sediments followed as a second lobe formed on the east flank.

3. Development of southeast lobe began in 1933 at the mouth of an artificially leveed channel that extended 1/2 mile beyond the southern edge of the existing delta plain. After a period of adjustment to this unnatural channel, a normal sequence of prodelta and delta-front environments and associated subenvironments developed and prograded east-southeastward.

4. In 1936 the discharge channel was extended through Matadgorda Peninsula, and the Colorado River began discharging directly into the Gulf of Mexico. Distributaries into the southeast lobe remained open but could divert only a fraction of the total discharge. This decrease in volume of discharge was accompanied by lower flow velocities, a slower progradation rate, and the deposition of generally finer sediments.

5. The lobe entered its destructional phase in 1941, when all distributaries were closed. Wave action has removed most of the subaqueous delta front, beaches and interdistributary bays have formed, and a flourishing marsh has developed.

MAXWELL, R. W., JR., Dept. of Geology, Florida State Univ., Tallahassee, Fla.

ORIGIN AND CHRONOLOGY OF ALABAMA RIVER TERRACES

Investigation of high fluvial terraces along the Alabama River indicates that the highest terraces (115+ m above the floodplain) may predate the Citronelle Formation. Preliminary radiometric age determinations suggest that all of Quaternary history may be represented by those terraces less than 50 m above the present floodplain. The Citronelle surface in southwestern Alabama shows differential warping caused by subsidence of the Gulf Coast geosyncline and uplift of the adjacent upland. Rates of uplift were roughly 1.2 cm/10^3 years.

The average rate of river entrenchment prior to North American Pleistocene glaciation was about 2.5 cm/10^3 years. During glacial Pleistocene time, the maximum net rate of river entrenchment may have been as great as 7 cm/10^3 years. Observation of fluvial features, such as meander scrolls, shows that, in terraces more than 60 m above the floodplain (*i.e.*, more than 1.1×10^6 years old), meander scrolls have been obliterated. Likewise, terrace surfaces are mostly destroyed where more than 1.6×10^6 years old. In deposits more than 3.5×10^6 years old, primary structures have been obliterated and the only evidence of these oldest terrace deposits is chaotic blankets of alluvium.

OLSSON, RICHARD K., Rutgers Univ., New Brunswick, N.J.

LOGARITHMIC SPIRE IN PLANKTONIC FORAMINIFERIDA: ITS USE IN TAXONOMY, EVOLUTION, AND PALEOECOLOGY

Studies of several species of planktonic Foraminiferida indicate that the spire of the generated coil is an important measure of species. The spire is easily measured and is logarithmic. Test and chamber growth dimensions measured in relation to the spire show that all species thus far studied exhibit nearly perfect geometric growth. Growth measurements taken in this manner allow the growth plan of individuals or assemblages of species to be compared statistically.

Such studies lead to a better understanding of variation within species and of the distinguishing morphologic characteristics of a species. Evolutionary change is better understood by investigating changes in growth dimensions with respect to the logarithmic spire. In paleoecologic studies of species populations, geographic variation can be quantified to yield a more precise analysis of paleoenvironmental parameters.

OXLEY, MARVIN, Bison Oil Co., and DANIEL E. HERLIHY, Consulting Geophysicist, Jackson, Miss.

GEOLOGY AND GEOPHYSICS OF EAST NANCY FIELD, CLARKE COUNTY, MISSISSIPPI

East Nancy field, discovered in April 1968, produces from 2 zones. The upper Smackover reservoir is oolitic limestone. The lower reservoir is a sandstone generally called Norphlet by the industry, but included in the Smackover in this paper.

Accumulation is the result of closure on a low-relief salt anticline. The structure is "buried," exhibiting no reversal on beds above the Cotton Valley. Consequently, shallow subsurface and gravity interpretations offer little aid in delineating the anomaly. East Nancy was first drilled, and apparently condemned, by Southwest Gas Producing Company in 1959, following an extensive conventional seismic program. The discovery well was located on the basis of CDP data, which defined the structure.

PAINE, WILLIAM R., Univ. of Southwestern Louisiana, Lafayette, La.

PETROLOGY AND SEDIMENTATION OF HACKBERRY SEQUENCE OF SOUTHWEST LOUISIANA

Recent discoveries in the Hackberry of southwest Louisiana have created new interest in the high-risk, deep Hackberry section. Petrographic examination of 3 conventional cores and hundreds of sidewall cores, together with previously completed isopach studies, has established that the lower Hackberry sandstones are turbidites. Within the area, the lower Hackberry sandstone interval shows two depositional patterns: an updip north-south channel pattern, and a downdip blanket-type sandstone pattern. Cores in the lower Hackberry show the following graded sequence from bottom to top: (1) a coarse-grained conglomeratic sandstone which grades upward into finer laminated sandstones; (2) crossbedded and convoluted sandstone; (3) siltstone; and (4) finely laminated shale. The sandstone is bimodal and trimodal, commonly containing 30–50% clay matrix. The microfaunal assemblage within the lower Hackberry cyclic sequence indicates depth ranges of 300-3,000 ft (Zones 5, 6).

Because of the turbidite nature of the sediments, production within the channels has been small, except where the channels have encountered salt domes and have been deflected around them. In such channels, the turbidity currents lost velocity, and important sandstone bodies were deposited, reworked, and locally winnowed. In the downdip area where the channels spread out into a blanket pattern, production is controlled by the topographic and structural configuration of the unconformity surface on and around which the turbidity currents deposited sediments.

PAMPE, WILLIAM R., Lamar State College of Technology, Beaumont, Tex.

NEW PLEISTOCENE MARINE FOSSIL LOCALITY IN CHAMBERS COUNTY, TEXAS

A well-preserved marine invertebrate fauna of late Pleistocene age represented by 48 species has been found in Ingleside barrier island, southeastern Texas.