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
			$		$
Anthracite coal	short ton	191	3,103	161	2,524
Bituminous coal	"	1,115	10,305	1,314	9,299
Coke	"	103	1,761	110	1,550
Gas	M. cu. ft.	315	419	452	495
Wood	cord	13	117	17	142
Other fuel	–	–	–	–	161
Electric power	k.w.h.	–	7,288	919,530	14,578
Total	–	–	22,993	–	28,749

Table 82.—Power Employed in the Inks, Dyes and Colours 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	3	37	7	265
Engines—				
(a) Steam	2	42	1	40
(b) Gas	1	4	1	4
(c) Oil and gasoline	1	4	–	–
Electric motors—				
(a) Operated by purchased power	88	871	96	1,038
(b) Operated by power generated by the establishment	2	29	1	28

Materials Used.—(a) Dyes and Colours.—Materials used in the dyes and colours industry included such substances as aniline dye, dye mixtures, butter colour, malt, ammonia and grape sugar, but as each of these was reported by only one or two firms, the data cannot be published, but are included under other materials. In 1924, the total cost of materials amounted to $140,120 as against $208,571 in 1923. Containers constituted 33 per cent of the total cost.

(b) Printing Inks.—Dry colours worth $245,408 and oil, varnishes and driers worth $168,627 were the principal raw materials used in 1924. Altogether the materials used in 1924 cost at the plant $652,746 as compared to $826,310 in 1923. Materials used by less than 3 firms and those unspecified are included under "other materials".

(c) Writing Inks.—Dyes and colours, dextrine and gums, tannic acid, carbon paper and rubber cloth were the more important of the materials used in the manufacture of writing inks. As in other industries where the products are marketed in small bottles and packages, the cost of containers runs very high. In 1924, shipping containers cost $75,613 or one-half the total cost of all raw materials.

Table 83.—Materials Used in the Inks, Dyes and Colours Industry in Canada, 1923 and 1924

Materials used	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
Dyes and Colours—					
Raw materials[1]	–	–	146,902	–	94,522
Containers (boxes, bags, packages, etc.)	–	–	61,669	–	45,598
Total	–	–	208,571	–	140,120
Printing Inks—					
Carbon black	lb.	162,910	23,789	131,499	11,316
Dry colours	"	847,522	261,752	531,081	245,408
Oils, varnishes and driers	–	–	170,656	–	168,627
Glue	lb.	52,625	14,131	56,334	12,247
Glycerine	"	94,876	19,042	99,696	19,395
Methylated spirits, benzine, naphtha, coal oil and turpentine	–	–	18,727	–	13,300
Containers (boxes, etc.)	–	–	47,208	–	44,172
All other materials[2]	–	–	270,945	–	138,281
Total	–	–	826,310	–	652,746
Writing Inks—					
Dextrine and gums	lb.	–	15,457	40,258	5,277
Dyes and colours	–	–	2,502	–	6,970
Oils	gal.	–	385	9,502	2,288
Silicate of soda	lb.	–	–	75,000	1,800
Carbon paper, ribbon cloth, ribbon spools, and brushes	–	–	–	–	10,404
Tannic acid, gallic acid and carbolic acid	–	–	–	–	4,216
All other materials[3]	–	–	23,426	–	51,891
Containers (boxes, etc.)	–	–	64,451	–	75,613
Total	–	–	106,221	–	149,459
Total	–	–	**1,141,102**	–	**942,325**

[1] Includes grape sugar, ammonia, malt, aniline dye and dye mixtures, alcohol, shellac and various other materials.
[2] Includes dyes, resin and gums, shellac, pitch, candle tar, transfer paper, rubber blankets and various other materials.
[3] Includes glycerine and various other materials.

Products.—(a) Dyes and Colours.—In 1924, production amounted to $457,726 which was about 23 per cent below the output value of the previous year. Products of the industry include dyes, sugar colouring, butter colouring, straw hat colour and malt flour but only the first of these can be shown as the others are products of one firm only.

(b) Printing Inks.—Printing inks to the value of $1,348,850 and printers' rollers worth $206,574 constituted the bulk of the products of this industry which, also included considerable quantities of paints, varnishes, enamels and dry colours and, in 1924, totalled $1,889,242 thus almost maintaining the production of 1923.

(c) Writing Inks.—In 1924, products of this industry were valued at $309,432 which was only 6 per cent below the output of 1923. Writing inks, mucilage, paste and carbon papers were the major products.

Table 84.—Products of the Inks, Dyes and Colours Industry in Canada, 1923 and 1924

Products	Unit of measure	1923		1924	
		Quantity	Selling value	Quantity	Selling value
			$		$
Dyes and Colours—					
Dyes			473,391		393,894
All other products			117,734		63,832
Total			591,125		457,726
Printing Inks—					
Printing inks			1,385,492		1,348,850
Printers' rollers and composition			214,827		206,574
Dry colours and showcard colours			41,685		64,176
Paints, varnishes, stains and enamels			151,686		127,002
All other products[2]			161,777		142,640
Total			1,955,467		1,889,242
Writing Inks—					
Writing inks			250,719		236,784
Mucilage and paste			10,831		20,156
Ink pellets, ink powders and miscellaneous inks			1,759		1,537
Carbon paper, inked ribbon and stamp pads			41,368		30,288
All other products[3]			25,078		20,667
Total			329,755		309,432
Total			**2,876,347**		**2,656,400**

[1] Include malt flour, hat colour, butter colour, washing blue, caramel and various other products.
[2] Include paste, padding cement and various other products.
[3] Include waterglass, polish, castor oil and various other products.

CHAPTER TEN

WOOD DISTILLATION AND WOOD EXTRACTS

General.—Wood distillation has been an established industry in Canada for a number of years and the increasing demand for alcohol, acetic acid, acetone, etc., in other industries has been sufficient to insure its growth to one of considerable importance. By 1920 there were 17 plants employing 604 persons engaged in manufacturing chemical products by the destructive distillation of wood, but there has been a slight falling away since the peak production of the immediate post war years and in 1924 there were in operation 12 plants, which employed 367 persons and had a production valued at $2,283,422.

While any kind of wood may be used for the production of alcohol, acetates and charcoal, the hardwoods give much better yields and are used almost entirely in Canada, one cord of wood yielding on the average from 40 to 50 bushels of charcoal, 8 to 15 gallons of crude alcohol and 120 to 200 pounds of gray acetate of lime.

In modern plants the wood is carbonized in steel ovens which are large enough to hold 2 to 4 steel cars each loaded with about 2 cords of wood. The cars are run in on tracks, the doors looted gas tight, the ovens heated slowly and the distillation continued for 20 or 30 hours. The wood is distintegrated and the resulting gases led over to condensers. Four crude products

are obtained: (1) noncondensable gases, (2) an aqueous liquor known as "pyroligneous acid", (3) tars and oils, (4) charcoal. The uncondensed gases are piped back and burned under the boilers; the tar and pyroligneous acid run off together and are led to wooden vats where the tar is allowed to settle; and the charcoal is run out in the loaded cars and cooled in steel coolers similar in shape to the ovens, the heat of the oven walls being thus conserved for the next charge. The separated tar is then fractioned for further products or burned under the boilers, the latter practice probably being more common.

The pyroligneous acid contains as its chief constituents, methyl hydrate, 4 to 6 per cent, acetic acid, 8 to 14 per cent, and tar held in solution, the balance being practically all water contained in the wood and resulting from its decomposition. The crude pyroligneous acid is distilled in acid stills until only tar (boiled tar) remains; the distillate containing alcohol, acid, etc., is then neutralized with lime, forced to a "lime lee" and redistilled giving (1) a residue which upon evaporation and crystallization yields gray acetate of lime, and (2) a distillate which upon refining gives the various grades of methylated spirits.

Commercial acetic acid is produced by treating the gray acetate of lime with a mineral acid. Acetone and acetone oils are obtained by dry distillation of lime acetate; the pure products are then separated by fractional distillation.

Formaldehyde is prepared by passing vapours of methyl hydrate over platinized asbestos. Commercial formaldehyde is usually a 40 per cent solution of the gas in water.

Table 85.—Summary Statistics of the Wood Distillation and Wood Extracts Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel and electricity*	Cost of materials	Selling value of products	Value by manufacturing
		$		$	$	$	$	$	$
1920	17	4,247,097	604	73,778	627,332	623,093	2,153,005	4,982,283	2,829,278
1921	12	2,694,824	276	53,741	273,550	221,950	1,110,697	2,202,314	1,091,617
1922	12	3,265,882	295	46,747	245,182	196,258	932,667	1,902,243	969,576
1923	9	2,814,045	344	43,796	288,230	277,556	976,621	2,743,295	1,766,674
1924	12	2,784,681	367	41,382	342,668	248,816	1,055,658	2,283,422	1,227,764

* Does not include electricity for 1920, 1921 or 1922.

Capital Employed.—Capital employed in the wood distillation and wood extracts industry in 1924 amounted to $2,784,681 most of which was tied up in extensive buildings and plant equipment and which was about equally divided between Ontario and Quebec. As in most other industries the capital employed showed a marked decline after the peak years of 1919 and 1920. In the latter year there were 17 plants in operation employing a combined capital of $4,247,097 but in 1921 there were only 12 active plants having a total capital investment amounting to $2,694,824. In 1922 the same number of plants reported the sum of $3,265,882, tied up in lands, buildings, machinery and tools, materials on hand, stocks in process, and cash, trading and operating accounts; but in the following year this figure declined to $2,814,045, almost the same as was reported in 1924.

Table 86.—Capital Employed in the Wood Distillation and Wood Extracts 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	1,110,865	160,678	170,576	**1,442,119**	1,201,536	182,321	3,215	**1,387,072**
Ontario	995,432	196,457	180,037	**1,371,926**	1,251,509	140,371	5,729	**1,397,609**
Canada	**2,106,297**	**357,135**	**350,613**	**2,814,045**	**2,453,045**	**322,692**	**8,944**	**2,784,681**

Employment.—In 1924 the wood distillation and wood extracts industry afforded employment to 24 salaried employees and 343 wage-earners making a total of 367 persons to whom $384,050 was paid, in wages and salaries. This marks the peak employment figure for this industry since 1920, when 604 persons were on the pay-roll as against 276 in 1921, and 295 in 1922 and 344 in 1923. Monthly figures indicate a slight seasonal trend with more activity shown in the fall and winter months. In January, there were 434 persons on the pay-roll but by May the number had dropped to 291, the low point for the year. Then a gradual increase was recorded for each succeeding month until in December there were 398 persons employed. Total wages for the year amounted to $342,668 giving an average yearly income of $999 to each wage-earner.

Table 87.—Employment, Salaries and Wages Paid in the Wood Distillation and Wood Extracts Industry in Canada, 1923 and 1924

—	1923			1924		
	Male	Female	Total	Male	Female	Total
(a) Number of employees:						
Salaried employees	23	3	26	23	1	24
Wage-earners, by months:						
January	357	-	357	433	1	434
February	351	-	351	361	1	362
March	376	-	376	271	1	272
April	255	-	255	332	1	333
May	238	-	238	290	1	291
June	284	-	284	292	1	293
July	234	-	234	326	1	327
August	269	-	269	301	1	302
September	287	-	287	334	1	335
October	376	-	376	374	1	375
November	368	-	368	387	1	388
December	410	-	410	397	1	398
Average	318	-	318	342	1	343
Total	**341**	**3**	**344**	**365**	**2**	**367**
(b) Salaries and wages:						
Salaries $	-	-	43,796	-	-	41,382
Wages $	-	-	288,230	-	-	342,668
Total $	-	-	**332,026**	-	-	**384,050**
(c) Average yearly earnings of each wage-earner ... $	-	-	906	-	-	999
(d) Average number of days on which plants in this industry operated during the year	-	-	226	-	-	187
(e) Labour turnover:						
Total number of different wage-earners employed during the year	-	-	-	-	-	595
Average number of wage-earners employed within the year	-	-	318	-	-	343
Difference	-	-	-	-	-	252
Apparent labour turnover (per cent)	-	-	-	-	-	74

Table 88.—Distribution of Employment in the Wood Distillation and Wood Extracts Industry in Canada, according to the Average Number of Hours Worked per Day, by Provinces, 1924

Province	Number of wage-earners working			
	8 hours or less per day	9 hours	10 hours	Over 10 hours
Quebec	2	3	172	-
Ontario	-	-	342	1
Canada	**2**	**3**	**514**	**1**

Table 89.—Fuel and Electricity Used in the Wood Distillation and Wood Extracts Industry in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Bituminous coal	short ton	30,333	233,709	35,030	229,937
Coke	"	3,310	14,871	2,014	8,052
Wood	cord	6,505	25,764	477	1,928
Other fuel	.....	-	3,212	-	-
Electric power	k.w.h.	-	-	330,830	8,899
Total	.....	-	**277,556**	-	**248,816**

Table 90.—Power Employed in the Wood Distillation and Wood Extracts 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	28	3,590	35	4,475
Engines:				
(a) Steam	7	263	9	343
(b) Oil and gasoline	1	6	1	6
Electric motors:				
(a) Operated by purchased power	12	670	16	455
(b) Operated by power generated by the establishment	2	45	2	40

Materials Used.—Hardwoods and lime make up the bulk of the primary materials used in the wood distillation industry. Although resinous woods may be used to make methyl hydrate, acetic acid and acetate of lime, hardwoods are used almost exclusively in Canada as they give much higher yields than do the soft woods. In 1924 hardwoods formed 95 per cent of the total cost of primary materials used, and lime 3·9 per cent; 57,131 cords of wood cost $562,525 and 55,190 bushels of lime cost $22,816. Salt, sulphuric acid and caustic soda were used in small amounts. Intermediates used amounted to $463,271 composed entirely of gray acetate of lime and wood alcohol used in making acetic acid, acetone and formaldehyde.

