

Petroleum.—The Turner Valley field in Alberta is the principal source of production in Canada. Upon the completion, in 1924, of Royalite 4, drilling of the 'gas-cap' for gas and distillate oil (naphtha), spread along the probable area until, by 1933, only the southern end remained available for leasing. The existence of crude oil on the flank of the structure, had been demonstrated by the drilling of Model 1, in 1930, in the northern part of the field, but the search was not further prosecuted until after the completion of Century 1 in the south in 1934. In this area, production, like that of Model 1, changed gradually from naphtha to a high-grade crude oil and gave encouragement to the completion, in 1936, of a deeper well (Turner Valley Royalties 1) situated half a mile to the southwest.

This well came in as the first big crude-oil producer of Turner Valley and the impetus thus given to drilling for crude oil was remarkable. By the end of 1940, apart from the two earlier Model wells, 139 such wells had been completed and of these only 10 were not then productive. Four of the latter were classed as gas wells. Of the 129 wells, 116 were in the southern part of the field opened up by Turner Valley Royalties 1. Generally, production has been greatly increased by treating the wells with acid, the effect of which is to open up the pore structure and establish channels for the oil to flow more readily to the well. Whether or not the total production of which a well is capable is increased by this treatment has not yet been determined.

Besides crude oil, Turner Valley produced a smaller quantity of distillate oil from the older wells, of which there are 101 capable of producing; the number actually allowed to do so depends upon the demand for natural gas. Many of these wells and some of the crude-oil wells also contribute natural gasoline through the media of absorption plants.

The oil from the limestone in the crude-oil area of Turner Valley ranges in specific gravity from 39° to 48° API, averaging 43°, and yields 50 p.c. of straight-run gasoline, differing from most crudes, which yield 30 to 35 p.c. Distillate oil ranges from 55° to 73° API and natural gasoline is 73° API. Wide variability in the yields of different wells has been found throughout the field.

The rapid growth of crude-oil production in Turner Valley brought with it problems of transportation and marketing. Tank storage in the field and at Calgary and other Prairie refining centres has now been increased so that the pipelines from the field to Calgary can handle the demands from the Prairie Provinces and eastern British Columbia. Oil is also moved from the field by truck. Revised freight rates from Calgary to refining centres in Saskatchewan and Manitoba in 1937 have led to enlarged markets for Turner Valley crude, and now the demand exceeds the supply.

This changed situation has given rise to active exploration programs to increase production of crude oil in Western Canada. Within the drainage systems of the Elbow and North Saskatchewan Rivers substantial oil shows have been found in test wells and, far to the north, at Norman, on the Mackenzie River, a steady production has been maintained since 1932. At many localities on the plains of Alberta and across the border into Saskatchewan, oil shows have been found during drilling. Considerable interest was aroused at the close of 1940 by a strike of oil north of Princess Station on the C.P.R., on lsd. 3, sec. 13, twp. 20, rge. 12, W. of the 4th Meridian, at a depth of 3,290 feet. The oil was sweet, had a specific gravity