THURSDAY AFTERNOON, OCTOBER 25

W. F. VON DREHLE: Anomalous beach ridges of Sangamon(?) age 2:00
A. P. WRIGHT, E. O'DONNELL: Shoreline and beach changes on Honeymoon Island, Pinellas County, Florida, 1967–1971 2:20
F. W. STAPOR, W. F. TANNER: Errors in pre-Holocene carbon-14 scale 2:40
J. E. BANKS, M. E. HUNTER: Post-Tampa, pre-Chipola sediments exposed in Liberty, Gadsden, Leon, and Wakulla Counties, Florida 3:00
R. S. MURALI: Wave-power gradient—approach to Holocene depositional history 3:20
A. H. BOUMA: Leveed channel deposits, turbidites, and contourites in deeper part of Gulf of Mexico 3:40
R. REZAK, W. R. BRYANT: Geology of West Flower Gardens Bank 4:00
T. H. MISSIMER: Growth rates of beach ridges on Sanibel Island, Florida 4:20

FRIDAY MORNING, OCTOBER 26

W. F. TANNER: West Louisiana chenier plain history 9:00
C. W. POAG: Late Quaternary sea levels in Gulf of Mexico 9:20
A. H. BOUMA, B. W. HOLLIDAY, C. W. POAG, G. L. HALL, B. S. APPELBAUM: Role of geologist in environmental impact study 9:40
K. A. HODGKINSON: Stone City and Cook Mountain (middle Eocene) scaphopods from southeast Texas 10:00
R. S. BARNETT: Reinstatement of *Nummulites heilprini* Hantken, 1886 10:20
D. J. ECHOLS, D. M. CURTIS: Paleontologic evidence of mid-Miocene refrigeration from subsurface marine shale, Louisiana Gulf Coast 10:40

FRIDAY AFTERNOON, OCTOBER 26

Calcareous Nannofossil Applications in Gulf of Mexico–Caribbean Region Symposium
Chairman: L. A. SMITH

L. A. SMITH: Calcareous nannofossil applications in Gulf of Mexico–Caribbean region 1:00
S. GARTNER: Calcareous nannofossil studies—state of art 1:30
B. M. SHAFFER: Lower Cretaceous nannofossil biostratigraphy in Gulf region—review 2:00
J. B. RISATTI: Nannoplankton biostratigraphy of upper Bluffport Marl–lower Prairie Bluff Chalk interval (Upper Cretaceous) in Mississippi 2:20
W. W. HAY, J. C. STEINMETZ: Probabilistic analysis of distribution of late Paleocene–early Eocene calcareous nannoplankton 2:40
T. R. WORSLEY, G. BLECHSCHMIDT, B. SNOW: Probability-based analysis of area-time distribution of Oligocene calcareous nannofossils 3:00
W. H. AKERS, P. E. KOEPPEL: Age of some Neogene formations, Atlantic coastal plains, United States and Mexico 3:20
J. B. SACHS, H. C. SKINNER: Late Pliocene–early Pleistocene nannofossil stratigraphy in north-central Gulf Coast 3:40
S. W. WISE, JR.: Calcareous nannofossil datum levels associated with Pliocene-Pleistocene boundary 4:00
I. B. BROHM: Coccoliths from Desoto Canyon region, Gulf of Mexico 4:20
N. SCHNEIDERMANN: Deposition of coccoliths in compensation zone of Atlantic Ocean 4:40
DISCUSSION 5:00

ABSTRACTS

AHR, W. M., Texas A&M Univ., College Station, Tex.

CARBONATE RAMP—ALTERNATIVE TO SHELF MODEL

One of the most common depositional models for carbonate rocks is the "shallow shelf." This model typically is constructed to show a nearly flat platform and a clearly defined shelf-slope break. Typically, there are detrital carbonates on the platforms, reefs or banks at the shelf-margin and basinal rocks seaward of the reefs. The usual analogs are the Florida-Bahamas (recent), the Cretaceous of Texas and northern Mexico (Edwards-El Abra), and the Permian of West Texas-New Mexico (Capitan model).