Table 91.—Materials Used in the Wood Distillation and Wood Extracts Industry in Canada, 1923 and 1924

Materials used	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
WOOD DISTILLATION—					
Primary materials:					
Hardwood	cord	56,310	540,541	57,131	562,525
Lime	bush.	52,903	22,107	55,190	22,816
Salt	lb.	13,900	139	32,800	328
Sulphuric acid, 60° Be	"	507,706	5,045	469,020	4,807
Caustic soda	"	40,425	1,802	34,300	1,470
Other materials	.....	-	292	-	26
Total	.....	-	569,926	-	592,032
Intermediates used:					
Gray acetate of lime	lb.	781,640	25,993	5,895,108	150,730
Methyl hydrate, crude	gal.	300,655	233,528	334,964	227,161
Methyl hydrate, pure	"	146,727	146,727	96,740	85,380
Total	.....	-	406,248	-	463,271
Total	.....	-	976,174	-	1,055,303
WOOD EXTRACTS—					
Total	.....	-	447	-	355
Total	.....	-	**976,621**	-	**1,055,658**

Products Made.—In 1924, products of the wood distillation and wood extracts industry were valued at $2,283,422 as compared with $2,743,295 in 1923, and $1,902,243 in 1922. Primary production consisted of 2,892,404 bushels of charcoal worth $715,351; 10,889,845 pounds of gray acetate of lime valued at $283,990 and 890,377 gallons of methyl hydrate with a selling value of $705,532, this being an average yield of 50·6 bushels of charcoal, 190·6 pounds of lime acetate and 15·6 gallons of alcohol for every cord of wood used Over one-half the production of lime acetate and 45 per cent of the alcohol was treated further to produce 939,278 pounds of acetone, 1,398,989 pounds of formaldehyde and 977,034 pounds of 28% and 177,520 pounds of 80% of acetic acid.

Table 92.—Products of the Wood Distillation and Wood Extracts Industry in Canada, 1923 and 1924

Products	Unit of measure	1923		1924	
		Quantity	Selling value	Quantity	Selling value
			$		$
WOOD DISTILLATION—					
Products made for sale—					
Charcoal	bush.	2,780,707	704,929	2,892,404	715,351
Gray acetate of lime	lb.	6,815,977	253,051	5,045,948	127,685
Methyl hydrate, 95%	gal.	129,370	105,325	154,512	101,719
Methyl hydrate, pure	"	371,708	431,181	331,718	311,151
Columnian spirits	"	3,399	8,939	3,372	5,597
Acetone	lb.	504,199	134,721	939,278	176,584
Acetone oils	"	123,299	24,575	216,361	39,378
Wood creosote	gal.	219,950	39,591	327,279	71,347
Acetic acid, 28%	lb.	1,158,456	57,634	977,034	43,188
Acetic acid, 80%	"	109,551	21,709	177,520	31,122
Formaldehyde	"	1,736,900	293,536	1,398,989	200,395
Total	.....	-	2,165,191	-	1,823,517
Intermediates made for use—					
Gray acetate of lime	lb.	4,430,360	134,399	5,843,897	156,305
Methyl hydrate, crude	gal.	375,575	280,681	307,377	207,282
Methyl hydrate, pure	"	146,727	146,727	96,740	85,380
Total	.....	-	561,807	-	448,967
Total	.....	-	2,726,998	-	2,272,484
WOOD EXTRACTS—					
Total	.....	-	16,297	-	10,938
Total	.....	-	**2,743,295**	-	**2,283,422**

CHAPTER ELEVEN

MISCELLANEOUS CHEMICAL INDUSTRIES

General.—A number of firms operating in Canada produce chemicals or allied products which do not naturally fall in any of the groups previously considered, so a miscellaneous group has been made and the industries therein divided into nine classes, namely: (a) adhesives; (b) baking powder, (c) boiler compounds; (d) celluloid products; (e) flavouring extracts; (f) insecticides; (g) polishes and dressings; (h) sweeping compounds, and (i) chemical products not elsewhere specified. The total cost of materials used by all the firms in this group in 1924 amounted to $4,689,966 and the selling value of the various products and by-products was $10,294,171 giving thus $5,604,205 as the value added by the process of manufacturing. In 1923, materials used cost $4,770,671, the products had a selling value of $10,911,011, and the value added by manufacturing was $6,140,340.

In 1924, there were 109 firms in the miscellaneous group; of these 63 were located in Ontario; 32 in Quebec; 4 in New Brunswick; 3 in Nova Scotia; 3 in Manitoba, 1 in each of Saskatchewan and Alberta, and 2 in British Columbia.

Each industry is briefly reviewed in this chapter and separate statistics shown for each, in the accompanying tables.

(a) Adhesives—In 1924, there were 18 firms in Canada primarily engaged in the manufacture of glue or other adhesive. Glue is an organic substance obtained by treating properly prepared animal tissues with water at a suitable temperature. The principal raw materials used in its manufacture are skins or hides, bones, sinews and fish scrap, all of which are by-products of other industries. The dried material is subjected to a preliminary water wash to soften and clean it and then treated with lime to cause it to swell. The surplus lime is then washed away and the absorbed portion neutralized with hydrochloric or sulphuric acid. The prepared stock is next subjected to treatment with water in special kettles, usually steam heated. The liquor is then clarified with certain chemicals, evaporated to the desired point, and then run into cooling pans where it solidifies to a jelly. The jelly is cut into sheets by wire cutters and dried in a current of warm air. When thoroughly dried, the material is broken or ground and packed for shipment. It is marketed in many forms, in sheets or cakes, in strips, in flakes or in ground or granulated form.

Of the 18 firms producing adhesives 8 were located in Quebec, 8 in Ontario, and 1 in each of Nova Scotia and New Brunswick In the latter provinces the glue works utilize fish scrap from the fish curing establishments. Products and by-products of the glue industry amounted to $1,434,883 or only slightly below the figure of the previous year. Employees numbered 247 in 1924 as against 228 in 1923. In the former year 56 salaried employees and 191 wage-earners received $303,696 in wages and salaries. On the average the plants in this industry operated on 278 days during the year.

(b) Baking Powders.—These are mixtures of certain chemicals, which will evolve carbon dioxide and impart a spongy texture to the bread, cake and pastry during the operation of baking. The carbon dioxide is produced by the chemical action of an acid on a carbonate. The highest grade of baking powder consists of sodium bicarbonate and cream of tartar mixed in proper proportions with considerable quantities of starch constituent to prevent the mature development of the chemical re-action due to the moisture of the atmosphere. Calcium or potassium acid phosphates is sometimes used as a substitute for cream of tartar and sodium carbonate in place of the bicarbonate. Baking powders are manufactured simply by thoroughly drying, and mixing the components in the proper proportions.

In 1924 the 3 plants in Quebec and 2 in Ontario produced 6,727,206 pounds of baking powder worth $1,761,875. Capital employed amounted to $1,579,295 of which by far the greater portion was invested in the Ontario plants. Employees in this industry numbered 424 of whom 91 male and 76 female were on salaries and 145 male and 112 female workers were earning wages. Salaries and wages totalled $464,155. In 1923 there were 416 persons employed and salaries and wages amounted to $453,412.

(c) Boiler Compounds.—Boiler compounds are primarily intended either for treating boiler feed water to remove the constituents that go to form the scale when the water is evaporated or for facilitating the removal of the scale after it has been formed in the boiler. Soda ash and soda compounds are largely used for this purpose. Tannin and tannin extracts also function in this manner.

In 1924 the 5 plants in this industry operated full time throughout the year and produced boiler compounds worth $212,554 from raw materials costing $68,546 giving thus a value added by manufacturing equal to $144,008. Employment was afforded to 32 persons and $47,933 was paid in wages and salaries. In 1923 production amounted to $248,727, raw materials cost $64,265, and employees numbered 30.

(d) Celluloid Compounds.—Products of this industry include such articles as ivory toilet articles, toys, and novelties, artificial leather goods, combs, hair ornaments, etc. Silver nitrate, collodion, polished zinc and polished copper were also produced in considerable quantities.

In 1924, there were 10 firms included in this group, 4 were located in Quebec and 6 in Ontario. These firms employed 317 persons during the year and produced goods with a selling value of $1,805,843. In the previous year 352 persons were employed and production amounted to $1,854,748. Materials used included textiles, celluloid, pyralin, rubber, bar silver, varnishes, lacquers, pigments and dyes.

(e) Flavouring Extracts.—The bases of all flavouring extracts and essences are organic products either naturally or synthetically produced. So far as is known these products are not made in Canada but are purchased by some firms and used as a raw material in the preparation of the various extracts and essences. Alcohol, gelatine, corn starch, sugar, vanilla, beans and various other materials are also used in the Canadian industry. Jelly powders and flavouring extracts constitute the bulk of the production but ice cream powders and various other prepared powders were also made in large quantities.

In 1924 there were 18 plants engaged in this industry this being 2 less than in the previous year; 8 plants were situated in Ontario, 6 in Quebec and 1 in each of the provinces of British Columbia, Alberta, New Brunswick and Nova Scotia. The plants employed 241 persons and produced commodities worth $1,501,207 from materials cosing $868,084; these figures being nearly the same as for the previous year.

(f) Insecticides.—Insecticides manufactured in Canada included paris green, lime sulphur solution, and various arsenic compounds as well as other liquids and powders for fumigation and disinfectant purposes. In 1924, there were 15 firms producing these commodities as major products: 4 of these were located in Quebec, 7 in Ontario, 2 in New Brunswick, and 1 in each of Manitoba and British Columbia. There was 1 less plant in operation than in the previous year but capital rose to $845,222 from $671,077 and the number of employees to 135 from 116 in 1923. Production amounted to $735,130 in 1924 as against $938,782 in 1923.

(g) Polishes and Dressings.—The 27 establishments engaged in the manufacture of polishes and dressings in 1924 employed 255 persons of whom 135 were salaried employees and 120 were wage-earners. In 1923 there were 30 plants employing 202 persons on salaries and 132 persons earning wages. Capital employed fell from $1,628,251 in 1923, to $1,448,747 in 1924 due to the fact that there were 3 less reporting plants in the latter year.

Shoe polishes and dressings worth $485,591, floor wax valued at $201,040, and various products such as furniture polish, metal polish and hand cleaner made up the production of this industry which in 1924 totalled $1,464,975 as compared to $1,765,161 in 1923.

(h) Sweeping Compounds.—Sweeping compounds are designed primarily to collect dust and prevent its rising in the air when sweeping. In some cases it also acts as an antiseptic and insecticide. They consist usually of a body material such as sawdust or sand to which some binding material such as oil has been added. They are usually treated with cedar oil or oil of myrbane to give a pleasant odour.

In 1924 there were 4 firms engaged in this industry employing 25 persons and paying $36,459 in salaries and wages. Products had a selling value of $64,208 as against $102,682 by the same number of firms in 1923. Materials cost $26,666 in 1924 and $34,779 in 1923.

(i) Chemical Products, N.E.S.—The miscellaneous group includes 5 firms in Ontario, 1 in Manitoba and 1 in Saskatchewan which manufactured such miscellaneous products as welding compounds, anti-freeze mixtures, dexter-maltose and various other chemical compounds. In 1924 these industries employed 31 persons and produced commodities having a selling value of $324,310.

