

INTERACTION OF SCIENCE, GOVERNMENT AND INDUSTRY IN NEW ZEALAND

IN a recent issue of the *New Zealand Science Review* (21, No. 3; 1963) Dr. R. M. Williams, of the State Service Commission, Wellington, discusses the responsibility of Government in scientific research and development. Distinguishing between research primarily directed at exploiting existing knowledge and that which primarily aims at extending knowledge, rather than between pure and applied research, he considers five ways in which Government can promote research. The first, which is the method most frequently used in New Zealand, is by the direct employment of scientists: this method he considers will remain important, though he rejects the idea that Government departments should be limited to applied research or services. The second method, that of using consultant firms, has not yet been used with complete satisfaction; however, the third, that of using non-profit organizations, while open to abuse, has proved valuable in financing university research. In New Zealand it is exemplified by earmarked grants to universities, and Dr. Williams suggests that the value of this work would be enhanced if the universities directed more attention to the nature of the applicants' interest in making appointments. The fourth method, that of the research association, he regards as one of the most worth-while for expansion, but he stresses the need for vigorous and enlightened direction. The fifth method, research in private industry, is weak in New Zealand, but Dr. Williams does not suggest that Government responsibility should extend beyond encouraging those firms who are willing to help themselves in this work. Finally, considering the proposed National Research Council, he points out that it is essential that it should have a strong representation of those with executive and advisory responsibilities.

A second paper in the same issue, by I. E. Dick, of the New Zealand Department of Scientific and Industrial Research, on science in industrial development,

throws further light on the position of science in New Zealand and the outlook of scientists. Mr. Dick discusses more particularly the problems likely to confront scientists who may be called on to take an important part in determining policy in industrial development. He suggests that the value of a scientist at board-level depends very largely on his ability to view the whole complex of operations in a thoroughly scientific manner. He should not regard his responsibility as limited to the technological problems with which his professional training has made him primarily familiar. Accordingly, he should be at particular pains to acquire technical understanding of these wider problems from the appropriate specialist periodicals.

Discussing the various ways in which science can be used to promote industrial development, Mr. Dick suggests that leaders in science and the appropriate scientific organizations in New Zealand are to-day, on the whole, displaying a lamentable lack of initiative, intellectual courage and foresight in regard to the choice of avenues of industrial development which look feasible and desirable, both technically and economically. In support of this contention, he cites the absence of a public statement, convincingly argued, on the part that science can play in industrial development or national life, and the excessive reliance of leading scientists in New Zealand on overseas scientists. He sees no merit in seeking solutions to problems in New Zealand from overseas scientists, and, while admitting that New Zealand has much to learn from overseas scientists, he suggests that such help can best be given in an advisory capacity to a committee of New Zealanders appointed to deal with a specific problem. Mr. Dick is convinced that New Zealand scientists are fully competent to handle the problems which confront them provided they are given competent leadership and public confidence.

SEARCH FOR OIL IN AUSTRALIA

FOLLOWING the brief account of present petroleum exploration activities in Australia recently published in *Nature* (200, 123; 1963), two further official reports have been received giving details of drilling operations, both in Queensland*.

Publication No. 15 describes the Overflow No. 1 well drilled by the Queensland American Oil Co. on the South Moreton Anticline occurring in south-east Queensland. The target depth of this project was 6,500 ft., but it actually finished at 2,993 ft. The well was drilled in Bundamba Sandstone (Triassic) to 310 ft., thence in the Ipswich Coal Measures down to 1,605 ft., followed by a thick sequence of volcanic rocks of probable early Triassic or Upper Palaeozoic age to the point where it was abandoned. It was found that minor oil and gas showings were associated with the coal seams, but poor petroleum prospects once the volcanic rocks were penetrated, coupled with extremely hard drilling, determined the finish of operations some 3,500 ft. short of the horizon aimed at. This was an unusually short-lived project, the well being spudded in on April 8, 1960, and abandoned as a dry hole

on May 18, 1960. It is concluded that the South Moreton Anticline structure does not warrant further exploration largely because of the lack of porosity and permeability of the Ipswich Coal Measures, also the presence of a formidable development of volcanic andesites, basalts and trachytes, a series which certainly does not invite oil prospecting.

In Publication No. 41, an account is given of a much deeper venture, the Phillips-Sunray Buckabie No. 1 well, drilled by the Phillips Petroleum and Sunray Mid-Continent Oil Companies, carried to a total depth of 9,070 ft. It is reported that this hole penetrated a normal Cretaceous and Jurassic sequence of deposits known at this site (about 110 miles west of Charleville, southern Queensland) from previous water-borehole data, and accounting for some 5,000 ft. of strata. This well was logged with electric, radiation and acoustic tools. "Regional seismic surveys indicated that the known section of the Great Artesian Basin overlies, with angular unconformity, stratified rock up to 15,000 ft. thick. This deeper sequence had not been penetrated by the bit and its age and lithology over wide areas were completely unpredictable." Thus, although valuable geological knowledge of this part of the basin was gained as a result of this drilling, no appreciable shows of oil or gas were met with; when at 8,810 ft. the well entered a dense, steeply dipping metamorphosed mudstone, it was obvious that no further

* Australia: Department of National Development, Bureau of Mineral Resources, Geology and Geophysics, Petroleum Search Subsidy Acts, Publication No. 15: *Queensland American The Overflow No. 1, Queensland, of Queensland American Oil Company*, Pp. 21+1 plate, Publication No. 41: *Phillips-Sunray Buckabie No. 1, Queensland of Phillips Petroleum Company and Sunray Mid-Continent Company*, Pp. 43+1 plate, (Canberra City, A.C.T.: Department of National Resources, Bureau of Mineral Resources, Geology and Geophysics, 1962 and 1963.)