

identified in the finished commodities of commerce; in addition, the production of the necessary heavy chemicals for use in further manufacture is often carried out in close proximity to the main plant, owing to the cost of transportation and the danger of handling large quantities of such products.

The manufacture of sulphuric acid is a factor determining the status of the chemical industry, and in a broader sense is an index of general industrial activity. Some 72,863 short tons 66° Baumé were manufactured in 1920, the materials used being 38,616 tons of Canadian pyrites and 13,500 tons of brimstone imported from Louisiana and Texas. More recently, sulphuric acid has been made by a plant in Ontario consisting of two acid chamber-units with a daily capacity of 120 tons. The acid is largely used in making acid phosphate for domestic consumption. The apparent consumption of sulphuric acid for Canada during 1921 was 44,530 tons, the production being 47,195 tons, the imports 94 tons and the exports 2,759 tons.

A division of this industry which is dependent upon hydro-electric power is the manufacture of calcium carbide, produced by fusing lime and carbon together at the temperature of the electric furnace. The process is a Canadian invention, but there are now a number of plants in other countries. The chemical is used extensively for the production of acetylene gas and the manufacture of calcium cyanamide. The three plants manufacturing calcium carbide in Canada are located at Shawinigan Falls, at Welland and at Merriton, Ontario. For the fiscal year ended March 31, 1923, the exports of calcium carbide were valued at \$2,358,160. The manufactures in the calendar year 1921 were 70,794 tons, valued at \$4,726,465.

Calcium cyanamide is manufactured in America exclusively on the Canadian side of Niagara Falls by causing a current of atmospheric nitrogen to pass over calcium carbide made red hot in an electric furnace. About 30,000 electric horsepower are used in the fixation of about 15,000 tons of air nitrogen every year for the manufacture of cyanamide and cyanide products. The former is marketed in the United States, and the latter, made by fusing crude cyanamide with common salt in the electric furnace, is shipped to the gold and silver mining districts of the continent for use in the reduction of ores. The production of calcium cyanamide in 1921 was 25,291 tons, valued at \$1,486,753.

Employing upwards of 1,800 persons and making products valued at almost \$14,000,000 annually, the firms engaged in the manufacture of industrial chemicals other than coal tar products, including sulphuric, nitric, and hydrochloric acids, caustic soda, salt cake, calcium carbide and compressed gases such as oxygen, hydrogen, ammonia and acetylene dissolved in acetone, have made rapid strides in recent years, until at the end of 1921 there were 50 plants in Canada engaged in these industries.

Paints, Pigments and Varnishes.—The increased use of paint and varnish in Canada has been due in part to the volume of new construction, but perhaps more to the growing appreciation of the value of conservation. The industry corroded pig lead in 1921 for the production of 7,637,000 lbs. of dry white lead and 11,953,000 lbs. of white lead ground in oil, in addition to 1,724,000 lbs. of litharge. The total quantity of ready mixed paints produced in 1921 was 2,372,000 gallons worth \$6,909,000, and the varnishes were next in importance, with a production of 1,594,000 gallons, valued at \$3,548,000. The imports of paints, pigments and varnishes in the calendar year 1921 were valued at \$2,599,000; the exports were worth \$488,503. The total value of Canadian production was \$18,044,000.

Present Position.—The output of chemicals and allied products during 1921 was \$87,200,000, as against \$121,700,000 in the preceding year, a decline of \$34,500,-