Table 93.—Summary Statistics of the Miscellaneous Chemical Industries in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel and electricity*	Cost of materials	Selling value of products	Value added by manufacturing
		$		$	$	$	$	$	$
Adhesives—									
1920	17	2,233,364	414	127,618	352,855	168,601	1,070,493	2,202,059	1,131,566
1921	17	1,898,848	222	90,410	161,592	60,951	598,932	1,474,754	875,822
1922	17	2,108,688	529	115,637	236,487	83,390	643,917	1,537,649	893,732
1923	17	1,492,927	228	120,511	179,066	57,795	694,507	1,486,807	792,300
1924	18	1,648,678	247	111,907	191,789	57,350	635,538	1,434,883	799,345
Baking powder—									
1920	9	1,083,800	419	188,846	248,161	14,126	1,303,805	2,602,382	1,298,577
1921	7	1,461,477	375	194,531	214,930	11,559	1,079,505	2,481,565	1,402,060
1922	6	1,637,770	409	218,776	202,814	13,086	869,608	2,712,894	1,843,286
1923	6	1,484,115	416	244,095	209,317	16,369	894,045	2,702,633	1,808,588
1924	5	1,579,295	424	244,672	219,483	13,602	921,288	2,751,061	1,829,773
Boiler compounds—									
1920	6	227,277	28	34,037	11,075	1,423	90,868	253,683	162,815
1921	6	200,702	29	35,198	12,354	2,025	77,137	255,896	178,759
1922	5	175,122	29	44,702	10,774	1,489	53,368	213,223	159,855
1923	4	188,561	30	31,776	12,478	2,068	64,265	248,727	184,462
1924	5	194,889	32	33,751	14,182	2,823	68,546	212,554	144,008
Celluloid products—									
1920	–	–	–	–	–	–	–	–	–
1921	9	1,670,561	267	87,461	163,451	28,815	668,997	1,418,903	749,906
1922	10	1,746,117	333	80,162	250,237	27,002	915,571	1,794,395	878,824
1923	10	6,491,147	352	139,100	234,039	41,545	952,924	1,854,748	901,824
1924	10	2,028,203	317	127,717	216,329	37,650	963,373	1,805,843	842,470
Flavouring extracts—									
1920	22	1,756,080	316	212,051	148,278	8,054	636,213	2,213,495	1,577,282
1921	19	1,473,632	261	225,277	89,560	7,956	896,188	1,501,380	605,192
1922	19	1,233,969	269	240,351	77,072	6,830	832,732	1,430,093	597,361
1923	20	1,077,587	267	220,589	70,010	11,713	873,595	1,562,536	688,944
1924	18	1,206,930	241	186,032	88,186	7,056	868,084	1,501,207	633,123
Insecticides—									
1920	7	87,443	22	15,521	10,656	686	80,420	140,701	60,281
1921	10	142,152	24	17,688	9,302	679	71,975	149,060	77,085
1922	12	459,721	100	42,953	47,302	6,549	293,911	536,274	242,363
1923	14	671,077	118	51,906	84,875	24,161	491,272	938,782	447,510
1924	15	845,222	135	58,869	91,305	24,837	473,526	735,130	261,604
Polishes and dressings—									
1920	32	1,444,963	309	202,462	147,835	10,196	1,130,377	2,005,970	875,593
1921	33	1,399,445	266	205,519	123,897	10,173	741,607	1,445,226	703,619
1922	31	1,521,563	289	251,345	119,594	8,583	736,517	1,670,293	933,776
1923	30	1,628,251	334	309,263	112,053	10,835	671,203	1,765,161	1,093,958
1924	27	1,448,747	255	238,846	108,356	10,896	583,751	1,464,075	881,224
Sweeping compounds—									
1920	6	58,842	21	26,433	10,240	498	51,729	124,913	70,184
1921	5	67,304	10	6,883	7,932	615	56,660	118,691	62,031
1922	4	74,779	20	34,915	8,094	611	42,087	107,991	65,904
1923	4	89,007	21	17,483	8,848	601	34,779	102,682	67,903
1924	4	73,447	25	27,690	8,769	514	26,666	64,208	37,542
Miscellaneous chemical products, n.e.s.—									
1920	5	160,004	29	10,679	14,722	3,717	127,366	186,239	58,873
1921	8	178,326	38	30,114	16,360	3,443	213,238	325,605	112,367
1922	6	123,514	23	22,821	9,465	1,466	72,646	142,437	69,791
1923	7	138,996	34	33,038	12,805	1,610	94,081	248,935	154,854
1924	7	251,336	31	35,152	15,552	2,143	149,191	324,310	175,116
Total[1]—									
1920	**110**	**11,523,714**	**2,193**	**952,693**	**1,389,568**	**207,301**	**6,810,244**	**13,688,141**	**6,877,897**
1921	**120**	**12,060,910**	**1,735**	**975,101**	**1,045,794**	**126,216**	**4,827,225**	**10,138,297**	**5,311,072**
1922	**110**	**9,081,213**	**2,001**	**1,051,660**	**961,839**	**149,006**	**4,160,357**	**10,145,249**	**5,684,892**
1923	**112**	**13,261,668**	**1,800**	**1,167,761**	**923,191**	**166,697**	**4,770,671**	**10,911,011**	**6,140,340**
1924	**109**	**9,279,717**	**1,707**	**1,064,636**	**953,951**	**156,871**	**4,689,966**	**10,294,171**	**5,604,205**

* Electricity not included for 1920, 1921, or 1922.

[1] Includes artificial abrasives in 1920 and 1921.

Table 94.—Capital Employed in the Miscellaneous Chemical Industries 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
	$	$	$	$	$	$	$	$
ADHESIVES—								
Quebec	447,400	58,637	49,795	555,832	450,416	46,900	52,553	549,869
Ontario	395,418	233,884	263,239	892,541	540,061	295,377	225,524	1,060,962
Canada*	868,387	306,310	318,230	1,492,927	1,016,046	351,799	280,833	1,648,678
BAKING POWDER—								
Quebec	42,336	55,386	29,955	127,677	10,294	80,577	1,540	92,411
Ontario	596,778	371,741	387,919	1,356,438				
Canada*	639,114	427,127	417,874	1,484,115	577,825	508,344	493,126	1,579,295
BOILER COMPOUNDS—								
Ontario	80,946	31,806	75,809	188,561	79,021	27,715	88,153	194,889
Canada	80,946	31,806	75,809	188,561	79,021	27,715	88,153	194,889
CELLULOID PRODUCTS—								
Quebec	401,762	207,068	76,065	684,895	209,041	147,334	78,186	624,561
Ontario	3,342,485	314,738	2,149,029	5,806,252	939,550	277,633	186,459	1,403,642
Canada	3,744,247	521,806	2,225,094	6,491,147	1,338,591	424,967	264,645	2,028,203
FLAVOURING EXTRACTS—								
Quebec	75,868	226,510	118,590	420,968	127,607	253,208	169,920	550,735
Ontario	193,741	194,613	214,017	602,371	219,583	195,919	188,920	604,422
Canada*	296,821	444,565	330,201	1,077,587	374,709	467,563	364,658	1,206,930
INSECTICIDES—								
Quebec	231,190	70,190	6,129	307,509	233,865	79,162	11,756	324,783
Ontario	211,506	46,241	80,938	338,685	213,629	111,648	139,557	464,834
Canada*	451,729	123,320	96,028	671,077	487,419	205,116	152,687	845,222
POLISHES AND DRESSINGS—								
Quebec	164,894	103,155	75,136	343,185	150,569	105,653	49,973	306,195
Ontario	570,831	389,418	324,682	1,284,931	484,903	349,091	297,558	1,131,552
Canada*	735,725	492,673	399,853	1,628,251	637,472	459,744	351,531	1,448,747
SWEEPING COMPOUNDS—								
Canada*	17,190	14,969	56,848	89,007	25,058	13,854	34,535	73,447
MISCELLANEOUS CHEMICAL PRODUCTS, N.E.S.—								
Ontario	52,033	45,958	31,732	130,623	142,460	63,190	44,886	250,536
Canada*	60,856	46,408	31,732	138,996	143,360	63,890	47,086	254,336
Total—								
Nova Scotia	20,107	8,291	5,872	34,570	32,567	13,802	6,881	43,190
New Brunswick	31,296	25,926	977	58,199	33,103	16,377	3,382	52,862
Quebec	1,363,550	721,446	356,370	2,441,566	1,322,092	713,254	361,528	2,449,894
Ontario	5,460,072	1,639,025	3,553,887	10,652,984	3,201,532	1,761,751	1,673,801	6,637,090
Manitoba	8,879	4,980	37,504	51,363	35,364	1,250	25,423	62,037
Saskatchewan	500	300	–	800	500	300	–	800
Alberta	878	1,225	1,655	3,758	1,278	1,625	2,109	5,012
British Columbia	9,233	7,791	1,404	18,428	13,125	14,610	1,127	28,862
Canada	6,895,015	2,408,984	3,957,669	13,261,668	4,679,501	2,522,992	2,077,254	9,279,747

*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 95.—Number of Employees, Salaries and Wages Paid in the Miscellaneous Chemical Industries in Canada, 1923

Industry	Average number of employees					Salaries and wages		
	Salaried employees		Wage-earners		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
						$	$	$
Adhesives	49	8	161	10	228	120,511	179,066	299,577
Baking powder	104	67	147	98	416	244,095	209,317	453,412
Boiler compounds	11	5	14	–	30	31,776	12,478	44,254
Celluloid products	51	17	212	72	352	139,100	234,039	373,139
Flavouring extracts	115	42	44	66	267	220,589	70,010	290,599
Insecticides	25	5	86	–	116	51,906	84,875	136,781
Polishes and dressings	145	57	76	56	334	309,263	112,053	421,316
Sweeping compounds	11	3	7	–	21	17,483	8,848	26,331
Miscellaneous chemical products, n.e.s.	16	4	8	6	34	33,038	12,805	45,843
Total	527	208	755	308	1,798	1,167,761	923,491	2,091,252

Table 96.—Number of Employees, Salaries and Wages Paid in the Miscellaneous Chemical Industries in Canada, 1924

Industry	Average number of employees					Salaries and wages		
	Salaried employees		Wage-earners		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
						$	$	$
Adhesives	43	13	182	9	247	111,907	191,789	303,696
Baking powder	91	76	145	112	424	244,672	219,483	464,155
Boiler compounds	12	5	15	–	32	33,751	14,182	47,933
Celluloid products	40	14	190	73	317	127,717	216,329	344,046
Flavouring extracts	97	31	41	72	241	186,032	88,186	274,218
Insecticides	26	5	91	13	135	58,869	91,305	150,174
Polishes and dressings	95	40	69	51	255	238,846	108,356	347,202
Sweeping compounds	12	4	9	–	25	27,690	8,769	36,459
Miscellaneous chemical products, n.e.s.	11	4	10	6	31	35,152	15,552	50,704
Total	**427**	**192**	**752**	**336**	**1,707**	**1,064,636**	**953,951**	**2,018,587**

Table 97.—Distribution of Employment in the Miscellaneous Chemical Industries in Canada, according to the Average Number of Hours Worked per Day, 1924

Province	Number of wage-earners working			
	8 hours or less per day	9 hours	10 hours	Over 10 hours
Nova Scotia	7	1	8	1
New Brunswick	10	4	–	–
Quebec	162	118	97	2
Ontario	338	252	187	41
Manitoba	4	–	–	–
Saskatchewan and Alberta	2	–	–	–
British Columbia	6	–	–	–
Canada	**529**	**375**	**292**	**44**

Table 98.—Fuel and Electricity Used in the Miscellaneous Chemical Industries in Canada, 1923 and 1924

Kind	Unit of measure	1923		1924	
		Quantity	Value	Quantity	Value
		No.	$	No.	$
Anthracite coal	short ton	2,240	21,497	452	6,158
Bituminous coal	"	15,725	107,878	17,537	108,060
Coke	"	2	14	7	84
Fuel oil	gal.	229	23	–	38
Gasoline	"	798	237	784	223
Gas	M. cu. ft.	8,457	6,187	3,449	3,197
Wood	cord	381	1,878	309	1,502
Other fuel	.....	–	660	–	438
Electric power	k.w.h.	–	28,323	2,445,072	37,171
Total	.....	–	**166,697**	–	**156,871**

Table 99.—Power Employed in the Miscellaneous Chemical Industries 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	30	2,996	39	3,239
Engines—				
(a) Steam	13	542	24	567
(b) Gas	1	5	1	6
(c) Oil and gasoline	–	–	1	22
Hydraulic turbines or water wheels	1	110	1	110
Electric motors—				
(a) Operated by purchased power	261	2,060	267	1,919
(b) Operated by power generated by the establishment	8	187	15	201

Table 100.—Materials Used in the Miscellaneous Chemical Industries in Canada, 1923 and 1924

