properties are largely dependent on the primary properties.

RALPH BIEL, Humble Oil & Refining Co., New Orleans, La.

COMPOSITION OF SOME MIOCENE AND HOLOCENE PLANKTONIC FORAMINIFERAL ASSEMBLAGES

The composition of planktonic foraminiferal assemblages varies with depth in the upper few hundred feet of the present oceans. Empirical data show similar composition variations for early Miocene planktonic foraminiferal assemblages in the south Louisiana subsurface. Two variables most closely related to these changes appear to be (1) water temperature as a function of latitude and (2) water temperature as a function of bathymetry. Thus, planktonic foraminiferal assemblage compositions can be used to interpret paleobathymetry of marine strata at least as old as early Miocene.

RICHARD L. BOWEN, Dept. Geology, Univ. of Southern Mississippi, Hattiesburg, Miss.

EPI-PALEOZOIC HYPERSALINITY AND MARINE BIOTIC EXTINCTIONS

From consideration of the volumes of halite and associated salts deposited since the Permian, one must infer that either seawater at the close of the Paleozoic was hypersaline compared with seas of today (35‰ salinity); or, although 6 million cu km or more of salt has been precipitated from the world ocean in highly varying amounts at irregular intervals since the Permian, an equal volume of salt has gone into solution. Data from analysis of sedimentary sulfur-isotope ratios strongly support the former inference. Concordant, but more speculative, support also is available from aridity indices.

A condition of hypersalinity in the oceans during the Permian Period would explain the known patterns of Permian extinctions. Evidence suggests that those marine taxa (*e.g.*, echinoderms, fusulines, coelenterates) with the lowest tolerance for salinity variability were the group within the entire Permian biota that suffered the greatest proportion of extinctions at the close of the Paleozoic. Such an explanation is more consistent with a uniformitarian earth than causes sought in cosmic radiation variability or pulses, which should have affected terrestrial organisms more strongly than marine taxa.

W. E. CONATSER, Pelto Oil Co., New Orleans, La.

GRAND ISLE—BARRIER ISLAND IN GULF OF MEXICO

Grand Isle is part of a barrier-island chain along the coast of southeastern Louisiana. It separates the estuarine environment of Barataria Bay from the marine environment of the Gulf of Mexico. The island is 7½ mi long and about ½ mi wide.

Mechanical analyses of 102 surface samples indicate that the island is composed of fine-grained terrigenous sand, silt, and clay, with a minor percentage of shell material. Median grain diameters range from 0.166 mm for beach sands to 0.005 mm for isolated clay pockets of the back-island area. Grain-size isopleth maps demonstrate a parallelism of grain-size characteristics with sedimentary features and environments such as the beach, dunes, ridges, and interridges. They also demonstrate an increase in the size of beach sand on the southwest. Beach and dune sands are well sorted. Ridge and interridge sediments contain a higher percentage of silt and clay and exhibit poorer sorting. Organic content of representative sediment samples ranges from 0.20 to 9.08%.

The high oxidation environments of the beach and dunes generally have the lowest organic content. Carbonate content in the form of shell material ranges up to 4.2% with the smaller grain-size sediments generally having a higher carbonate content.

The subsurface stratigraphy was studied using 127 soil-boring logs. All strata found by the borings (to a maximum depth of 320 ft) were Holocene sand and clay. The oxidized Pleistocene contact is interpreted to be at a depth of 400 ft as determined by deeper borings on nearby islands. Four Holocene sands are recognized in this subsurface section. The deepest sand, interpreted to be a Holocene transgressive unit, is 120–170 ft thick. The maximum thickness of 3 shallower sands is 43 ft, and the average thickness is 10–20 ft. The three upper sands are fine to very fine grained. The deepest sand is fine to coarse grained. Typical silty prodelta clays and highly plastic offshore clays are found between the sand beds.

The Grand Isle beach has an average seaward slope of 2½°. A low dune ridge runs almost continuously behind the beach. Approximately 25 sets of relict beach and dune ridges can be identified behind the active dunes. These sets trend nearly parallel with each other and with the present beach. The ridges are 35–100 ft wide and are 3 ft or less high.

The sediments to a depth of 100 ft are interpreted to be related to deltaic progradation of the ancestral Mississippi River. This deltaic progradation began about 5,600 years ago when sea level reached a stillstand. The Lafourche delta formed west of Grand Isle about 2,000 years ago. As wave action attacked the delta front, sediment was carried northeastward by littoral currents. A barrier spit was constructed in the mouth of Barataria Bay. The barrier spit was eventually breached by a narrow tidal channel. From this original nucleus island, Grand Isle has grown by beach and dune-ridge accretions.

JOHN B. DUNLAP, JR., Paleo-Data, Inc., New Orleans, La.

PALEOECOLOGY AS EXPLORATION TOOL

Paleoecology, properly interpreted and applied, can serve as a valuable tool in any exploration program. To be interpreted properly, it is of prime importance that standard criteria for paleoecologic data be used without attempting to alter the data obtained to fit preconceived ideas.

In order that the data developed may be presented uniformly and be consistent with other available information, Paleo-Data, Inc., uses the general criteria and depth zonation suggested by the Gulf Coast SEPM Committees on Paleoecology.

WILLIAM L. FISHER and CLEO V. PROCTOR, JR., Bur. Econ. Geology, Univ. of Texas, Austin, Tex.

DEPOSITIONAL SYSTEMS IN JACKSON GROUP OF TEXAS GULF COAST BASIN

Regional outcrop and subsurface investigation of the Jackson Group in Texas indicates development of 5 main depositional systems. Dominant element in the central and east Texas Gulf basin (bounded by Guadalupe River on the south and Neches River on the