presented because all of those recovered from the sediments examined are described and illustrated in the literature.

16. GENE ROSS KELLOUGH, University of Houston, Houston, Texas

PALEOECOLOGY OF FORAMINIFERA FROM THE WILLS POINT FORMATION (MIDWAY GROUP) IN NORTHEASTERN TEXAS

The last large-scale transgression of the Tertiary seas in northeastern Texas began with the deposition of marine clays of the Wills Point Formation (upper part of Midway Group) on the carbonate sediments of the Tehuacana Member of the Kincaid Formation (basal part of Midway Group).

The Wills Point Formation, divided into basal Mexia Member, Kerens Member, and upper Solomon Creek Member, has been studied from shallow-well and outcrop sections in an attempt to interpret the paleoecology of the Foraminifera and to delineate the boundaries of the members. Paleoecologic interpretations are based on: (1) the number of species of Foraminifera per sample; (2) the number of specimens per 1-gram sample; and (3) the characteristic dominance of the fauna, whether benthonic or planktonic.

By employing the criteria set forth by Walton (1964), that a decrease in number of species of Foraminifera indicates an approach toward marginal-marine conditions and an increase in numbers of species indicates a marine transgression, the writer postulates that at the beginning of deposition of Mexia sediments, sea-level increased gradually in depth with open-marine conditions prevailing. A maximum depth of no greater than 50 fm. is indicated for the section up to 150 ft. above the Tehuacana Member. Above this level, a gradual shallowing of water is indicated until, 330 ft. above the Tehuacana, the water was less than 10 fm. deep.

The decrease in number of species and the increase in dominance of the *Haplophragmoides-Ammobaculites* fauna suggests that marginal-marine conditions of an intertidal to 2-fm.-deep facies existed from 330–460 ft. above the Tehuacana.

A further regression with fluctuating brackish to nonmarine conditions caused the deposition of thin-bedded glauconitic sandstones between cross-bedded massive sandstones, and large flat-topped ferruginous concretionary layers 12–24 in. thick. At the top of the section studied, 687 ft. above the Tehuacana member, a thin section of gray clay containing an arenaceous fauna of five species was deposited in shallow brackish water.

The upper boundary of the Mexia Member of the Wills Point Formation is placed approximately 180 ft. above the top of the Tehuacana Member where the abundance of planktonic Foraminifera decreases to 6% and, with one exception at 360 ft., stays at or below that figure.

The upper boundary of the Kerens Member is placed at the top of the continuous shallow- to brackish-water, wholly arenaceous fauna. The brackish to non-marine, non-foraminiferal section above is included in the Solomon Creek Member, whose upper boundary can not be determined. The massive sandstone and overlying bed of *Ostrea duvali*, which form the Caldwell Knob Member at the base of the Wilcox Group, are not present along the Trinity River in the Navarro-Henderson Counties area.

17. PAUL F. HUDDLESTON AND LYMAN D. TOULMIN, Florida State University, Tallahassee, Florida

UPPER EOCENE-LOWER OLIGOCENE STRATIGRAPHY AND PALEONTOLOGY IN ALABAMA[1]

Southeastern Alabama, where the clastic upper Eocene and lower Oligocene beds from the west grade into and interfinger with the equivalent limestone beds toward the east, is an area of deep weathering. Exposures are lacking except along the rivers and major streams, where complete unweathered geologic sections can be studied from a small boat. Study of these sections where the two lithosomes and their distinctive fossils mingle has resulted in a better understanding of the stratigraphic relations and correlation of upper Eocene and lower Oligocene strata between Mississippi and Florida.

The Moodys Branch Formation can be divided into a lower and an upper member in southeastern Alabama, the lower member being the *Periarchus lyelli* assemblage zone. The lower member is correlated with the Inglis Formation in Florida and the upper member with the Williston Formation. The members of the Yazoo Clay can be traced eastward into southern Alabama, where they merge into the Crystal River Formation, the "Ocala Limestone" of early reports. The upper member of the Yazoo (Shubuta Clay Member) is correlated with the upper part of the Crystal River (*Asterocyclina* assemblage zone) exposed in the vicinity of Marianna, Florida. The Red Bluff Clay is correlated with the Bumpnose Limestone that overlies the Crystal River Formation in the Marianna area. Like the Bumpnose, it contains the guide fossil *Lepidocyclina chaperi* Lemoine and Douvillé in exposures near Perdue Hill, Alabama.

18. JOHN. J. W. ROGERS AND JUDITH C. LONGSHORE, Rice University, Houston, Texas

LATE PLEISTOCENE AND RECENT HISTORY OF PORTION OF COLORADO RIVER VALLEY OF TEXAS

The modern valley of the Colorado River near Columbus and Eagle Lake is incised into terraces representing depositional surfaces of early Pleistocene sediments. The terraces which normally are cut landward from the deltaic shoreline areas have been accentuated by continued Pleistocene uplift along a down-to-the-basin fault crossing the river near Eagle Lake. Extensive deposition of coarse materials in the sag downstream from the fault has steepened stream and terrace gradients in comparison with gradients above the fault. The present river is progressively moving coarse materials downstream from earlier deposits.

19. KENNETH J. LOEP, Mobil Oil Company, Houston, Texas

STUDY OF ECOLOGY AND DISTRIBUTION OF RECENT FORAMINIFERA IN NORTHWESTERN GULF OF MEXICO[2]

Eight different stations in the Gulf of Mexico from 3–3,300 ft. in depth were studied in detail in an attempt to group the foraminiferal assemblages found at each station into useful ecologic indicators. It was found that four ecologic provinces are present from the shore to the lower edge of the continental slope: (1) beach and nearshore environment; (2) continental shelf; (3) continental slope; and (4) a shallow, clear, warm-water, calcareous environment (found on Stetson Bank). These environments are controlled by a combination of chemical

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[2] Socony Mobil Oil Company, Inc., granted permission for publication of this work.