Materials used	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
ADHESIVES—					
Acetic acid	lb.	8,310	1,246	11,806	1,466
Bones and hide trimming	ton	9,235	202,580	8,013	156,239
Boracic acid	lb.	2,892	369	3,050	358
Borax	"	96,566	5,381	90,520	4,417
Dextrine	"	285,260	16,856	508,753	27,979
Fishskins and waste	ton	-	15,473	1,615	21,386
Flour	.....	-	6,922	-	4,437
Glue stock	.....	-	31,238	-	46,330
Gums	.....	-	632	-	1,431
Lime	ton	602	7,336	297	3,336
Rubber and rubber substitute	lb.	48,280	15,564	45,542	13,734
Rosin, pitch, wax, etc	"	2,551,513	69,587	2,392,601	57,323
Starch	"	457,122	19,060	359,936	10,358
Containers	.....	-	63,504	-	76,917
All other materials	.....	-	238,759	-	204,837
Total	.....	-	694,507	-	635,538
BAKING POWDER—					
Bicarbonate of soda	lb.	1,794,001	45,985	1,922,276	47,805
Calcium acid phosphate	"	2,010,730	169,811	2,035,191	175,597
Corn starch	"	2,505,147	115,019	2,474,336	125,060
Containers, boxes, packages, etc	.....	-	348,763	-	329,675
All other materials	.....	-	214,467	-	243,151
Total	.....	-	894,045	-	921,288
BOILER COMPOUNDS—					
Sodium carbonate	lb.	-	5,771	310,238	7,433
Sodium hydroxide	"	-	5,954	108,932	5,448
Sodium silicate	"	-	8,488	608,999	7,579
Trisodium phosphate	"	107,622	4,310	120,352	4,683
Containers, (boxes, packages, etc.)	.....	-	8,447	-	7,619
All other materials	.....	-	31,295	-	35,784
Total	.....	-	64,265	-	68,546
CELLULOID PRODUCTS—					
Total	.....	-	952,924	-	963,373
FLAVOURING EXTRACTS—					
Alcohol	.....	-	93,803	-	104,666
Corn starch	lb.	325,978	10,317	284,729	15,162
Essences, essential oils, etc	.....	-	126,366	-	97,862
Flour	lb.	99,430	2,972	93,557	2,368
Gelatine	"	177,379	55,584	162,072	53,294
Sodium bicarbonate	"	24,136	692	15,317	395
Sodium chloride (salt)	"	6,886	103	2,508	41
Sugar	"	1,738,429	166,083	1,646,434	142,751
Tartaric acid	"	30,006	8,455	23,705	5,742
Vanilla beans	"	10,576	33,632	12,159	62,003
Containers, boxes, etc	.....	-	187,794	-	161,006
All other materials	.....	-	181,794	-	222,794
Total	.....	-	873,595	-	868,084
INSECTICIDES—					
Acetic acid	lb.	997,724	55,740	830,091	44,500
Copper sulphate	"	1,232,541	68,910	1,287,802	65,232
Insect flowers	"	46,000	28,000	45,210	27,128
Lime	"	501,000	3,333	1,225,703	7,655
Litharge	"	489,604	45,987	384,657	35,027
Sulphur	"	1,021,794	16,260	1,312,330	16,938
White arsenic	"	802,672	78,670	878,633	73,527
Containers, boxes, etc	.....	-	77,342	-	92,921
All other materials	.....	-	117,030	-	110,598
Total	.....	-	491,272	-	473,526

Table 100.—Materials used in the Miscellaneous Chemical Industries in Canada, 1923 and 1924—Concluded

Materials used	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at works
			$		$
POLISHES AND DRESSINGS—					
Carbon black	lb.	33,375	6,223	38,838	5,379
Dyes and colours	.....	-	16,529	-	14,432
Graphite	lb.	145,606	7,206	151,407	8,447
Methylated spirits	"	4,030	3,965	2,300	2,055
Naphtha	gal.	45,500	12,300	55,000	11,000
Resin	lb.	6,430	192	6,840	273
Shellac	"	-	28,468	38,039	21,800
Turpentine	gal.	27,630	40,882	25,215	29,457
Wax, carnauba	lb.	60,957	19,008	67,277	21,156
Wax, paraffin	"	51,783	5,840	-	-
Wax, n.s.	"	224,789	27,077	-	29,360
Containers	.....	-	337,763	-	268,352
All other materials	.....	-	165,660	-	172,031
Total	.....	-	671,203	-	583,751
SWEEPING COMPOUNDS—					
Oils, citronella, myrbane, cocoanut, essential, etc	.....	-	10,462	-	9,880
Sand	.....	-	1,121	-	1,051
Sawdust	.....	-	1,137	-	1,091
Containers, boxes, etc	.....	-	18,571	-	13,777
All other materials	.....	-	3,488	-	867
Total	.....	-	34,779	-	26,666
MISCELLANEOUS CHEMICAL INDUSTRIES, N.E.S.—					
Total	.....	-	94,081	-	149,194
Total	.....	-	**4,770,671**	-	**4,689,966**

Table 101.—Products of the Miscellaneous Chemical Industries in Canada, 1923 and 1924

—	Unit of measure	1923		1924	
		Quantity	Selling value	Quantity	Selling value
			$		$
ADHESIVES—					
Glue, mucilage paste and liquid fish glue	.....	-	1,028,569	-	1,038,729
Gums, dextrine and paste powders	.....	-	78,554	-	61,045
Size, including paper sizing	.....	-	153,733	-	131,231
Rubber and other cements and sealing wax	.....	-	100,419	-	76,398
All other products and by-products[1]	.....	-	125,532	-	127,480
Total	.....	-	1,486,807	-	1,434,883
BAKING POWDER—					
Baking powder	lb.	6,530,194	1,706,523	6,727,206	1,761,875
All other products[2]	.....	-	996,110	-	989,186
Total	.....	-	2,702,633	-	2,751,061
BOILER COMPOUNDS—					
Boiler compounds	.....	-	244,599	-	211,221
All other products[3]	.....	-	4,128	-	1,333
Total	.....	-	248,727	-	212,554
CELLULOID PRODUCTS—					
Celluloid products	.....	-	769,317	-	711,241
All other products[4]	.....	-	1,085,431	-	1,094,602
Total	.....	-	1,854,748	-	1,805,843

Table 101.—Products of the Miscellaneous Chemical Industries in Canada, 1923 and 1924—Concluded

—	Unit of measure	1923		1924	
		Quantity	Cost at works	Quantity	Cost at Works
			$		$
FLAVOURING EXTRACTS—					
Baking powder	lb.	–	9,626	98,016	12,506
Egg substitute	"	–	57,654	65,226	52,816
Flavouring extracts and essences	gal.	–	613,160	65,157	590,546
Ice cream powders	lb.	–	14,497	42,464	12,961
Jelly powders	"	–	491,296	1,908,485	484,547
All other products[3]		–	376,294	–	347,831
Total		–	1,562,536	–	1,501,207
INSECTICIDES—					
Insecticides, n.e.s., paris green, lead arsenate, calcium arsenate, and lime sulphur solution		–	744,351	–	640,518
All other products[4]		–	194,431	–	94,612
Total		–	938,782	–	735,130
POLISHES AND DRESSINGS—					
Furniture polish		–	260,794	–	195,658
Floor wax		–	156,077	–	201,040
Harness polish		–	7,101	–	11,768
Metal polish		–	40,895	–	16,836
Polishes, n.e.s.		–	171,209	–	42,350
Shoe polishes, pastes, and dressings		–	482,693	–	485,591
Stove polish		–	234,427	–	181,888
Varnishes, stains, and enamels		–	91,653	–	81,685
All other products[7]		–	320,312	–	248,159
Total		–	1,765,161	–	1,464,975
SWEEPING COMPOUNDS—					
Sweeping compounds		–	85,808	–	61,508
All other products		–	16,874	–	2,700
Total		–	102,682	–	64,208
MISCELLANEOUS CHEMICAL PRODUCTS, N.E.S.—					
Total[8]		–	248,935	–	324,310
Total		–	**10,911,011**	–	**10,294,171**

[1] Includes fishcrap, silver polish, rubberized cotton, grease, tankage, shoe cloth, top facings and innersoling and box toe goods.

[2] Includes yeast, lye, cream of tartar, caustic soda, and other products.

[3] Includes grates and other products.

[4] Includes fabrikoid, collodion, silver nitrate and other products.

[5] Includes toilet preparations, pie filling, custard powder, icings, powdered albumen, doughnut flour, egg powder and other products.

[6] Includes liquid soap, hand cleaner, tomato catsup, arsenic acid, copper arsenic dusts and sweeping compounds.

[7] Includes mops, sweeping compounds, washing compounds, hand cleaner, oil spray and other products.

[8] Includes dextro-maltose, soaps, cheese rennet and colour, sulphanated oils, and welding compounds.

DIRECTORY OF FIRMS ENGAGED IN THE MANUFACTURE OF CHEMICALS AND ALLIED PRODUCTS IN CANADA

Coal Tar and its Products

Name	Head Office Address	Location of Plant
COAL TAR DISTILLATION—		
Nova Scotia—		
Dominion Tar and Chemical Co., Ltd.	354-5 Salisbury House, London Wall, E.C. 2, London, England.	Sydney.
Quebec—		
The Barrett Co., Ltd.	2001 St. Hubert St., Montreal, Que.	Montreal.
Consolidated Products Ltd.	184 St. Margaret St., Montreal, Que.	Montreal.
Dominion Tar and Chemical Co., Ltd.	354-5 Salisbury House, London Wall, E.C. 2, London, England.	Allard St., Ville la Salle.
Ontario—		
The Barrett Co., Ltd.	2001 St. Hubert St., Montreal, Que.	Toronto.
Dominion Tar and Chemical Co., Ltd.	354-5 Salisbury House, London Wall, E.C. 2, London, England.	Sault Ste. Marie.
Hamilton Tar Products Co., Ltd.	Corner Caroline and Mulberry St., Hamilton, Ont.	Hamilton.
Manitoba—		
The Barrett Co., Ltd.	2001 St. Hubert St., Montreal, Que.	Winnipeg.
British Columbia—		
The Barrett Co., Ltd.	2001 St. Hubert St., Montreal, Que.	Vancouver.
DISINFECTANTS—		
Quebec—		
Rowe, Robert W., Ltd.	249 Grand Trunk St., Montreal, Que.	Montreal.
West Disinfecting Co.	41 Fifth Ave., New York City, N.Y.	301-303 Casgrain St., Montreal.
Ontario—		
Canadian Germicide Co., Ltd.	1 Howard Park Ave., Toronto	Toronto.
Hayner, Norman C., Co.	Rochester, N.Y., U.S.A.	Warehouse, 183 Huron St., Toronto.
Polusterine Products Co. of Canada, Ltd.	168-170 Ontario St., Toronto	Toronto.
Wodehouse Zenoleum Ltd.	22 Ainslie St., S. Galt	Galt.
Woods Chemical Co., Ltd.	45 Colborne St., Toronto	Toronto.
Manitoba—		
Canadian Sundries, Ltd.	212 Balmoral St., Winnipeg	Winnipeg.

Acids, Alkalies, Salts and Compressed Gases

ACIDS, ALKALIES AND SALTS—		
Nova Scotia—		
Dominion Iron and Steel Co., Ltd.	Sydney	Sydney.
Quebec—		
Canada Carbide Co., Ltd.	611 Power Bldg., Craig St., Montreal	Transmission Ave., Shawinigan Falls.
Canadian Electro Products Co., Ltd.	611 Power Bldg., Craig St., Montreal	Transmission Ave., Shawinigan Falls.
Cowan, John, Chemical Co., Ltd.	9 Dalhousie St., Montreal	Montreal.
Electric Reduction Co., Ltd.	Oldbury, England	Buckingham.
Laporte-Irwin, Ltd.	20 St. Paul St., West., Montreal	Montreal.
Montreal Water and Power Co.	11 Place d'Armes Square, Montreal	20 Charlevoix St. Montreal.
Nichols Chemical Co., Ltd.	222 St. James St., Montreal	Capelton.
Ontario—		
Algoma Steel Corp.	Sault Ste. Marie	Sault Ste. Marie.
American Cyanamid Co.	511 Fifth Ave., New York, N.Y.	Niagara Falls.
Brunner, Mond Canada, Ltd.	Canadian Bank of Commerce Bldg., Toronto	Amherstburg.
Canadian Hanson and Van Winkle Co., Ltd	2 Silver Avenue, Toronto	15-25 Morrow Ave., Toronto.
Canadian Salt Co., Ltd.	719 Sandwich St., W., Windsor	Riverfront St., Sandwich.
Chemical Products, Ltd.	Trenton	Trenton.
Consolidated Chemical Co., Ltd.	Port Hope	Port Hope.
Foster, W. L.	333 Adelaide St., W. Toronto	Toronto.
Nichols Chemical Co., Ltd.	222 St. James St., Montreal, Que.	Sulphide.
Trenton Chemical Co.	Bay St., Trenton	Trenton.
Union Carbide Co. of Canada	46 King St., W. Toronto	Welland.
Yocum Faust Ltd.	123 St. George St., London	London.
Graselli Chemical Co., Ltd.	Burlington St. Hamilton	Hamilton.
British Columbia—		
Consolidated Mining and Smelting Co. of Canada, Ltd.	Drummond Bldg., Montreal, Que.	Tadanac St., Trail.
Nichols Chemical Co., Ltd.	222 St. James St., Montreal, Que.	Barnet.

