

The fauna is similar to the Holocene fauna of the Texas Gulf Coast. Most of the species suggest deposition in a rather low salinity bay or inlet environment, but the entire fauna indicates changing environmental conditions.

POAG, C. WYLIE, Dept. Oceanography, Texas A&M Univ., College Station, Tex.

REEVALUATION OF GULF COAST PLIOCENE-PLEISTOCENE BOUNDARY

A reexamination of the sequences of planktonic foramin and calcareous nannoplankton in the Plio-Pleistocene sediments beneath the Louisiana continental shelf has been undertaken to modernize correlation schemes that were established 10-20 years ago. As a consequence it can be shown that (1) a new correlation of marine micropaleontological and continental glacial events is necessary; (2) the Gulf Coast faunal events can be correlated reliably with those in the type Italian Pleistocene section and in the deep sea cores; (3) some species, the limits of whose ranges have been relied upon for isochronous boundaries (e.g., *Globobulimina altispira*) appear to have persisted in some areas for a considerably longer time than in other areas; and (4) it is increasingly evident that it is invalid to correlate the Plio-Pleistocene boundary, as defined by paleontology, with a climatically defined boundary.

RANDAZZO, ANTHONY F., Dept. of Geology, Univ. of Florida, Gainesville, Fla.

PETROGRAPHY OF SELECTED TERTIARY LIMESTONE TYPE SECTIONS IN FLORIDA

The Tertiary limestones of Florida provide sedimentologic information for environmental analysis. The type sections of the Eocene Ocala Group (Crystal River, Williston, Inglis Formations), and the Oligocene Suwannee and Marianna Limestones were studied petrographically. These formations represent several different microfacies that can be recognized in other areas. Rock types present include biosparites and biomicrites, many of which are pelletoidal and intraclast bearing.

The various facies reflect the presence of topographic highs, numerous marine transgressions and regressions, and a complex diagenetic history involving periods of organism boring, solution, spar infilling, recrystallization, dolomitization, and silicification. Petrographic information about the various type sections provides standards of reference which can be related to other exposures of these formations.

REEL, DAVID A., Louisiana State University, Baton Rouge, La., and GEORGE M. GRIFFIN, Univ. of Florida, Gainesville, Fla.

POTENTIALLY PETROLIFEROUS TRENDS IN FLORIDA AS DEFINED BY GEOTHERMAL GRADIENTS

A newly constructed geothermal gradient map of Florida suggests both the presence of areas with high petroleum potential and the thickness of the potentially petroliferous section. The base of the "potential section" is defined by the depth of the basement, and the top is defined by the depth at which the minimum temperature exists for petroleum maturation. From previous studies this upper limit is assumed to coincide with the 221°-isotherm depth. A "potential section" map has been prepared which includes all of the presently productive fields and new discoveries within favorable areas. Locations of thick sediment sections of proper

temperature for oil occurrence are: the Western Panhandle, a small area of the central Panhandle, and the extreme southwestern part of the peninsula. Over most of central and north Florida and in the southern Keys the basement may be penetrated before encountering the requisite minimum temperature for petroleum maturation. Tests in these areas run a higher probability of being barren.

SCHUSTER, N. A., J. D. BADON, and E. R. ROBINS, Schlumberger Ltd., Houston, Tex.

APPLICATION OF ISF/SONIC COMBINATION TOOL TO GULF COAST FORMATIONS

The Spherically Focused Log is a new resistivity log developed to replace the short-normal in the Induction-Electrical sonde (IES). It uses an electrode array and includes a current focusing system. Bucking currents, flowing mainly in the borehole, cause the measuring current to enter the formation and then diverge spherically.

The Spherically Focused Log (SFL, trademark of Schlumberger) has much better bed definition and considerably less borehole effect than the short normal. It has a shallower investigation, hence it gives more accurate invaded-zone resistivity.

The Induction-SFL can be run in combination with a borehole-compensated Sonic, thus providing a simultaneous recording of deep resistivity, shallow resistivity, SP, Sonic transit time (porosity information), a caliper or Gamma Ray, and computed R_{wa} . This combination makes possible a more immediately available evaluation of zones of interest with less expenditure of rig time.

