

should escalate to 800,000 to 1,300,000 bbl/day in 1985. Production of synthetic crude oil from oil-impregnated rock should develop in the decade 1975-1985. Both supplemental oil sources are certain to be important parts of the nation's pool of available energy from 1980 into the next century.

Unforeseen world events and political/economic decisions at high government levels can profoundly affect and alter these timetables.

ROONEY, W. S., Water and Trade Wastes Consultants, Sydney, Australia, and R. D. PERKINS, Duke Univ., Durham, N.C.

MICROBORING ORGANISMS AS ENVIRONMENTAL INDICATORS AND SEDIMENT TRACERS, ARLINGTON REEF COMPLEX, AUSTRALIA

Sediments surrounding the Arlington reef complex of the Great Barrier Reef of Australia were examined to determine the types and relative abundances of microborers present, to describe the morphology of their excavations, and to plot and interpret their distributional patterns. The most widespread and abundant microborings found within carbonate particles were those produced by fungi, which appear to be among the first endolithic organisms to attack skeletal debris. A characteristic branching red (?) alga was found to be most abundant at depths in excess of 18 m, although it was not restricted to these depths. However, a distinctive endolithic sponge was found only at depth below 18 m, and may prove valuable as a paleoecologic guide.

An 8-10 μ endolithic green alga actively infests carbonate particles of the interior reef platform to depths as great as 30 m, although it is generally more abundant at shallower depths. This alga serves both as a photic zone indicator and sediment tracer within the study area. Its distribution within sediments suggests that net transport is from the interior reef platform landward with little or no sediment being carried seaward.

Endolithic organisms were observed to infest molluscan fragments preferentially, thereby selectively removing them from the carbonate fraction. The distribution and spatial relations of endolithic organisms within Arlington reef complex sediments suggest that microborers may be useful as relative depth indicators in recent, and possibly ancient, carbonates.

ROSE, P. R., Shell Oil Co., Denver, Colo.

FORAMINIFERIDA AND CARBONATE ENVIRONMENTS OF SOUTH FLORIDA AND BAHAMAS

Previous studies in the Florida-Bahamas region have shown that organic constituents of modern shallow-water carbonate sediments vary systematically and predictably with sediment grain size, submarine topography, areal geography, and hydrography, so that persistent associations of certain facies tracts and dominant organisms now are well known. Although such dominant organic constituents generally are segregated into gross taxonomic groups (coral, coralline algae, forams, mollusks), the present study shows that similar systematic variation also can be observed within a single gross taxon (Foraminiferida). Such variation produces 5 faunas that reflect 5 major environments (forereef slope, shelf margin, open shelf, interior shelf, restricted shelf) of the shallow-marine carbonate realm, as well

as local depositional features, such as mudbanks and patch reefs. Sediment classes and foraminiferal faunas are probably only indirectly related, but they are remarkably congruent. Transport of Foraminiferida by currents affects distribution locally, but does not materially affect the 5 major faunas.

Lateral successions in foraminiferal faunas are present in the ancient rock record just as they are in modern sediments and can be used as a predictive tool, but for comparison with ancient faunas, recent death assemblages are more meaningful than living faunas.

Many previous studies of modern forams have emphasized water depth as the dominant environmental parameter, but most modern carbonates are forming in very shallow water so that possible range in water depth is necessarily small. Accordingly, circulation of oceanic waters supersedes water depth as the dominant environmental control of forams in the carbonate realm.

ROSS, C. A., Dept. Geol., Western Washington State College, Bellingham, Wash.

PROBLEMS IN PROVINCIALITY

Paleogeographic provinciality is a subject that has attracted attention for more than 150 years. Most of the early models of distribution of paleogeographic provinces conformed to the concept that the major cratonic areas of the world had remained geographically stable through geologic time and that the rate of dispersal of biota through barriers between these stable areas varied during geologic history. Such models were challenged critically by the concept of "drifting" continents. The recent model of plate tectonics appears to present a mechanism for moving and variously connecting and disconnecting cratonic masses. This idea has resulted in renewed interest in many different fields of geology and suggests reevaluation of all types of pertinent data that bear on the subject of paleogeographic provinces.

The intent of the 1972 SEPM Research Symposium is to examine many of the different aspects that contribute to the development, changes, and stability of provinciality and the paleogeographic patterns of different types of provinciality. A broad spectrum of interpretations on this diverse subject is drawn from sedimentology, oceanography, zoology, paleontology, paleobotany, clay mineralogy, tectonics, climatology, and paleomagnetism. These interpretations outline the magnitude, extent, and direction of many changes in physical and paleobiological geography during the geologic past.

RUBIN, B., Teton Exploration Drilling Co., Casper, Wyo.

URANIUM ROLL-FRONT ZONATION IN SOUTHERN POWDER RIVER BASIN, WYOMING

Uranium deposits in the Powder River basin have been found during the past decade through the extensive use of the "roll-front" concept. Until now far more holes were drilled than were needed to complete successfully each profile across the various "roll-fronts" discovered. The recognition of 6 zones across the "roll-front" has enabled the geologist to effectively utilize his drilling so as to intersect the high-grade ore zone with fewer holes per profile. Consequently, time, effort, and money have been saved allowing the geologist more time to do more imaginative geologic thinking.