

products account for less than 1% of the total volume of stone production and about 10% of the total value. Crushed stone products, consisting of materials used for concrete aggregate, railway ballast, road metal, rubble and riprap, terrazzo, stucco and artificial stone, etc., account for about 80% of the total volume; the remainder is used in the chemical and allied industries. (See Table 12.23.)

Common clays and shales occur in most regions of Canada and are the principal raw materials used for brick and tile manufacture. Deposits of high-quality argillaceous materials used in the manufacture of such products as papers, refractories, high-quality whitewares and stoneware products are relatively scarce in Canada. Consequently, china clay (kaolin), fire clay, ball clay, and stoneware clay are mostly imported. The final production value of clay products from domestic clays increased marginally to \$51,791,258 in 1970 and decreased to \$48,583,262 in 1971 (Table 12.24).

The table refers to production of such products as brick and tile made from domestic clays. Imports of these products, mainly from the United States, have a low total value. Other clay products such as floor and wall tile, sanitary ware, pottery and dinnerware, and electrical porcelain contain a large proportion of china clay and ball clay. The value of whiteware products produced in Canada from such materials approached \$34,000,000 in 1970.

12.1.4 Petroleum and natural gas

Further indications of the anticipated large oil and gas potential in Canada's frontier areas were given in 1971 by the first significant oil and gas discovery in the east coast off-shore areas and additional discoveries in the Canadian North. Particularly noteworthy were the oil and gas discoveries made on Richards Island in the Mackenzie Delta, the gas discovery at Kristoffer Bay on the west coast of Ellef Ringnes Island, and the oil and gas discovery on Sable Island off the Nova Scotia coast. On the basis of preliminary estimates it would appear that many of these are major discoveries and could be major supply sources in the future. However, until these new-found reserves are connected to market by pipeline, Canadian domestic and export requirements will continue to be met from the producing areas of western Canada where natural gas reserves showed only a modest increase in 1971 and reserves of petroleum and natural gas liquids actually declined. Substantial additions to reserves will be needed if Canada is to meet its own increasing demand and to continue to increase exports of oil and gas to United States markets.

Continuing strong demand for Canadian oil and gas in United States markets contributed significantly to Canadian production gains in 1971 (Tables 12.25 and 12.26). Total production of all liquid hydrocarbons — crude oil plus natural gas liquids — increased by almost 7.1% to 1,585,000 barrels per day (b/d). Net production of crude oil averaged 1,348,000 b/d and field and gas plant production of natural gas liquids reached 237,000 b/d. Alberta production at 1,015,000 bbl, accounted for 75.5% of the total Canadian crude oil output, 2.3% more than in 1970. Production remained static in all producing provinces and territories except Alberta, where there was a 10% increase.

Total liquid hydrocarbon reserves declined to 10,162,000,000 bbl, comprising 8,333,000,000 bbl of crude oil and 1,829,000,000 bbl of natural gas liquids. Reserves added in 1971 totalled 288,000,000 bbl and of this amount, 207,000,000 bbl were attributed to revisions, 63,000,000 bbl to extensions of established fields, and 18,000,000 bbl to new discoveries. Since production was 564,000,000 bbl in 1971, total proven reserves showed a net decline of 276,000,000 bbl for the year. Fully 90% of Canada's proven liquid hydrocarbon reserves at the end of 1971 was in Alberta. Proven remaining marketable natural gas reserves rose by 3.9% to 55,461,850 MMcf in 1971, representing an improvement over the 2.7% increase attained in 1970. Net withdrawals of natural gas rose 9.1% to 6,847 MMcf/d in 1971 in response to increasing demand in both domestic and export markets.

Alberta. Although the number of well completions rose by 9% in 1971, the footage drilled showed only a slight increase. This resulted from a continuation of the recent trend to drill a larger number of wells in southern Alberta where potential producing reservoirs occur at relatively shallow depths. Much of this shallow drilling activity was related to the development of gas reserves in the Medicine Hat - Alderson area of eastern Alberta. However, during 1971, a medium-gravity oil discovery was made in the Grand Forks area of southern Alberta which promises to develop into one of the best fields found in Alberta in recent years. Exploratory