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TWO STUDIES OF MARINE ENVIRONMENT IN AUSTRALIA

A controversy arose in the late 1960s regarding the effect of the crown-of-thorns starfish Acanthaster planci (Lamarck) on the Great Barrier Reef. At that time of public concern, oil exploration was announced in the vicinity of the reef. In response to public outcry, government created the Great Barrier Reef Petroleum Drilling Royal Commission to consider: (1) what risk there is of an oil or gas leak during drilling; (2) what the effects would be of such a leak and the subsequent remedial measures; (3) whether there are localities where drilling might be permitted; (4) what safety conditions should be imposed before drilling; and (5) what are the probable benefits accruing from drilling.

Westernport Bay is close to petroleum reserves and consumer markets, and is an obvious place for industrial development. It is also an untouched body of water suitable for holiday homes, and recreation for Melbourne's 2.6 million people. The catchment of Westernport Bay offers undeveloped land for expansion of the city's residential areas.

To resolve the conflicts, represented by the possible uses of Westernport Bay, the Victorian Government, in conjunction with industry, created the Westernport Bay Environment Study. This interdisciplinary scientific program comprises: (1) collection of information on the characteristics of bay waters, and distribution of living organisms; (2) laboratory studies on tolerance to pollutants of selected species; (3) preparation of a landuse model for forecasting potential inputs to the bay from any planned development in the catchment area; and (5) preparation of a water-quality model of the bay describing intensity, areal extent, and duration of contamination arising from a given input.

The Barrier Reef Royal Commission will provide government with recommendations on the policy to be adopted regarding oil-industry activities in the Barrier Reef area, based on the Commission's careful testing, according to the rules of evidence, of the available knowledge. The Westernport Study will provide government with new knowledge and a numerical tool for predicting the impact of change; it will not recommend a policy for the future development of the Westernport area.

Here are two contrasting methods of handling a complex environmental problem. Each will cost some US \$2 million, and each will take several years to complete.

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MARINE PETROLEUM EXPLORATION OF KOREAN PLATFORM

Geophysical surveys performed over the southeastern part of the Yellow Sea indicate the presence of a broad area of shallow basement called the Korean platform. A veneer of Pliocene-Pleistocene sedimentary rocks on this platform covers a regional unconformity. Sedimentary basins and subcrop patterns below this unconformity demonstrate a positive structural trend far west and south of the Korean Peninsula. Two deep exploratory wells drilled on the north edge of the study area are of significance to a better understanding of the stratigraphy west of Korea. Because of the presence of charophytes and freshwater ostracods and the total absence of nannofossils, most of the sedimentary rocks were deposited in continental environments. Limited fossil data indicate shallowmarine tongues that enter the upper part of the section below the regional unconformity. High matrix carbonate in the clastic rocks throughout the section may account for the high interval velocities observed. Although no hydrocarbons were found in the rocks penetrated by the wells, additional drilling will be required before this large area can be fully evaluated.

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METALLOGENIC BELT AND TECTONIC EVOLU-TION OF CHILEAN CIRCUM-PACIFIC CON-TINENTAL BORDER

This paper accompanies a mineral and geothermal resources map of the continental part of Chile. The mineral deposits, including coal- and petroleumbearing basins, and geothermal fields, are associated in belts and represented as fringes on a tectonic base map at a scale 1:2,500,000.

The tectonic-metallogenic scheme shows the relations between the geologic evolution of the region from the Precambrian to the Pleistocene and the genesis of the mineral deposits. Of special interest is the relation of the mineralization of iron, apatite, copper, gold, and silver which are associated with Subhercynian (Cenomanian) plutonism, and the belt of superimposition of the Tithonian-Neocomian marine basin over the folded and eroded Jurassic volcanic formations. Also of interest is the relation of the porphyry copper and polymetallic deposits with paleogeographic factors (especially some Jurassic paleogeographic features), magmatic factors (Tertiary volcanism), and tectonic factors (large normal, reverse, and transcurrent faults).

Although Chilean metallic minerals include deposits of iron, manganese, silver, gold, mercury, etc., its huge copper reserves define it as a highly specialized copper-bearing metallogenic province. Copper production is about 700,000 tons per year, and is chiefly from porphyry copper mines (85%), which also produce associated molybdenum.

Among the industrial minerals, nitrate in the north of Chile is of particular interest, and a revival of its importance is probably due to the present world's shortage of petroleum (required to produce synthetic ammonium nitrate).

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ENVIRONMENTS OF CORDILLERAN DEPOSI-TIONAL BASINS

The stratigraphy of the cordillera can be interpreted in terms of stratigraphic assemblages that are unique in distribution, gross lithology, and lateral facies variations. Models of depositional basins in which these assemblages accumulated are essential in exploration for mineral deposits whose distribution is controlled by stratigraphy.