Acids, Alkalies, Salts and Compressed Gases—Concluded

Name	Head Office Address	Location of Plant
COMPRESSED GASES—		
Nova Scotia—		
Canadian Carbonate Ltd	1 Hadley St., Côte St. Paul, Montreal, Que	Stairs St., Dartmouth.
L'Air Liquide Society	285 Beaver Hall Hill, Montreal, Que	Cor. Kane & Agricola Sts., Halifax.
Quebec—		
Canadian Carbonate Ltd	1 Hadley St., Côte St. Paul, Montreal	Montreal.
Dominion Oxygen Co., Ltd	46 King St. West, Toronto, Ont	225 Bourgeois St., Montreal.
L'Air Liquide Society	285 Beaver Hall Hill, Montreal, Que	Viau and Rouen Sts., Montreal.
Prest-O-Lite Co. of Canada, Ltd	46 King St. W., Toronto, Ont	Transmission Ave., Shawinigan Falls.
Ontario—		
Canadian Ammonia Co., Ltd	65-87 Heward Ave., Toronto	Toronto.
Canadian Carbonate Ltd	1 Hadley St., Côte St. Paul, Montreal, Que	Simcoe St., Hamilton.
Canadian Carbonate Ltd	1 Hadley St., Côte St. Paul, Montreal, Que	6 Wabash Ave., Toronto.
Dominion Oxygen Co., Ltd	46 King St. West, Toronto	Hillcrest Park, Toronto.
L'Air Liquide Society	285 Beaver Hall Hill, Montreal, Que	York St., London.
L'Air Liquide Society	285 Beaver Hall Hill, Montreal, Que	16 Boler St., West Toronto.
L'Air Liquide Society	285 Beaver Hall Hill, Montreal, Que	Sudbury.
Peoples Gas Supply Co., Ltd	2 Mill St., Ottawa	Ottawa.
Prest-O-Lite Co. of Canada, Ltd	46 King St. West, Toronto	Merritton.
Manitoba—		
Canadian Carbonate, Ltd	1 Hadley St. Côte St. Paul, Montreal, Que	Archibald St., St. Boniface.
L'Air Liquide Society	285 Beaver Hall Hill, Montreal, Que	1207 Pine St., Winnipeg.
Prest-O-Lite Co. of Canada, Ltd	46 King St. West, Toronto, Ont	Taché Ave., St. Boniface.
Western Hydrogen & Oxygen Mfg. Co., Ltd	Mill Street, Winnipeg	Winnipeg.
Alberta—		
L'Air Liquide Society	285 Beaver Hall Hill, Montreal, Que	201 First Ave E., Calgary.
British Columbia—		
Canadian Carbonate Ltd	1 Hadley St., Côte St. Paul, Montreal, Que	Cor. 11th Ave. and Yew St., Vancouver.
L'Air Liquide Society	285 Beaver Hall Hill, Montreal, Que	Cor. Fifth Ave. and Yukon St., Vancouver.

Explosives, Ammunition, Fireworks and Matches

EXPLOSIVES—		
Quebec—		
Canadian Explosives, Ltd	120 St. James St., Montreal	Beloeil.
Northern Explosives Ltd	623 Drummond Bldg., Montreal	Dragon.
Ontario—		
Canadian Explosives Ltd	Canada Cement Bldg., Phillips Square, Montreal, Que.	Nobel.
National Explosives Co., Ltd	71½ Sparks St., Ottawa	Camp Mohawk.
North Star Explosives Co., Ltd., c/o J. J. Heney.	40 Elgin St., Ottawa	Prescott.
Thompson Powder Co., Ltd	Deseronto	Deseronto.
British Columbia—		
Canadian Explosives Ltd	120 St. James St., Montreal, Que	Nanaimo & James Island
Giant Powder Co. of Canada, Ltd	Room 302, Bank of Nova Scotia Bldg., Vancouver.	Nanoose Bay.
AMMUNITION—		
Quebec—		
Canadian Safety Fuse Co., Ltd	120 St. James St., Montreal	Brownsburg.
Dominion Cartridge Co., Ltd	120 St. James St., Montreal	Brownsburg.
Dominion Arsenal	8 Carlton St., Quebec	Quebec.
Ontario—		
Dominion of Canada Arsenal	Lindsay	Lindsay.
FIREWORKS—		
Quebec—		
Central Railway Signal Co	230 Boylston St., Boston, Mass	Iberville.
Ontario—		
Bottieri, Henry	803 Congress St., Shneeteday, N.Y	London.
The T. W. Hand Firework Co., Ltd	411 King St. W., Hamilton	Hamilton.
Dominic Ruffo	8th St. West, Cornwall	Cornwall.
Toronto Fireworks Co., Ltd	28 James St., South, Hamilton	Islington.
MATCHES—		
Quebec—		
Eddy, E. B. Co., Ltd	Hull	Hull.
World Match Corp., Ltd	137 McGill St., Montreal	Berthierville.
Ontario—		
Canadian Match Co., Ltd	Water St., Pembroke	Pembroke.
Dominion Match Co., Ltd	Main St., Deseronto	Deseronto.

Fertilizers

Name	Head Office Address	Location of Plant
Nova Scotia—		
Colonial Fertilizer Co.	40 North Market St., Boston, Mass, U.S.A.	Nesbitt St., Windsor.
Cross Fertilizers Ltd.	Prince St., Sydney	Sydney.
Jack Fertilizer Co.	Halifax	Halifax.
New Brunswick—		
Dominion Fertilizer Co., Ltd.	61 Broadway, New York, N.Y., U.S.A.	Prince Willaim St., St. Stephen.
St. John Fertilizer Co.	500 Chesley St., St. John	St. John.
Quebec—		
Roy, Léon	Lévis	Lévis.
Tanguay Limitée	48 St. Paul St., Quebec	116-120 St. Andrew St., Quebec.
Ontario—		
Canadian Fertilizer Co., Ltd.	Market Bldg., Chatham	End of King St. E., Chatham.
Farmers' Fertilizer Co., Ltd.	Josephine St., Wingham	Wingham.
Freeman, W. A. Co., Ltd.	Cor. Hunter St. & Ferguson Ave., Hamilton	Terra Cotta Ave., Hamilton.
Ontario Fertilizers, Ltd.	Harris Road, West Toronto	Harris Road, West Toronto.
Port Stanley Supply Co., Ltd.	Port Stanley	Port Stanley.
Scottish Fertilizers, Ltd.	Welland Jct. Township of Humberstone	Welland.
Stone, William, Sons, Ltd.	Woodstock	Ingersoll.
Witts, Cyrus	R.R. No. 1, Norwich	Norwich.
Manitoba—		
Brooks Aniline Works, Ltd.	Room 9, Board of Trade, Winnipeg, Man.	379 Provencher Ave., St. Boniface.
British Columbia—		
Canadian Explosives, Ltd.	Canada Cement Bldg., Montreal, Que.	James Island.
Globe Fertilizer Co.	Campbell Road, South Vancouver	South Vancouver.
Triangle Chemical Co., Ltd.	P.O. Box 1011, New Westminster	Foot 16th St. New Westminster.

Medicinal and Pharmaceutical Preparations

Nova Scotia—		
Evangeline Mfg. Co.	Middleton	Middleton.
Minard's Liniment Co., Ltd.	7 Jenkins St., Yarmouth	Yarmouth.
New Brunswick—		
Brayley Drug Co., Ltd.	13-15 Mill St., St. John	St. John.
Quebec—		
Arex Company, The	Bienville	Bienville.
Audet E. Co.	21 Iberville St., Montreal	Montreal.
Centaur Co.	80 Varick St., New York City	442 St. James, Montreal.
Chrétien, Alphonse	Ste. Eulalie	Ste. Eulalie.
Cie de Produits Chimiques, Dr. Varrain, Enreg.	39 Notre Dame St. E., Montreal	Montreal.
Cie Pharmaceutique Remeau, Ltée	310 St. Catherine E., Montreal	Montreal.
Davis and Lawrence Co.	Bronx Blvd. & 238th St., New York, N.Y., U.S.A.	356 St. Antoine St., Montreal.
Denver Chemical Mfg. Co.	20 Grand St., New York	107 Lagauchetière St., W., Montreal.
Devins, R. J., Ltd.	2123 St. James St., Montreal	Montreal.
Farmely Medicine Co.	Victoriaville	Victoriaville.
Frasier, Thornton and Co., Ltd.	Cookshire	Cookshire.
Frosst, Charles E. and Co.	101 Lagauchetière St. W., Montreal	Montreal.
Gnuvin, J. A. E.	851A St. Catherine St. E., Montreal	273 Maisonneuve St., Montreal.
Hanford, G. C. Mfg. Co., Ltd.	133 Youville Square, Montreal	Montreal.
Hervay Chemical Co. of Canada, Ltd.	St. Basile	St. Basile.
Horner, Frank W. Ltd.	48 St. Urbain St., Montreal	Montreal.
Hurtubise, B.	1814 Papineau St., Montreal	Montreal.
Ideal Medicine Co.	Victoriaville	Victoriaville.
Laboratoire Nadeau, Ltée.	110 St. Paul St. West, Montreal	Montreal.
Lambert, Dr. J. O., Ltée.	396 St. Antoine St., Montreal	Montreal.
Laurentian Laboratories	230 De Courcelles St., Montreal	Montreal.
Mathieu, J. L., Compagnie	14 Albert St., Sherbrooke	Sherbrooke.
Menley and James Ltd. of Canada	45 St. Alexander St., Montreal	Montreal.
Morin, Dr. Ed. and Cie, Ltée.	113 Côte de la Montagne, Que.	Quebec.
National Licorice Co.	106 John St., Brooklyn, N.Y., U.S.A.	4211 Rouen St., Montreal.
Polson, N. C. and Co., Ltd.	311 Notre Dame St. W., Montreal	Montreal.
Robin and Cie	139 St. Elizabeth St., Montreal	Montreal.
Routhier, P.	547 Mont Royal E., Montreal	Montreal.
Trudel, J. E.	46-4th Ave., Quebec	Quebec.
Watson, D. and Co.	35 St. François Xavier St., Montreal	Montreal.
White, A. J. and Co., Ltd.	45 St. Alexander St., Montreal	Montreal.
Wingate Chemical Co., Ltd.	468 St. Paul St. W., Montreal	Montreal.
Wyeth, John and Bro., Inc.	Cor. Washington Ave. & Eleventh St., Philadelphia, P.A., U.S.A.	46 Prince St., Montreal.

