(1) a Pliocene and Miocene nearshore to continental massive sandstone facies; (2) an early Miocene and Oligocene continental-shelf facies of alternating sandstone and shale; and (3) a thick bathyal shale facies of Oligocene age. Oil and gas production in the area is confined almost entirely to sandstone beds in the continental-shelf facies.

South Bosco-Duson-Ridge fields are on a faulted, elongated north-south anticline that trends normal to the regional stratigraphic strike. All faults are normal and are either down-to-the-basin or up-to-the-basin. The down-to-the-basin faults are regional and are parallel with the regional stratigraphic strike. The up-to-the-basin faults are compensating faults confined to the South Bosco-Duson-Ridge complex. The fault throw generally increases with depth. All the faults "die out" upward in the section in or before reaching early Miocene sedimentary rocks.

Strata thicken into the downthrown sides of the faults and thin toward the crest and over the highest parts of the structure. The amounts of thickening or thinning generally increase with depth. Thus, fault movement and anticlinal folding were contemporaneous with sedimentation, continuously from Oligocene into Miocene time, and were most intense during Oligocene time.

The South Bosco-Duson-Ridge structure probably originated from faulting and anticlinal folding on the continental slope during Oligocene time. Structural growth was greatest where the structure was in the unstable environment of the hinge line (or shelf edge). Structural activity continued during the deposition of the neritic sediments of the Oligocene and early Miocene but at a steadily reduced rate. The structure was buried by a great thickness of nearshore and continental massive sandstone beds during Miocene and Pliocene time.

4. EDWARD D. MINIHAN, E. L. Erickson Co., Jackson, Miss., AND MARVIN L. OXLEY, Lone Star Producing Co., Jackson, Miss.

PRE-CRETACEOUS GEOLOGY OF POOL CREEK FIELD, JONES COUNTY, MISSISSIPPI

Commercial production from the Jurassic Cotton Valley and Smackover and pre-Smackover shows at Pool Creek represent a new era in exploration for the state. Thick multiple pays, high production rates, large reserves per well, and better spacing regulations offer oil hunters new incentives for deeper drilling. Knowledge gained from the study of this field will aid materially in the search for other Jurassic prospects.

Pool Creek is an intermediate-type salt dome overlain by a complexly faulted graben. Prior to the discovery of Jurassic production, the Cretaceous geology was well defined and used to help predict the presence of the older and deeper structure. Upper Cotton Valley sandstone beds rest unconformably on an eroded Smackover surface. At Pool Creek, depositional environment, length of erosional period, and time of salt movement are the controlling factors for accumulation.

5. MAX BORNHAUSER, Dillard-Waltermire, Inc., Houston, Tex.

MARINE UNCONFORMITIES IN NORTHWESTERN GULF COAST

The marine unconformities occurring in the northwestern Gulf Coast region are classified into: (1) non-deposition unconformities (parallel unconformities); (2) truncation unconformities (angular unconformities); and (3) excavation unconformities (scour-and-fill unconformities).

This classification is applied to the unconformities already reported in Gulf Coast literature; additional examples of unconformities are described and illustrated from western Madison and central Orange Counties, Texas.

6. HUBERT C. SKINNER, Tulane University, New Orleans, La.

MODERN PALEOECOLOGICAL TECHNIQUES: AN EVALUATION OF ROLE OF PALEOECOLOGY IN GULF COAST EXPLORATION

In recent years there has been a great increase in interest in ecology and paleoecology and in the use of paleoecological data to define ancient environments. This is true especially in the petroleum industry where success in exploration is dependent upon the accurate correlation of strata. During the last 2–3 decades, several hundred papers dealing with this subject have been published, creating a formidable mass of paleoecological literature.

The historical background of paleoecological study is reviewed. The basic principles, the limitations of paleoecology, and some of the common problems are discussed. Because benthonic and planktonic faunas are distinct and separate in nature, a review of modern literature studies involving benthonic faunas is considered first, followed by studies of planktonic faunas. Planktonic/benthonic ratios, paleotemperature indicators, and the relation of live/total ratios to sedimentation rates are discussed and evaluated.

7. B. J. SCULL, C. J. FELIX, S. B. McCALEB, AND W. G. SHAW, Sun Oil Company Research Laboratory, Richardson, Tex.

INTER-DISCIPLINE APPROACH TO PALEOENVIRONMENTAL INTERPRETATIONS

In subsurface studies, unlike surface studies, specific environments of deposition can not be established reliably on the basis of sediment geometry because a sediment pattern can represent several environments. Clues from various disciplines can be integrated to identify regional and local environments—deltaic plain, open shelf, distal bar, longshore bar, lagoon, swamp, littoral zones, *etc.* The accuracy of interpretations is governed by the types of samples available, types of disciplines applied, spacing of control wells, and the experience and imagination of the interpreters. The confidence level ordinarily ranges from 80 to 95% in Tertiary and younger strata but is in few cases more than 85% in older sediments.

Because paleoenvironments resulted from the interaction of climatic, physical, chemical, and biotic factors, each factor must be evaluated in part and in combination. The physical-chemical system is determined from the mineralogy, textures, sedimentary structures, and trace chemical gradients ascertained with petrologic, X-ray mineralogy, and geochemical methods. These methods are applicable to all environments. Palynology utilizes pollen and spores and other plant and animal micro-entities; their acid-resistant nature and abundance permit statistical applications to paleoecologic and stratigraphic problems. Evaluations principally are botanical with an environmental range of terrestrial to open-marine shelf. Fossil faunal assemblages chiefly are marine and contribute information about water depths, salinity values, and turbidity. For each specific environment, one discipline