of clastic and organic floodplain deposits which accumulated on the newly formed coastal plain. The terminal phase is documented by sediments deposited during a period of instability when a marine transgression either continuously or intermittently forced estuarine conditions on the rivers entering the basin. Throughout the terminal transgression the finite zone of active deposition adjacent to the shoreline was shifted landward. Basinward of this active zone of deposition, hiatal conditions existed, and at the instant of maximum transgression, when the depositional episode was terminated, all points on the hiatal surface were synchronous.

The bounding surfaces of depositional sequences represent natural stratigraphic breaks and are related to hiatal conditions imposed by marine transgressions. Within the Quaternary section, the repetitive alternation of depositional episodes and significant hiatuses is due to the glacioeustatic fluctuations of sea level. As a result, worldwide correlations of the Pleistocene sequences and hiatuses can be made.

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BAY MARCHAND—TIMBALIER BAY—CAILLOU ISLAND SALT COMPLEX, LOUISIANA

This salt complex, more than 28 mi long and up to 12 mi wide, may be part of a much longer salt feature that extends both east and west. The mother salt bed, of probable Late Triassic-Early Jurassic age, is buried at depths of 40,000–50,000 ft, whereas the tops of the individual domes along the trend rise to within 2,000–3,000 ft of the surface.

Production to date on the three-field complex has been more than 0.7 billion bbl of oil. Oil reserves are estimated to range from 0.75 billion to 1.0 billion bbl. Significant gas reserves also are present.

Hydrocarbon accumulation occurs in sands of Pleistocene through late Miocene ages and ranges in depth from 1,000 to below 20,000. A wide variety of traps is found, including supradomal arching, shale and salt truncations, stratigraphic traps, and those resulting from faults.

Production was established on this complex in 1933. The total hydrocarbon production for 1968 was approximately 99 million bbl.

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PROFILE OF BIOGENIC SEDIMENTARY STRUCTURES IN HOLOCENE BARRIER ISLAND—SALT MARSH COMPLEX, GEORGIA

Biogenic sedimentary structures, many of which are characteristic of particular depositional environments, are abundant among Holocene barrier island–salt marsh habitats of coastal Georgia. The major environments represented are (1) beaches, including the shoreface, lower and upper foreshore, backshore, dunes, and washover fans; (2) salt marshes, consisting of the low marsh, high marsh, and salt pans; and (3) estuaries and tidal streams, including channel deposits, point bars, stream banks, and natural levees. Biogenic sedimentary structures in these environments consist of bioturbate textures and tracks, trails, burrows, and dwelling tubes, and are produced chiefly by polychaetes, gastropods, pelecypods, decapods, amphipods, and insects. Such structures, either singly or as assemblages of lebensspuren, are ordinarily sufficient to delimit major habitats. Further, most of these structures are capable of preservation, and many of them have been documented in the Pleistocene of Georgia and Florida.

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CORRELATION OF NEOGENE PLANKTONIC FORAMINIFER AND CALCAREOUS NANNOFOSSIL ZONES

From the uppermost Miocene (Messinian) to the Holocene six planktonic foraminifer zones have been recognized in tropical and subtropical latitudes. Using overlapping segments from deep-sea cores previously dated by use of planktonic foraminifers, the calcareous nannofossils for this same interval were analyzed in order to relate nannofossil ranges to established foraminiferal zones.

With the light microscope nine calcareous nannofossil zones are readily distinguishable for this interval, one for the uppermost Miocene (Messinian), four for the Pliocene, and four for the post-Pliocene. The planktonic foraminifer zones N-18 through N-20 have roughly corresponding nannoplankton zones, although zone N-20 appears to represent a shorter stratigraphic interval than the corresponding nannoplankton zone. Zone N-21 is divisible into two nannofossil zones of about equal duration. The top of zone N-21, which is marked by the first evolutionary occurrence of *Globorotalia truncatulinoides*, corresponds rather closely to the extinction of discoasters in deep-sea sediments. Above this horizon for additional nannofossil zones can be recognized, based on partial ranges or concurrent ranges of three placolith genera that successively dominate the nannofossil assemblages.

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DEPOSITIONAL ENVIRONMENTS DEFINED BY DIPMETER INTERPRETATION

A new method of dipmeter interpretation gives an estimation of water depth during deposition. This method is applied to high-resolution dipmeter surveys in which short-interval correlations are machine computed at closely spaced levels of the well.

The major premise is that these short-interval dip computations reflect the energy of the depositional environment. High-energy marine environments lead to a large scatter of dip magnitudes. Conversely, low-energy environments, such as found in deep water, lead to "layer-cake" deposition, and appear as uniform dip magnitudes on the dipmeter plot. Thus, the scatter of dip magnitude in a formation is the key by which the depositional water depth is interpreted to be shallow (less than 50 ft), medium, or deep (greater than 300 ft).

Comparisons with paleoecologic data indicate the interpretation method to be both valid and useful. Exceptions to the rules for dipmeter interpretation occur when the original bedding planes are distorted or overshadowed, as in fault zones, weathered formations underneath unconformities, marine slides, and heaving shales. Even with these exceptions, and partly because of them, the dipmeter interpretation and paleoecologic data augment each other in defining depositional environments.

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