Medicinal and Pharmaceutical Preparations—Continued

Name	Head Office Address	Location at Plant
Ontario—		
Allen and Hanburys Co., Ltd.	64-66 Gerrard St. E., Toronto	65 King St. E., Lindsay.
Arner Co., Ltd.	303 Michigan Ave., Buffalo, N.Y., U.S.A.	Fort Erie.
Bauer and Black, Ltd.	96 Spadina Ave., Toronto	Toronto.
Bayer Co., Ltd.	801 Dominion Bank Building, Toronto	907 Elliott St., Windsor.
Bennett and Messecar Co., Ltd.	Mille Roches	Mille Roches.
Bonalene Products Ltd.	152 Duchess St., Toronto	Toronto.
Briggs, G. C. and Sons	122 King St. W., Hamilton	162 Sanford Ave. N., Hamilton.
Buckley, W. J., Ltd.	142 Mutual St., Toronto	Toronto.
Canada Pharmacal Co., Ltd.	447 Talbot St., London	London.
Canadian Gumagathon Ltd.	750B Yonge St., Toronto	Toronto.
Carter Drug Co.	1560 Dundas St. W., Toronto	Toronto.
Chamberlain Medicine Co., Ltd.	Sixth Ave., Des Moines, Iowa, U.S.A.	41 Dovecourt Road, Toronto.
Cummings, J. H. (Carter Cummings and Co.).	107 Duke St., Toronto	Toronto.
Coleman and Co., Canada, Ltd.	67 Portland St., Toronto	Toronto.
Crossman, L.	439 Booth St., Ottawa	Ottawa.
D. D. D. Co.	27 Lyall Ave., Toronto	67 Portland St., Toronto.
Diffin, C. W.	Bridgeburg	Bridgeburg.
Douglas and Co.	Napanee	Napanee.
Druggists Corporation of Canada.	35 Britain St., Toronto	Toronto.
Eaton, The T., Drug Co., Ltd.	190 Yonge St., Toronto	Toronto.
Edmanson, Bates and Co., Ltd.	244 Adelaide St. W., Toronto	Toronto.
Emerson Drug Co., Ltd.	Bromo-Seltzer Tower Bldg., Baltimore, Ind.	1266 Queen St. W., Toronto.
Fleming Bros., Ltd.	422 Wellington St. W., Toronto	Toronto.
Foster Dack Co., Ltd.	377 King St. W., Toronto	Toronto.
Fulford, C. E. Ltd.	310 Dupont St., Toronto	Toronto.
Gallagher Remedy Co., Ltd.	332 Water St., Peterborough	Peterborough.
Gamble, D. J. C. and Son.	63 Sheridan Ave., Toronto	Toronto.
Gaskin, H. M. Co., Ltd.	420 Yonge St., Toronto	Toronto.
Hartz, J. F. and Co., Ltd.	24-26 Hayter St., Toronto	Toronto.
Howard Bros. Chemical Co.	243 Jarvis St., Bridgeburg	Bridgeburg.
Hygiene Kola, Ltd.	20 Dundas St. W., Toronto	Toronto.
Ingram & Bell Ltd.	256 McCaul St., Toronto	Toronto.
International Druggists' and Chemists' Laboratories, Inc.	280 Pearl St., New York, N.Y., U.S.A.	147 Carling St., London.
Jefferis, E. G.	442 Quebec Ave., Toronto	Toronto.
Karn, F. E. Co., Ltd.	415 Spadina Road, Forest Hill, Toronto	Toronto.
Lambert Pharmacal Co.	2101 Locust St., St. Louis, Mo., U.S.A.	263 Adelaide St. W., Toronto.
Lavoris Chemical Co., Ltd.	1-3 Jarvis St., Toronto	Toronto.
Lewis, A. H. Medicine Co.	319 S. Fourth St., St. Louis, Mo., U.S.A.	67 Cruwford Ave., Windsor.
Lyman Bros. and Co., Ltd.	71 Front St. E., Toronto	183 Front St. E., Toronto.
Mahans, Dr., Compass Oil Co.	18 Garfield Ave., London	London.
Marlatt, J. W. and Co., Ltd.	211 Gerrard St. E., Toronto	Toronto.
Mentholatum Co.	Wichita, Kansas, U.S.A.	Lewis St., Bridgeburg.
Merrill Co., Ltd.	93½ Church St., Toronto	Toronto.
Milburn, The T. Co., Ltd.	643 King St. W., Toronto	Toronto.
Morse, H.	44 Church St., New Rochelle, N.Y.	Bridgeburg.
Mulveney, R. L.	211 Ossington Ave., Toronto	Toronto.
Noll, Geo. M. (The Pinex Ltd).	424 Wellington St. W., Toronto	Toronto.
Northrop and Lyman Co., Ltd.	462-6 Wellington St. W., Toronto	Toronto.
Pabst Chemical Co.	319 W. Ohio St., Chicago, Ill.	179 Parliament St., Toronto.
Parke Davis and Co.	Joseph Campeau Ave., Detroit, Mich., U.S.A.	Walker & Sandwich Sts. Walkerville.
Paris Medicine Co.	St. Louis, Mo., U.S.A.	Toronto.
Penslar Co., Ltd.	Walker Power Bldg., Walkerville	Walkerville.
Pepsin Syrup Co., Ltd.	Caldwell Bldg., 76 Stafford St., Toronto	Toronto.
Pinkham, Lydia E. Medicine Co.	271 Western Ave., Lynn, Mass, U.S.A.	University Ave., Cobourg.
Powell, H., Chemical Co.	40 Dundas St. E., Toronto	Toronto.
Pugsley, Wm.	126 Yorkville Ave., Toronto	Toronto.
Rundle, Geo. H. and Son Co., Ltd.	Cor. Pitt and Dougal Ave., Windsor	Windsor.
Sanderson, John H.	Richmond Hill	Richmond Hill.
Saunders, W. E. and Co., Ltd.	184-188 King St., London	London.
Scott and Bowne, Inc.	60 Orange St., Bloomfield, N.J., U.S.A.	64-66 Princess St., Toronto.
Shuttleworth, E. B. Chemical Co., Ltd.	898 St. Clair Ave., W. Toronto	Toronto.
Stearns, Frederick and Co. of Canada, Ltd	345 Sandwich St. W., Windsor	Windsor.
Sutcliffe and Bingham of Canada, Ltd.	Manchester, England	81 Peter St., Toronto.
Synthetic Drug Co., Ltd.	243 College St., Toronto	Toronto.
Tanlac Co., Ltd.	301 E. First St., Dayton, Ohio	48 Kildare Rd., Walkerville.
Toronto Pharmacal Co., Ltd.	20 Brockton Ave., Toronto	Toronto.
United Drug Co., Ltd.	Boston, Mass.	68 Broadview Ave., Toronto.
Vanderhoof and Co., Ltd.	Louis & Wynndotte St., Windsor	Windsor.
Van, T.	1152 Dunforth Ave., Toronto	Toronto.
Viavi Co.	401 London St., Windsor	Windsor.
Wampole, Henry K. and Co., Ltd.	Perth	Perth.
Warner, William R. and Co., Ltd.	727 King St. W., Toronto	Toronto.

Medicinal and Pharmaceutical Preparations—Concluded

Name	Head Office Address	Location of Plant
Ontario—Concluded		
Waterbury Chemical Co. of Canada, Ltd.	58 Spadina Ave., Toronto	Toronto.
West, Ernest P.	41 Duchess St., Toronto	Toronto.
World's Dispensary Medical Association	665 Main St., Buffalo, N.Y., U.S.A.	Courtwright St., Bridgeburg.
Manitoba—		
Drugs, Ltd.	Lydia & McDermott Ave., Winnipeg	Winnipeg.
Eaton, The T. Co., Ltd.	190 Yonge St., Toronto, Ont.	Winnipeg.
Fahrney, Dr. Peter and Sons Co.	2501 Washington Blvd., Chicago, Ill., U.S.A.	256 Stanley St., Winnipeg.
Macdonald Medicine Co. of Canada, Ltd.	310 Notre Dame Ave., Winnipeg	Winnipeg.
Mickelson Anton Co., Ltd.	125 Pacific Ave., Winnipeg	Winnipeg.
Rawleigh, W. T. Co., Ltd.	Freeport, Ill., U.S.A.	587-589 Henry Ave., Winnipeg.
Sanol Mfg. Co.	184 Henley Ave., Winnipeg	Winnipeg.
Watkins, The J. R. Co.	158-170 Liberty St., Freeport, Ill., U.S.A.	E. Higgins and Annabella Sts., Winnipeg.
British Columbia—		
British Columbia Pharmacal Co., Ltd.	329 Railway St., Vancouver	Vancouver.

Paints, Pigments and Varnishes

Nova Scotia—		
Brandram-Henderson Ltd.	2984 St. Urbain St., Montreal	230-240 Kempt Road, Halifax.
Moseley Bros.	North St., Dartmouth	Dartmouth.
Quebec—		
Best, H. A.	Upper Bedford	Upper Bedford.
Brandram-Henderson, Ltd.	2984 St. Urbain St., Montreal	Montreal.
Canada Paint Co.	572 William St., Montreal	Montreal.
Carter White Lead Co. of Canada, Ltd.	91 Delorimier Ave., Montreal	Montreal.
Holland Varnish Co., Ltd.	6700 Park Ave., Montreal	Montreal.
Jamieson, Jas. W. Co., Ltd.	Charlemagne and Boyce Sts., Montreal	Montreal.
Jamieson, R. C. Co., Ltd.	264 St. Patrick St., Montreal	Montreal.
Martin-Senour Co., Ltd.	2951 Greenshields Ave., Montreal	Montreal.
McArthur, Irwin Ltd.	20 St. Paul St. W., Montreal	Montreal.
Mount Royal Color and Varnish Co., Ltd.	195 Dorchester St. E., Montreal	305 Casgrain St., Montreal.
Murphy Varnish Co. of Canada, Ltd.	305 Manufacture St., Montreal	Montreal.
National Varnish Co. of Canada, Ltd.	369 Craig St. W., Montreal	Montreal.
Paintol Chemical Co.	319 St. Paul St., Quebec	Quebec.
Ramsay, A. and Son, Company	12 Inspector St., Montreal	Montreal.
Sherwin-Williams Co. of Canada, Ltd.	897 Centre St., Montreal	Montreal.
The Steel Co. of Canada, Ltd.	Hamilton, Ont.	1272 Notre Dame St., Montreal.
Ontario—		
Arco Co., Ltd.	16 Liberty St., Toronto	Toronto.
Berry Brothers, Incorporated	211 Lieb St., Detroit, Mich., U.S.A.	Walker Rd., Walkerville
Brandram-Henderson, Ltd.	2984 St. Urbain St., Montreal, Que.	377 Carlaw Ave., Toronto Biggar Ave., Hamilton.
Cooke, Geo. Co., Ltd.	174 King St. E., Toronto	Toronto.
Cosmos Chemical Company	Cavan St., Port Hope	Port Hope.
Crystal, H. S. & T. Co., Ltd.	169 Yonge St., Toronto	Seventh St., New Toronto.
Dominion Paint Works, Ltd.	102 Ottawa, St., Walkerville	Walkerville.
Dominion Putty Co., Ltd.	63 Nelson St., Toronto	Toronto.
Flint Varnish and Color Works of Canada, Ltd.	120 St. James St., Montreal, Quebec	Cor. Perth and Kingsley Ave., Toronto.
Glidden Co., Ltd.	370-382 Wallace Ave., Toronto	Toronto.
Hannan Varnish Co.	Glen Morris	Glen Morris.
Imperial Varnish and Color Co., Ltd.	2-20 Morse St., Toronto	Toronto.
International Varnish Co., Ltd.	Gerrard St. & Carlaw Ave., Toronto	Toronto.
Langmuir, James and Co., Ltd.	Oakville	Oakville.
Lowe Brothers, Ltd.	263 Sorauren Ave., Toronto	Toronto.
Moore, Benjamin and Co., Ltd.	Mulock and Lloyd Sts., West Toronto	Toronto.
Morin, J. H.	54 Colborne St., Toronto	Toronto.
Muirhead, A. Co., Ltd.	217 King St. E., Toronto	Toronto.
Northern Varnish Co., Ltd.	1st Ave. W., Owen Sound	Owen Sound.
Ottawa Paint Works, Ltd.	687 Wellington St., Ottawa	Ottawa.
Penfound Varnish Co.	Cariboo Ave., Toronto	Toronto.
Pratt and Lambert, Inc.	79 Townawanda St., Buffalo, N.Y.	Bridgeburg.
Sanderson Pearcy and Co., Ltd.	272 Van Horne St., Toronto	Toronto.
Scarfe and Co., Ltd.	35 Greenwich St., Brantford	Brantford.
Standard Paint and Varnish Co., Ltd.	Cor. Wyandotte St. and C.P. Railway, Windsor	Windsor.
Sturgeon's Ltd.	330 Carlaw Ave., Toronto	Toronto.
Toronto Putty Co.	142 Davenport Road, Toronto	Toronto.
Watts Chemical Co.	80 Don Esplanade, Toronto	Toronto.
Weir, Jas. Co., Ltd.	New Toronto	New Toronto.

Paints, Pigments and Varnishes—Concluded

Name	Head Office Address	Location of Plant
Manitoba—		
International Laboratories, Ltd	490 rue des Meurons, St. Boniface	St. Boniface.
Martin-Senour Co., Ltd	Box 2991—Winnipeg	Winnipeg.
Sherwin-Williams Co. of Canada, Ltd	897 Centre St., Montreal, Que	110 Sutherland Ave., Winnipeg.
Stephens, G. F. and Co., Ltd	172 Market St. East, Winnipeg	Winnipeg.
Wyers, C. J	763—13th St., Brandon	Brandon.
Alberta—		
Herbert Paint and Varnish Co., Ltd	9th Ave. & 72nd St., Calgary	Calgary.
Rocky Mountain Paint Co., Ltd	921—9th Ave. East, Calgary	Calgary.
British Columbia—		
Ayres Varnish and Paint Co., Ltd	950 Raymur Ave., Vancouver	Vancouver.
British America Paint Co., Ltd	Laurel Pt., Victoria	Victoria.
Crown Paint Co., Ltd	24 Cordova St. E., Vancouver	Vancouver.
Darling, Henry and Son	28 Powell St., Vancouver	Vancouver.
Impermen Products Co., Ltd	1445 Venables St., Vancouver	Vancouver.
Martin-Senour Co., Ltd	1505 Powell St., Vancouver	Vancouver.
Pacific White Lead Co., Ltd	Grenville Island, Vancouver	Vancouver.
Staneland Co., Ltd	849 Fort St., Victoria	Bay and Shakespeare Sts., Victoria.
Superior Paint and Shingle Stain Co	Chilliwack	Chilliwack.
Williams and Harte, Ltd	1302 Wharf St., Victoria	Victoria.