Less commonly presented, but very important, is the ramp depositional model. The ramp model is an inclined platform that extends basinward without a pronounced break in slope. Carbonate facies, therefore, are not protected necessarily by a shelf-margin barrier. Reefs and facies patterns of the detrital carbonates tend to be distributed in bands which parallel the coastline and reflect the greater wave and current activity near the mainland shore.

A modern example of the ramp model is the Campeche Bank. The detrital carbonates of the Campeche Bank are in concentric bands which range from grainstones and boundstones in shallow, agitated water to mudstones and wackestones on the seaward reaches of the ramp. Coral-algal reefs are common, but they do not occupy a position at the "margin" of the ramp.

The ramp model is appropriate to explain the Jurassic carbonates of the Smackover and Cotton Valley around the ancestral Gulf of Mexico. The Jurassic ramp is modified by, and facies patterns are complicated by, salt tectonics.

AKERS, W. H., and P. E. KOEPPEL, Chevron Oil Co., New Orleans, La.

AGE OF SOME NEOGENE FORMATIONS, ATLANTIC COASTAL PLAINS, UNITED STATES AND MEXICO

Calcareous nannoplankton indicate a middle Pliocene age for the Yorktown, Jackson Bluff, Concepcion, and Agueguexquite Formations and for unnamed beds near Sayula, Mexico. Planktonic Foraminifera are additional evidence for a younger age than formerly assigned to these beds.

BANKS, J. E., and M. E. HUNTER, Coastal Petroleum Co., Pinellas Park, Fla.

POST-TAMPA, PRE-CHIPOLA SEDIMENTS EXPOSED IN LIBERTY, GADSDEN, LEON, AND WAKULLA COUNTIES, FLORIDA

A new stratigraphic unit, the Torreya Formation, is proposed, based on a revised cross section along the Apalachicola River, including core holes near the river. A post-Tampa, pre-Chipola age for the unit is indicated by a study of its fauna.

The new unit is designated for strata containing a macrofauna including *Pododesmus scopelus* Dall and a microfauna with *Miogypsina globulina* Michelotti. It includes beds now mapped as equivalents of either lower Hawthorn, upper Chattahoochee (upper Tampa), or Fort Preston Formations in Liberty and adjoining counties.

The Torreya assemblage has little in common with the Tampa fauna, but is affiliated closely with that of the Chipola Formation. The pre-Chipola, post-Tampa stratigraphic position was determined by the presence in the fauna of miogypsinids, which to date have been reported only from sediments older than those containing the Chipola fauna, and by the supraposition of the Chipola fauna on a weathered remnant of the Torreya Formation.

The data suggest that this new unit was deposited in a marine to brackish-water bay that appears to have been centered in Georgia and open only to the Atlantic Ocean. The Gulf trough into the Apalachicola embayment apparently was closed by a land bridge presumed to be an exposed carbonate bank. Since deposition of the new unit, the presumed carbonate bank has wasted away, whereas the Torreya Formation with similar elevation persisted as a highland area.

BARNETT, R. S., Continental Oil Co., Lafayette, La.

REINSTATEMENT OF *Nummulites heilprini* HANTKEN, 1886

The foraminifer *Nummulites heilprini* Hantken is shown to be a senior synonym for *Operculina trinitatensis* Nuttall and *Camerina jacksonensis* Gravell and Hanna. The test morphology of *N. heilprini* is quantitatively and qualitatively different from *N. willcoxi* Heilprin, the first reported American nummulite.

BEALL, R., retired, Exxon Co., Fayetteville, Ark.

PLATE TECTONICS AND ORIGIN OF GULF COAST BASIN

A suggested hypothesis is that the basement under the eastern United States consisted of many "miniplates," and that movements of these "miniplates" were responsible for many of the structures in the Gulf Coast basin. Geologists working in the eastern United States have found evidence of continual compressive forces from the southeast during much of the Paleozoic Era. Compression was replaced by tension after the Allegheny orogeny.

The Gulf Coast basin miniplate lies between the Texas megashear, or a closely related fault, and another megashear which extends from under the eastern Gulf of Mexico to the east end of the Ouachita Mountains near Little Rock. A stable miniplate, of which the Llano uplift is a part, acted as a buttress against the northwest movement of the Gulf basin plate.

