scale mountain building. Some changes in sea-level may be related to the size of ice accumulations at the poles.

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Geology and Exploration of Three Greater Bass Strait Basins, Australia

Three major Mesozoic-Tertiary basins lie in succession along the eastern one-third of the south coast of Australia within a distance of about 700 miles. The total area embraced is approximately 100,000 square miles, and it includes parts of three of Australia's six states. Fully three-fourths of the area is classified as an offshore shelf.

The general east-west alignment of the basins resulted from sharp taphrogenic breakdown across the generally north-south Paleozoic orogenic trend of eastern Australia and Tasmania. The main faults and many of the basin features have northeasterly or northwesterly trends, suggesting that rotational or transcurrent stresses and subsidence were involved in the breakup.

Sedimentation began at least as early as Late Jurassic. The succeeding Mesozoic development lacks uniformity over the area, but the Tertiary is more uniformly developed throughout. Several unconformities are recognized. Though not all sediments carry marine fossils, the contained waters are saline beyond the limits of the fresh water flushing onshore.

The Gippsland or eastern basin covers about 22,000 square miles. More than 12,000 feet of rapidly deposited Jurassic-Cretaceous clastic rocks fills a downfaulted central trough and overlaps the basin shelves on the north and south. About 10,000 feet of more widely extending Tertiary sandstone, shale, marl, limestone, and some coal, completes the basin fill.

The deeply silled Bass basin, which separates the island State of Tasmania from the mainland, covers about 35,000 square miles. The section is composed of 12,000 feet or more of sandstone, shale, marl, limestone, and some coal. Deposition began in the central part of the basin, probably as early as Late Cretaceous time, and continued through the Tertiary, progressively overlapping radially in all directions.

The western or Otway basin covers more than 40,000 square miles. The Mesozoic consists of sandstone, shale, siltstone, and mudstone. Deposition began during Late Jurassic time and continued, with laterally differing breaks in deposition, into the Paleocene; a maximum thickness of more than 15,000 feet was deposited. Approximately 8,000 feet of overlapping Tertiary sandstone, shale, marl, and limestone completes the basin fill.

Potential traps for petroleum accumulation of the following types occur: tectonic folds; fault or fault-block structures; massive, elongate sandstone bodies associated with pronounced transgressive overlap and compaction drape; porosity abutment both above and below extensive low-angle unconformities; unconformable overlap of basin-sink sediments over broad bottom highs and against and over major fault scarps; structural noses; extensive progressive flank overlap around a deeply silled basin by a section composed of sandstone, shale, marl, and carbonate rocks; and porosity pinchouts.

Approximately 30 exploratory wells drilled onshore in the extensively fresh-water-flushed basin flank, found numerous non-commercial oil and gas shows. The first offshore well drilled in the Gippsland basin 20 miles from the coast (the first offshore well in Australia) resulted, early in 1965, in a major wet gas discovery in thick, very porous Tertiary sandstone.

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Petrographic and Chemical Study of Yucatán Carbonates

Carbonate rocks of Eocene(?) to Recent age crop out in northern Yucatán. Subsurface data from a few widely scattered wells indicate these Tertiary and Recent rocks range in thickness from 3,000 to 5,000 feet. Cretaceous (Comanchean and Gulfian) carbonates, evaporites, and volcanics underlie the Tertiary carbonate rocks.

Samples from all outcropping stratigraphic units in northern Yucatán have been collected. These samples have been studied in the following ways: (1) in hand specimen and by etching, (2) by preparation of acetate peels, (3) by staining (silver nitrate-potassium chromate) for calcite-dolomite content and by preparation of stained peels, (4) in thin section, and (5) by "wet" chemical analysis. Samples are presently being analyzed for $CaCO_3/MgCO_3$ content by EDTA (ethylenediaminetetraacetic acid) titration.

Virtually all carbonate rock types are present, but deposits of foraminiferal microcrystalline carbonates predominate. Reefoid carbonates are present in only minor quantities. Dolomitization and silicification are encountered in many samples. Silicification is most intense in reefoid deposits and negligible in all other rock types. Preliminary results of analyses for calcite-dolomite content in the rocks disclose no apparent correlation of dolomitization with individual rock types. There is, however, an apparent increase in dolomite content with the age of the rocks; this aspect is being investigated more thoroughly.

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Stratigraphy and Structure of Parras Basin and Adjacent Areas of Northeastern Mexico

The Parras basin, in southern Coahuila and western Nuevo León, contains 15,000–20,000 feet of Upper Cretaceous and lower Tertiary terrigenous clastic sediments. From 5,000–7,000 feet of Lower Cretaceous carbonate rocks and 6,000–10,000 feet of Triassic and (or) Jurassic evaporites, carbonate, and terrigenous clastic rocks flank parts of the basin and underlie large areas within the basin. The Triassic and (or) Jurassic sedimentary rocks exhibit complex facies relations. Lower Cretaceous carbonate rocks are remarkably uniform over large areas of northeastern Mexico. Most of the Upper Cretaceous and lower Tertiary calcareous-arenaceous-argillaceous sediments were deposited in a boot-shaped, shallow, subsiding basin between the present-day Sierra Madre Oriental and the Coahuila Platform.

The Upper Cretaceous-lower Tertiary Difunta Group displays intertonguing relations between two distinct lithic types; red, non-marine, arenaceous-ar-