Soaps, Washing Compounds and Toilet Preparations

SOAPS—		
New Brunswick—		
St. Croix Soap Mfg. Co	Water St., St. Stephen	St. Stephen.
Quebec—		
Alberta Soaps, Ltd	168 McCord St., Montreal	Montreal.
Barsalou, J. Cie., Ltée	172 Delorimier Ave., Montreal	Montreal.
Darling and Brady Ltd	159 Richardson St., Montreal	Montreal.
Gold Dust Corporation, Ltd	Box 970, Montreal	St. Patrick St., Ville La Salle.
La Savonnerie du Lion	3651 St. Hubert St., Montreal	Montreal.
Marx and Rawolle of Canada, Ltd	516 St. Ambroise St., Montreal	Montreal.
Robertson, J. T. Co. of Canada, Ltd	2101 Bennett Ave., Maisonneuve	Maisonneuve.
Sewards Ltd	Cor. 8th Ave. and Maple St., Ville St-Pierre	Ville St-Pierre.
Snap Company Ltd	91 Reading St., Montreal	Montreal.
Ontario—		
Cudahy Packing Co	Chicago, Ill., U.S.A	64 Macaulay Ave. West, Toronto.
Diamond Cleanser Ltd	376 Dufferin St., Toronto	Toronto.
Elliott, J. & R	Water St., S. Galt	Galt.
Guelph Soap Co., Ltd	12-20 Waterloo St., Guelph	Guelph.
Hamilton Soaps Ltd	101 Bay St. N., Hamilton	Hamilton
Jergens, Andrew Co., Ltd	Herriott St., Perth	Perth.
Lever Bros., Ltd	Eastern Ave., Toronto	Toronto.
Liquid Soap and Sanitary Products, Ltd	320 Bay Street, Toronto	114 Jarvis St., Toronto.
London Soap Co., Ltd	197 South St., London	London.
Morton, D. and Sons, Ltd	77 Emerald St. S., Hamilton	Hamilton.
Ontario Soap and Oil Co	45 Dickens Ave., Toronto	Toronto.
Palmolive Company of Canada, Ltd	64 Natalie St., Toronto	Toronto.
Proctor and Gamble Co. of Canada, Ltd	6th and Main Sts., Cincinnati, Ohio, U.S.A	Burlington St. E., Hamilton.
Pugsley, Dingman and Co., Ltd	Cor. Eastern and Davies Aves., Toronto	Cawthra Ave., Toronto.
Sapon Soaps of Canada, Ltd	164 Strachan St. E., Hamilton	Hamilton.
Standard Soap Co., Ltd	219-21 Front St., E. Toronto	Toronto.
Vegetable Oil Soap Co	Box 103, Marmora	Marmora.
Manitoba—		
Beaver Soap Co., Ltd	1377 Winnipeg Ave., Winnipeg	Winnipeg.
Royal Crown Soaps Ltd	King and Henry Sts., Winnipeg	Winnipeg.
Saskatchewan—		
Chemical Novelty Products Co	529—20th Street W., Saskatoon	Saskatoon.
Alberta—		
Hubley, E. (Acme Soap Works)	9272—110th Ave., North Edmonton	North Edmonton.
Royal Crown Soaps Ltd	Winnipeg, Man	Calgary.
British Columbia—		
Pendray, W. J. and Sons, Ltd	Belleville and Montreal Sts., Victoria	Victoria.
Royal Crown Soaps, Ltd	Winnipeg, Man	308 Georgia St. E., Vancouver.

Soaps, Washing Compounds and Toilet Preparations—Concluded

Name	Head Office Address	Location of Plant
WASHING COMPOUNDS—		
Quebec—		
Fyon and Fyon, Ltd	Cor. Papineau and Masson Sts., Montreal	Montreal.
Lesage, J. A.	1585 Des Erables, Montreal	Montreal.
Levesque, Lionel J.	164 Roche St., Three Rivers	Three Rivers.
Paquin, Joe	915 Berri St., Montreal	Montreal.
Robillard, J. J. et Cie	204 Fabre St., Montreal	Montreal.
Ontario—		
Alpha Chemical Co., Ltd	Kitchener	Kitchener.
Eastern Chemical Co	Box 221, Ottawa	Ottawa.
Eze Mfg. Co., Ltd	182 Adelaide St. W., Toronto	Toronto.
Macks Laundry Specialty Co	Reserve St., Almonte	Almonte.
Savage, C. N.	119 Trinity St., Toronto	Toronto.
Standard Cleaning Products Co	81 Bond St., Toronto	Toronto.
Williamson, F. A. Mfg. Co., Ltd	465-7 Wellington St., Ottawa	Ottawa.
Wilson, William and Son	155-157 Sheridan St., Toronto	Toronto.
Windsor Supoline Co	90 Sandwich St., Walkerville	Walkerville.
Saskatchewan—		
Van Kel Cleaners, Ltd	Swift Current	Swift Current.
Alberta—		
The Wash Out Co	10249—95th St., Edmonton	Edmonton.
British Columbia—		
The White Wizard Co	1238 Pender St. E., Vancouver	Vancouver.
TOILET PREPARATIONS—		
Quebec—		
Bellefontaine, Albert	1670 St. Denis St., Montreal	Montreal.
California Perfume Co. of Canada, Ltd	31 Park Place, New York, N.Y., U.S.A	35 St. Alexander St., Montreal.
Chesebrough Mfg. Co., Cons'd	17 State St., New York, N.Y., U.S.A	1880 Chabot Ave., Montreal.
Colgate and Co., Ltd	72 St. Ambroise St., Montreal	Montreal.
Forhans Limited	200 Sixth Ave., New York, N.Y., U.S.A	489 St. Paul St. W., Montreal.
Lewis, G. A. Co., Ltd	92 Prince St., Montreal	Montreal.
Marceau, J. A., Ltée	2 Rodney St., Montreal	Montreal.
The Mennen Co., Ltd	325 Craig St., Montreal	Montreal.
Palmers Limited	100 Latour St., Montreal	Montreal.
Ontario—		
Calsodent Co., Ltd	33 Front St. E., Toronto	Toronto.
Canadian Booster Co., Ltd	435 Sandwich St., Windsor	Windsor.
Corson, Ralph, Ltd	146 Brock Ave., Toronto	Toronto.
Elcaya Company of Canada, Ltd	Aylmer	Aylmer.
Herpicide Company	63 W. Milwaukee Ave., Detroit, Mich., U.S.A.	30 Goyeau St., Windsor.
Hudnut, Richard	727 King St. W., Toronto	Toronto
Ingram, Frederick F. Co	1565 W. Lafayette Blvd., Detroit, Mich. U.S.A.	501-3 Sandwich St. W., Windsor.
Marion Perfume Co	424 Wellington St. W., Toronto	Toronto.
McLarty, R. W. Ltd	432 Wellington St. W., Toronto	Toronto.
Misner Mfg. Co	Waterloo St., Goderich	Goderich.
Parfumerie Rigaud, Inc	75 Barrow St., New York, N.Y., U.S.A	107 Duke St., Toronto.
Partin, L., Ltd	12 Mutual St., Toronto	Toronto.
Pepsodent Co	1104 S. Wabash Ave., Chicago, Ill., U.S.A	191 George St., Toronto.
Pompeian Co	2400 Payne Ave., Cleveland, Ohio, U.S.A	414 Windsor Ave., Windsor.
Seely Mfg. Co., Ltd	15 Church St., Windsor	Windsor.
West, E. G. and Co	80 George St., Toronto	Toronto.
Manitoba—		
Klen-O Chemical Co., Ltd	310 Ross Ave., Winnipeg	Winnipeg.
Pulford Drug Co., Ltd	52 Albert St., Winnipeg	Winnipeg.
Alberta—		
Roberts Chemical Co	10434 Jasper Ave., Edmonton	Edmonton.
British Columbia—		
Henrietta Toilet Preparations	732 Richards St., Vancouver	Vancouver.

Inks, Dyes and Colours

DYES AND COLOURS—		
Quebec—		
Dominion Caramel Co	21 Walnut Ave., St. Henri, Montreal	Montreal.
Johnson-Richardson Ltd	74 St. Antoine St., Montreal	Montreal.
Tellier, Bydwell and Co	24-26 St. Dizier St., Montreal	Montreal.
Wells and Richardson Co., Ltd	200 Mountain St., Montreal	Montreal.
Ontario—		
North American Dye Corp., Ltd	519 S. 5th Ave., Mt. Vernon, New York, N.Y., U.S.A.	340 Richmond St. W., Toronto.

Inks, Dyes and Colours—Concluded

Name	Head Office Address	Location of Plant
PRINTING INKS—		
New Brunswick—		
Johnson, Ensley B	45 Kennedy St., St. John	St. John.
Quebec—		
Frontenac Ink Works	243 William St., Montreal	Montreal.
Robertson, J. S	119 Lagauchetière St. W., Montreal	Montreal.
Ontario—		
Ault and Wiborg Co. of Canada, Ltd	19-23 Charlotte St., Toronto	Toronto.
Bush, Charles, Limited	105 Davenport Rd., Toronto	Toronto.
Canada Printing Ink Co., Ltd	15 Duncan St., Toronto	Toronto.
Canadian Fine Colour Co., Ltd	125 Bolton Ave., Toronto	Toronto.
Dominion Printing Ink and Color Co., Ltd	128-130 Pears Ave., Toronto	Toronto.
Manton Bros	105 Elizabeth St., Toronto	Toronto.
Shackell Edwards Co., Can., Ltd	127 Peter St., Toronto	Toronto.
Sinclair Valentine Co. of Can., Ltd	233 Richmond St. W., Toronto	Toronto.
Manitoba—		
Printers' Roller Co	175 McDermot Ave., Winnipeg	Winnipeg.
Alberta—		
Little, W. J	2412-la St. E., Calgary	Calgary.
British Columbia—		
Columbia Printing Ink and Roller Co., Ltd	1063 Hamilton St., Vancouver	Vancouver.
WRITING INKS—		
Quebec—		
Carter's Ink Co	239 First St., Cambridge, Mass., U.S.A	655 Drolet St., Montreal.
Ontario—		
Blue Bird Ink Co	124 Richmond St. W., Toronto	Toronto.
Cutler Ink Co	61 Richmond St. W., Toronto	Toronto.
Poole, J. E. and Co	18 Holly St., Toronto	Toronto.
Stafford, S. S., Ltd	9 Davenport Rd., Toronto	Toronto.
Manitoba—		
Reliance Ink Co., Ltd	520 McGee St., Winnipeg	Winnipeg.
British Columbia—		
Peerless Products Ltd	1642 Pandora St., Vancouver	Vancouver.
Walmsley, Frank	2741—11th Ave. W., Vancouver	Vancouver.

Wood Distillation and Wood Extracts

WOOD DISTILLATION—		
Quebec—		
Canadian Explosives, Ltd	Canada Cement Bldg., Phillips Sq., Montreal	Windsor Mills.
Standard Chemical Co., Ltd	524 St. Ambroise St., Montreal	Cookshire.
Standard Chemical Co., Ltd	524 St. Ambroise St., Montreal	Fassett.
Standard Chemical Co., Ltd	524 St. Ambroise St., Montreal	524 St. Ambroise St., Montreal.
Standard Chemical Co., Ltd	524 St. Ambroise St., Montreal	Lac Mercier.
Standard Chemical Co., Ltd	524 St. Ambroise St., Montreal	Weedon.
Ontario—		
Dominion Wood and Lumber Co., Ltd	410 King St. W., Kitchener	Trout Creek.
Hodgson Bros. Chemical Co	89 St. Paul St., Lindsay	Lindsay.
Standard Chemical Co., Ltd	524 St. Ambroise St., Montreal, Quebec	Longford Mills.
Standard Chemical Co., Ltd	524 St. Ambroise St., Montreal, Quebec	Parry Sound.
Standard Chemical Co., Ltd	524 St. Ambroise St., Montreal, Quebec	Thornbury.
Standard Chemical Co., Ltd	524 St. Ambroise St., Montreal, Quebec	Donald.
Standard Chemical Co., Ltd	524 St. Ambroise St., Montreal, Quebec	South River.
Standard Chemical Co., Ltd	524 St. Ambroise St., Montreal, Quebec	Sault Ste. Marie.
WOOD EXTRACTS—		
New Brunswick—		
Miller Extracts Ltd	Millerton	Millerton.
Quebec—		
Brown Corporation	71 St. Peter St., Quebec	La Tuque.
Ontario—		
Casse, J. E	Maxville	Maxville.
National Potash Corp., Ltd	178 Spadina Ave., Toronto	Toronto.
British Columbia—		
Douglas Fir Turpentine Co	1104 Standard Bank Bldg., Vancouver	Vancouver.

Miscellaneous Chemical Industries

(a) Adhesives

Name	Head Office Address	Location of Plant
Nova Scotia—		
Robinson Glue Co., Ltd	4 St. Nicholas Building, Montreal, Que	Canso.
New Brunswick—		
Russia Cement Co	Gloucester, Mass, U.S.A	Gilberts Lane, St. John.
Quebec—		
Auld Mucilage Co., Reg	46 St. Alexander St., Montreal	Montreal.
Boston Blacking Co	3rd and Potter Sts., East. Cambridge, Mass., U.S.A.	Cabot St., Côte St. Paul, Montreal.
Dominion Flour Paste Co	613 Maisonneuve St., Montreal	6444 rue Champlain, Montreal.
Fox, T. M. and Sons, Limited	Côte St. Paul, Montreal	Montreal.
Marquis, F. Canac	Guyart St., Quebec	Quebec.
Quality Glue Co., Ltd	Papineauville	Papineauville.
Russia Cement Co	Gloucester, Mass., U.S.A	559 Pius IX Ave., Montreal.
Vol-Peek Mfg. Co	30 St. François Xavier St., Montreal	Montreal.
Woodward, F. E. and Sons	17th Avenue, Lachine	Lachine.
Ontario—		
Arabol Manufacturing Co. of Canada, Ltd	13 King St. West, Toronto	Brampton.
Boyle, A. S. Co	146-148 Brock Ave., Toronto	Toronto.
Canada Glue Company, Ltd	Box 630, Brantford	Brantford.
Canadian Adhesive Co	29 Queenston St., St. Catharines	Thorold.
Cannon Canadian Co., Ltd	361 Sonauren Ave., Toronto	Toronto.
Dominion Glue Ltd	1 Strange St., Kitchener	Kitchener.
Machon Sealing Wax Co	47 St. James Ave., Toronto	Toronto.
Meredith Simmons Co., Ltd	71 Brown's Ave., Toronto	Toronto.
Vera Chemical Co. of Canada, Ltd	Freeman	Burlington.