The Gulf basin plate is believed to have moved more than 400 mi during the pre-Mesozoic compressional cycle. Rebound followed the cessation of compressional forces and a Mesozoic basin was formed over most of the Gulf basin plate. Many of the structures in the post-Paleozoic sediments resulted from rebound associated tension acting on zones of strength and weakness in pre-Mesozoic rocks.

BERG, R. R., and R. L. FINDLEY, Texas A&M Univ., College Station, Tex.

DEEP-WATER DEPOSITION OF UPPER WILCOX SANDSTONES, KATY FIELD, TEXAS

Lower Eocene Wilcox sandstones were studied in a continuous core from a depth of 10,357 to 10,607 ft. The sandstones are 6–30 ft thick, very fine grained (0.11 mm), and generally thinly laminated. They consist of quartz, 52%; feldspar, 16%; rock fragments, 7%; other grains, 7%; and clay matrix, 18%. Interbedded shales are dark gray to black, massive, and rarely silty and bioturbated.

Sandstones are composed of thin beds that are 1–3 ft thick and commonly show a vertical bedding sequence of (1) a thin, basal zone that contains small, siltstone clasts 1–5 mm in long diameter, (2) a dominant middle zone of inclined laminae that dip at angles of about 5°, and (3) a thin upper zone of horizontally laminated siltstone. Grain size decreases upward from 0.16 mm to 0.05 mm within the thin beds. These units appear to represent a turbidite sequence corresponding to a basal graded unit (B_1), a middle laminated unit (B_2), and an upper laminated unit (D). A thin pelite unit (E) may be present at the top. The ripple-laminated unit (C) is missing or poorly developed. Contorted bedding is present in several intervals. A minor amount of sandstone also occurs in ripple lenses that are thinly interlaminated with dark-gray, pelagic shales. A deep-water origin is postulated for this section because of the turbiditelike bedding sequence and graded texture, scarcity of organic reworking, and regional location beyond the limits of mapped Wilcox deltas.

BOONE, P. A., Geol. Survey of Alabama, University, Ala.

DEPOSITIONAL SYSTEMS OF ALABAMA-MISSISSIPPI COASTAL ZONE

The northeastern Gulf of Mexico, from the Mississippi River to Desoto Canyon, is a complex of interrelated depositional systems. Alluvial-deltaic, estuarine, barrier-island, and marine-shelf systems characterize this part of the Gulf. The Pearl, Pascagoula, and Mobile fluvial-deltaic systems are major sources of sediment to the area. This complex is similar to that of the Texas coastal zone, but specific facies, geometry, and spatial relations differ.

Mobile Bay and Mississippi Sound are the most striking of the several estuaries in the area. Mobile Bay is shallow (average depth, 11 ft) and elongate (31 by 10 mi). Salinity varies locally within the bay and at any particular location between periods of high and low stream flow. Most of the bay is floored by clay and silty clay, with the shallow periphery underlain by sand. Sedimentation rates of 1.7 ft per century have been calculated.

Mississippi Sound is a shallow, bar-built estuary approximately 85 mi long and 7–15 mi wide, bounded on the south by a chain of barrier islands. The mainland side of the sound is fronted by grassy tidelands and artificial beach. Current patterns are complex due to the influence of the tidal passes; however, there is a slow westward longshore current. Most of the sound is floored by silt and clay, with the shallow periphery underlain by fine sand.

The Mississippi-Alabama barrier-island system is part of a chain of small, low-relief, barrier islands and spits that extend from Cat Island, Mississippi, to Choctawhatchee Bay, Florida. Westward-flowing longshore currents accrete sediments to the western ends of the islands while eroding the eastern ends. The rate of accretion is greater than that of erosion so that the islands lengthen and migrate westward.

The Mississippi-Alabama shelf system is that part of the shelf between the Mississippi River delta and Desoto Canyon. The topography of the shelf bottom is relatively smooth and has uniform slope. Minor topographic irregularities occur at depths of 100–150 ft. Wave action is of moderate intensity and sediment transport mainly the result of longshore currents. Sedi-