A large mid-Eocene channel is evident near Yoakum, Texas, from a study of the electrical logs of more than 50 wells. The channel, clearly erosional, is filled largely with silty shale, in sharp contrast to the sandy continental character of the typical Wilcox strata through which it was gouged.

This channel or canyon can be traced for more than 50 miles, from its mouth near the southeast line of Lavaca County updip north-northwesterly to the outcrop of the Wilcox in Bastrop County. At its maximum development, near the town of Yoakum, it has a width of 10 miles and a depth of approximately 3,000 feet.

A completely satisfactory explanation of the origin is difficult. The factors involved must include the following.

1. The presence of a major stream.
2. The great thickening of the Wilcox now known to exist, to as much as 8,000 feet at the outer edge of the former shelf, which placed an unstable mass of sediments adjacent to deep water.
3. Slumps and slides at the mouth of the large stream, triggered by fault movement and extended inland by stoping guided by the stream channel, created turbidity currents powerful enough to cut a gentle gradient to the sea bottom.
4. An abrupt, brief transgression of the sea resulted in rapid filling of the channel and deposition of a blanket of shale over a large area outside the channel. This was followed by a regression during which the extraordinarily thick and extensive sands of the Carrizo were deposited. These clean massive sands of the uppermost Wilcox entirely obliterated any evidence of the great channel below.

13. Textural Differences Between Two Types of Shoestring Sands, John J. W. Rogers and Cyrus Strong, Department of Geology, The Rice Institute, Houston, Texas.

Exploitation of oil and gas accumulations in "shoestring sands" can be aided materially by determining, with samples from even a single well, whether a sand stringer is an offshore bar deposit with a linear shape and lying parallel with the depositional trend, or whether it is a river deposit cutting across the depositional trend and having a sinuous shape. The present research has disclosed textural criteria applicable to well samples which serve to differentiate these two types of "shoestring sands."

Samples taken from rivers and from beaches along the Texas Gulf Coast indicate clear textural differences between the two environments. Compared with river sands, beach sands show an extremely restricted range of mean sizes and sorting coefficients. Furthermore, river sands with sorting coefficients equal to those of beach sands are invariably coarser than beach sands, whereas river sands of the same mean size as beach sands are more poorly sorted. Consequently, plots of mean size versus sorting yield a clear distinction between the two types of sediment.

The foregoing information has been obtained by sieve analyses of unconsolidated sediments. Mean sizes and sorting coefficients of sandstones, however, can be approximated readily by grain counts in thin sections. In 15 minutes, or less, sufficient grains can be counted in section to enable the geologist to differentiate the typical beach and river sands studied in the present work.

14. Influence of Jackson Dome on Sedimentary Facies and Effect on Water-Bearing Properties of Claiborne in Jackson Area, Mississippi, Joseph W. Lang, U. S. Geological Survey, Jackson, Mississippi.

This paper summarizes the importance of diastrophic uplift of the Jackson dome, which occurred during pre-Tertiary time and may have continued more or less active in the middle Eocene, and its influence on the sedimentary cycles in the Claiborne. The uplifting together with compaction of underlying sediments in the rim-syncline area affected the thickness, character, and attitude of the formations and established controls on the occurrence and quality of the ground waters.

Isopachous maps and stratigraphic sections are presented to show the thicknesses of the Sparta sand and Cockfield formation on and around the dome; they indicate facies and thickness distribution of the sediments in these and several other units, and the size of the structure. Local concentration of lignitic material in the aquifers causes various degrees of straw-colored water affecting its usefulness for certain specific purposes. The pertinent stratigraphic units and the two principal aquifers are described.

15. Analysis of Factors Affecting Quantitative Estimates of Organism Abundance, Louis S. Kornicker, Institute of Marine Science, The University of Texas.

Analyses of the distribution of dead organisms in recent sediments is strongly influenced by the method used to establish and report abundance counts. Comparison of abundance counts from recent and ancient strata are affected by the composition of the sediment, its history, and the type of sample upon which counts are based.

Examination of the physical relation between weight and volume sediment samples, and comparison of estimates of organism abundance obtained from equal-volume and equal-weight samples of recent sediment, show that kinds of minerals forming the sediment have little effect on abundance distribution patterns determined by counting the number of specimens in samples of a given weight

or volume, and that variation in sediment porosity probably is the major factor responsible for differences between organism counts based on equal-weight samples and those based on equal-volume samples.