(b) Baking Powder

Nova Scotia—		
Woodill Baking Powder Co	62 Almon St., Halifax	Halifax.
Quebec—		
Cook's Friend Baking Powder Co., Ltd	641 St. Paul St. W., Montreal	Montreal.
Puritas Ltd	77 St. Dominique St., Quebec	Montreal.
Royal Baking Powder Co	100 E 42 St., New York, N.Y., U.S.A	4 St. Lawrence Blvd., Montreal.
Standard Spice Mills	43 Champflour St., Three Rivers	Three Rivers.
Ontario—		
Coleman Baking Powder Co., Ltd	131-133 Perth St., Brockville	Brockville.
Egg-O Baking Powder Co., Ltd	198 Gage Avenue South, Hamilton	Hamilton.
Gillett, E. W. Co., Ltd	Fraser Ave. & Liberty Sts., Toronto	Toronto.

(c) Boiler Compounds

Ontario—		
Bird-Archer Co	33 Rector St., New York, N.Y., U.S.A	2nd St., Cobourg.
Dearborn Chemical Co., Ltd	2454-64 Dundas St. West, Toronto	Toronto.
Perolin Co. of Canada, Ltd	858 Dupont St., Toronto	Toronto.
Shell-Bar Boico Supply Ltd	1-15 Saunders Ave., Toronto	Toronto.
Woodward Chemical Co	238 Victoria Ave., Hamilton	Hamilton.

(d) Celluloid Products

Quebec—		
Arlington Co. of Canada, Ltd	120 St. James St., Montreal	103 Beaubien St., Montreal.
Dominion Comb and Novelty Co	Warwick	Warwick.
Granby Mfg. Co	39-41 Court St., Granby	Granby.
McConniskey, R. B. and Co	47 Alexander St., Granby	Granby.
Ontario—		
Austin, Carl W	266 King St. W., Toronto	54 Kenneth Ave., West Toronto.
Broad Novelty Co	38 Clifford St., Toronto	254 Niagara St., Toronto.
Canadian Fabrikoid Ltd	120 St. James St., Montreal, Quebec	15th St., New Toronto
French Ivory Products Ltd	1475 Queen St. W., Toronto	Toronto.
Latimer, H. B	7 Wilbur St., Toronto	Toronto.
Rideau Specialty Co	19 Main St., Smith's Falls	Smith's Falls.

Miscellaneous Chemical Industries—Continued

(e) Flavouring Extracts

Name	Head Office Address	Location of Plant
Nova Scotia—		
Crouse, Fred. O. and Co.	La Have, Bridgewater	Bridgewater.
New Brunswick—		
Wilson Chemical Co., Ltd.	23-27 Water St., St. John	St. John.
Quebec—		
Bee Starch Co.	291 St. Paul St. West, Montreal	Montreal.
Bush, W. J. and Co. (Canada), Limited	394 St. Paul St. W., Montreal	Montreal.
Chaput, L. Fils et Cie, Ltée	2 rue DeBresoles, Montreal	Montreal.
John, W. K. Co., Ltd.	32 St. Sulphice St., Montreal	Montreal.
Jones, Henri and Co.	173-177 St. Paul St. W., Montreal	Montreal.
King-Marceau, Ltd.	48 St. Vincent St., Montreal	Montreal.
Reodman, O.	841-943 Notre Dame St. E., Montreal	Montreal.
Rose and Laflamme Ltd.	500 St. Paul St., Montreal	Montreal.
Stuart Brothers	41-43 Youville Square, Montreal	Montreal.
Trembley, Thos. c/o Moulin Economique	1808 Bordeaux St., Montreal	Montreal.
Ontario—		
Cressy, John R. Co.	206 Gladstone Ave., Toronto	Toronto.
Genesee Pure Food Co. of Canada, Ltd.	Le Roy, N.Y.	Niagara St., Bridgeburg
Horne, Harry Co., Ltd.	1297 Queen St. W., Toronto	Toronto.
Imperial Extract Co.	2-24 Matilda St., Toronto	Toronto.
Kuntz Brewery	Park St., Waterloo	Waterloo.
Lowe, Joe. Co., Ltd.	100 Stirling Road, Toronto	Toronto.
Ottens, Henry H. and Co., Limited	129 S. Front St., Philadelphia, U.S.A.	3 Jarvis St. Toronto.
Patrick, W. G. and Co., Limited	51 Wellington Street West, Toronto	Toronto.
Alberta—		
Pure Standard Products, Ltd.	10865-96 St., Edmonton	Edmonton.
British Columbia—		
Grantham, F. C. Co., Ltd.	709-716—16th Ave. West, Vancouver	Vancouver.
New Era Mfg. Co., Ltd.	576 Seymour St., Vancouver	Vancouver.

(f) Insecticides

New Brunswick—		
Adams, Ralph	Lakeville	Lakeville.
Bug Death Chemical Co.	St. Stephens	St. Stephen.
Empire Chemical Co., Ltd.	8 Bentley St., St. John	St. John.
Quebec—		
Auto Roach Killer Co.	1359 St. Hubert St., Montreal	Montreal.
Canada Paint Co., Ltd.	572 William St., Montreal	19 Hunter St., Montreal.
Cowan, John, Chemical Co.	9 Dalhousie St., Montreal	Montreal.
Fly Terror Mfg., Rgd.	7 Notre Dame St. E., Montreal	Montreal.
The Kennedy Mfg. Co.	588 Henri Julien Ave., Montreal	Montreal.
Parisien, Wilfrid	525 rue Amherst, Montreal	Montreal.
Ontario—		
Bartlett, Norman	Beamsville	Beamsville
Bonner Columbian Insecticide	258 George St., Toronto	Toronto.
Canada Rex Spray Co., Ltd.	Ontario St., Brighton	Brighton.
Ceramic Chemical Metals, Ltd.	Welland	Welland.
Common Sense Mfg. Co.	393 Queen St. W., Toronto.	Toronto.
Deloro Chemical Co., Ltd.	Deloro	Deloro.
Niagara Brand Spray Co., Ltd.	Burlington	Burlington.
Radam's Microbe Killer Co.	30 Victor St., London	London.
The Williams Chemical Co., Ltd.	Russell	Russell.
Manitoba—		
Charles Riess and Co.	386 Colony St., Winnipeg	Winnipeg.
British Columbia—		
Oliver Chemical Co., Ltd.	Suite No. I, 407 Hastings St. W., Vancouver	Penticton.

(g) Polishes and Dressings

Nova Scotia—		
Blacking and Mercantile Co., Ltd.	Station St., Amherst	Amherst.
Quebec—		
American Metal Polish Co.	89 Winslow Ave., West Somerville, Mass., U.S.A	Second Ave., Ville St. Pierre.
Boston Blacking Co.	3rd and Potter Sts., East Cambridge, Mass.,	152 McGill St., Monrealt
Boston Blacking Co.	3rd and Potter Sts., East Cambridge, Mass., U.S.A.	1760 St. Lawrence Blvd., Montreal.
Ducharme, M. J.	2191 rue St. Laurent, Montreal	Montreal.
Hall Thompson Co.	3150 Manse St., Montreal	Montreal.
La-Lo Manufacturing Co., Ltd.	365 Aqueduct St., Montreal	Montreal.
Radio Mfg. Co.	2384 Adam St., Montreal	Montreal.
Rose Furniture Polish Co.	244 D'Arguillon St., Quebec	Quebec.
Star Dressing Co.	Rear 2055 Hutchison St., Montreal	Montreal.
Sultana Limited	102 Amherst St., Montreal	Montreal.
The Uni-Lak Co.	6 South Lyon St., Batavia, N.Y., U.S.A.,	3 Hogan St., Montreal.
Uncle Sam Dressing Co.	Lanvraie	Lanvraie.

Miscellaneous Chemical Industries—Concluded

(g) Polishes and Dressings—Concluded

Name	Head Office Address	Location of Plant
Ontario—		
American Chemical Paint Co	1118 So. Eleventh St., Philadelphia, Pa., U.S.A.	425 Pierre Ave., Windsor.
Buffalo Specialty Co	375 Ellicott St., Buffalo, N.Y., U.S.A.	Bridgeburg.
Bull, John, Mfg. Co	1 O'Reilly St., Hamilton	Hamilton.
Capo Polishes Co	58 Catherine St. N., Hamilton	Hamilton.
Channell Limited	369 Sorauren Ave., Toronto	Toronto.
The Commercial Oil Co., Ltd	420 Jackson St. W., Hamilton	Hamilton.
Cross Products Ltd	66-68 Dundas St. W., Toronto	Toronto.
Dalley, F. F. Co. of Canada, Ltd	75 Hughson St. N., Hamilton	Hamilton.
Dandy Specialties Co	58 James St., Ridgetown	Ridgetown.
Damon Specialty Co	29 Temperance St., Toronto	Toronto.
Glo Products Ltd	16 Gould St., Toronto	Toronto.
Hawes, Edward and Co., Ltd	71 Duke St., Toronto	Toronto.
The Hays Manufacturing Co	35 Carlaw Ave., Toronto	Toronto.
Hersee Chemical Works	Burlington	Burlington.
Home Products Co	151 Hyde Park Ave., Hamilton	Hamilton.
Johnson, S. C. and Son, Ltd	Frank St., Brantford	Brantford.
Lion Polish Co., Ltd	5 Wellington St. E., Toronto	Toronto.
Lord, Richard	130 Kensington Ave. N., Hamilton	Hamilton.
National Chemical Compounds, Limited	4 Clinton Place, Toronto	Toronto.
National Polish Co	240 King St. E., Toronto	Toronto
The Nonsuch Mfg. Co., Ltd	257 Logan Ave., Toronto	9 Busy St., Toronto.
The Permanent Ink Co., Ltd	302 Cumberland Ave., Hamilton	Hamilton.
Ralston, Robt. and Co., Ltd	33 Sanford Ave. S., Hamilton	Hamilton.
Reflex Mfg. Co	Box 639, Parry Sound	Parry Sound.
Solient Mfg. Co	12 Simcoe St. S., Oshawa	160 Simcoe St. S., Oshawa.
Tilley, Chas. and Son	90 Richmond St. W., Toronto	Toronto.
Wills and Kemp Products Mfg. Co	184 Logan Ave., Toronto	Toronto.
Windsor Polish Co	73 Roseborry Place, St. Thomas	St. Thomas.
Saskatchewan—		
Canadian Chemical Products	2510 Eleventh Ave., Regina	Regina.
Alberta—		
Bolwright, Mr	8021-112 Avenue, Edmonton	Edmonton.
British Columbia—		
Tilikum Mfg. Co	52 Dufferin St. W., Vancouver	Vancouver.

(h) Sweeping Compounds

Quebec—		
Conway Mfg. Co	16 Jenckes Lane, Sherbrooke	Sherbrooke.
Ontario—		
Advance Oil and Supply Co	80 Albert S., Toronto	Ave. K. Bannermount Ave., Toronto.
Dustbane Manufacturing Co., Ltd	Ottawa	Ottawa.
Soclean Limited	444 King St. W., Toronto	Toronto.
Manitoba—		
Dustbane Western Ltd	Ottawa	325 Elgin Ave., Winnipeg
Alberta—		
Chemical and Oil Co	Lane 101½ between 102 and 103 Aves., Edmonton	Edmonton.

(i) Miscellaneous Chemical Products, N.E.S.

Quebec—		
Leonard, B	29½ St. Stanislas St., Montreal	Montreal.
Ontario—		
Anti-Borax Compound Co	918 McDougall St., Windsor	Windsor.
Canadian Colours and Chemicals Ltd	1090 King St. W., Toronto	Toronto.
Hansen's Chr. Canadian Laboratory	Little Falls, New York, U.S.A.	201 Church St., Toronto.
McColl Bros., Ltd	114-120 Don Esplanade, Toronto	Toronto.
Mead Johnson and Co. of Canada, Ltd	Evansville, Indiana, U.S.A.	163 Dufferin St., Toronto.
Quaker City Chemical Co. of Canada, Ltd	Birmingham St. & Whitfield Ave., Hamilton	Hamilton.
Manitoba—		
Robinson and Webber Co., Ltd	57 Victoria St., Winnipeg	Winnipeg.
Saskatchewan—		
Radio-Tite Mfg. Co., Ltd	1932 Albert St., Regina	Regina.
British Columbia—		
Outings, Ltd	317 Pender St., Vancouver	Vancouver.