SHINN, EUGENE A., Shell Oil Co., New Orleans, La., and R. N. GINSBURG, School of Marine and Atmospheric Sciences, Univ. of Miami, Miami, Fla.

DIAGENETIC ASPECTS OF SUBMARINE CEMENTATION IN BERMUDA "BOILER" REEFS

Holocene reefs in Bermuda, called "boilers," are presently being cemented by fibrous and fine-grained "mud textured" magnesium calcite to produce a rock with low porosity and permeability. As much as 50% of the resulting rock consists of cement and internal sediment. Internal composition varies from pelleted ostracod- and foram-rich sediment to oolites and pisolites. Such sediments occur in vugs measuring from a few millimeters to caves up to more than 1 m across. These submarine caves are formed by overgrowth and sheet-like layers of coralline algae and the hydrozoan *Millepora* sp. (constructional formation), and by organic enlargement of cave walls by boring organisms (destructional formation). Such caves could be mistaken easily for subaerially formed caves, and the internal oolites and pisolites might be mistaken for freshwater cave pearls.

Syncementation fractures up to 1.5 m in width cross-cut one of the "boiler" reefs. Fractures are believed to result from instability due to organic growth which commonly produces overhanging ledges along the margins of these reefs.

SLOANE, B. J., Atlantic Richfield Co., Lafayette, La.

RECENT DEVELOPMENTS IN MIOCENE *Planulina* GAS TREND OF SOUTH LOUISIANA

The lower Miocene (Oligocene?) *Planulina* interval of South Louisiana is a sequence of interbedded sandstones and deep water shales beneath the *Siphonina*

davisi zone and above the Abbeville-ahuac Formation. The *Planulina* interval is the subsurface along a narrow barrier. Lake Verret in Assumption Parish, Cameron, Louisiana, into coastal Texas.

The first discovery of gas in the *Planulina* interval was made in 1945 by Magnolia Petroleum Co. in the Mud Lake field, Cameron Parish, Louisiana, after 18 years of exploratory effort. Significant *Planulina* fields. Operations by elusive structures, erratic sands, and other problems, high pressures, high densities, adequate seismic resolution, and a general understanding of the geologic setting. After 18 years a sharp increase in success has trend into one with promise of substantial reserves. Modern drilling technology techniques were responsible for this additional control has resulted in a new understanding of the geology.

Planulina sands are believed to be along the outer edge of a narrow Marine transgression in "late *Planulina*" the axis of deposition northward. The next younger cycle of deposition and faulting lies north of, and updip to, the trend. Because of this shift in the trend, growth of many *Planulina* sands "late *Planulina* time" and were buried in shale.

Typical *Planulina* structures are upward-plunging, faulted noses buried in pelagic sediments. Where younger beds have their structural crest generated from the apex of the *Planulina* sands, structural crests are commonly, though north of the shallow structure or in block. Some salt domes and high *Planulina* sandstone pinchouts on top.

Within the *Planulina* trend structural role in hydrocarbon entrapment and graphic traps are common.

SMITH, LEE A., Esso Production Co., Houston, Tex.

CONTRIBUTION OF JOIDES TO OUR KNOWLEDGE OF GULF OF MEXICO

The coring of deep-water sediments in the Gulf of Mexico during Legs I and X of the JOIDES has contributed significantly to our knowledge of the Gulf's geologic history. The nature of the sediments is still not known with certainty, but the results from legs 1 and 92 suggest that "normal faulting" (perhaps downslope movement) and salt tectonics are involved.

Drilling results from holes 3, 85, and 92 indicate that formation of the present Gulf of Mexico includes late Neogene subsidence and a more westerly source for clastic debris than the Mississippi River. A previous record of deep-water sediments at the end of Early Cretaceous time, from holes 95, 96, and 97, suggests a complex block tilting and faulting for the Gulf. This may include a Late Cretaceous reemphasis as the present Yucatan Strait as late as Pleistocene. Correlative continuities bounded above and below the sediments may require some more