Consideration of the diagenetic processes of compaction and cementation that affect organism abundance shows that, for sediments which have not been materially changed by processes like interstratal solution, replacement, and recrystallization, abundance counts from recent and ancient sediments are more comparable if clays and shales are reported on the basis of equal-weight samples, and unlithified and lithified sands are reported on the basis of equal-volume samples.

16. Biostratigraphic and Paleologic Study of Midway Foraminifera along Tehuacana Creek, Limestone County, Texas, Gene Ross Kellough, University of Houston, Houston, Texas.

The Midway group of Texas, a predominantly shale, sandy shale, and sandy limestone section of Paleocene age, was deposited in an open sea whose depth fluctuated between very shallow and deep. This concept is based on a study of samples from Tehuacana Creek, Limestone County, in east-central Texas. The interval sampled extends upward for 278 feet from the Cretaceous-Paleocene contact. Lithologic examination revealed a complete cycle of deposition, with a basal glauconitic sand overlain successively by sandy shale, sandy limestone or calcareous sandstone, glauconitic sand, and shale.

The foraminiferal content indicates that the very lowest beds of the Midway (Littig member of Kincaid formation) are marine, not littoral, probably mid-neritic to outer neritic. Seemingly the unconformity between this section and the Cretaceous developed without the latter being exposed subaerially. Biostratigraphic and paleoecologic interpretation demonstrates that the shales and sandy shales of the lower part of the succeeding Pisgah member were deposited in water deeper than 200 meters. As the water became more shallow, sands and calcareous muds interbedded with sands of the upper Pisgah and Tehuacana member were deposited. This shallow-water environment favored an abundant growth of a few species of Foraminifera. The Mexia member (lower unit of Wills Point formation) represents a gradual return to a deeper-water environment characterized initially by a glauconitic sand followed by glauconitic muds and a rich fauna of both deep and shallow-water species. The dark pyritic muds of the upper part of the Mexia member were deposited in deep water (more than 200 meters). The fauna was rich in variety of genera and species of Foraminifera but poor in number of individuals.

The Midway group of Texas (Danian) has been included in the *Globigerina compressa-daubjergensis* zone by Loeblich and Tappan. An analysis of the distribution of Foraminifera showed that 4 zonules can be established at this locality. They are, from the base upward:

4. *Marginulina tuberculata* (Plummer) zonule
3. *Polymorphina cushmani* Plummer zonule
2. *Discorbis newmanae* Plummer zonule
1. *Alabamina midwayensis* Brotzen *limbata* (Plummer) zonule.

17. New Log Interpretation Techniques for Gulf Coast, R. P. Burton, Schlumberger Well Surveying Corporation, Houston, Texas.

The fact that porosity can be measured accurately with the sonic log has prompted new procedures for estimating saturation, wherein data concerning the various permeable beds in a given well are compared.

1. In one approach a comparison is made of the values of the formation water resistivity computed from the resistivity log and from the sonic log. Actually, apparent formation water resistivities are calculated in assuming that all sands are wet. With the concept of continuity, this procedure makes possible a quick determination of zones of saturation in shaly sand and in cases where there are appreciable variations in formation water salinity with depth.

2. It has been found also that comparison of the apparent formation factor obtained from the sonic log with that computed from a short investigation resistivity log may reveal in many cases the presence of residual oil or gas and thus detect potentially productive formations. This procedure is valuable when true formation resistivity and the resistivity of the formation water are in doubt.

Although these two procedures permit only a qualitative interpretation of the log, they have the advantage of speed and simplicity. The quantitative interpretation that remains to be done can be performed very quickly since all the non-productive formations have been eliminated by the foregoing procedures. The first procedure is best adapted to formations of high porosity and in fresh mud. The second procedure works best in formations of low porosity and with little contrast between the mud and formation water resistivities. Examples illustrate the application of these two techniques in the Miocene, Frio, and Wilcox sections of the Gulf Coast.

18. Geology and Petroleum Development of Continental Shelf of Gulf of Mexico, Gordon I. Atwater, Atwater, Cowan and Associates, New Orleans, Louisiana.

The stratigraphic and structural framework of the Gulf of Mexico is described, with particular