ABSTRACTS

1. "Geosynclinal Sedimentation in Central Gulf Region of United States," Grover E. Murray, Louisiana State University, Baton Rouge, Louisiana.

More than 30,000 feet of Mesozoic and Cenozoic sediments are present in the central Gulf region of southern United States. They constitute a great sedimentary complex (Gulf Coast geosyncline) composed of marine and deltaic deposits. The deltaic sediments occur as overlapping ladle-shaped and irregularly lenticular masses with areas of maximum accumulation (depocenters) in general parallel with the coast line. Individual deltaic masses coalesce to form elongate, geosynclinal deltaic complexes. Thin marine strata are present between the deltaic depocenters; thick marine sediments occur on the seaward edges of the deltaic masses. Landward, currently updip, both the marine and deltaic units are replaced by marginal and fluviatile deposits; seaward, the marine facies are deeper-water and the deltaic facies are more marine.

Three major depositional stages are represented: a lower, marginal-deltaic stage; a middle, marine stage; and an upper, marginal deltaic stage. These primary stages coincide with major fluctuations of sea-level. Minor depositional stages and sea-level fluctuations complicate the sedimentary history of the area.

Axes of maximum deposition shifted from time to time in position and alignment and progressed generally in a seaward direction. Major interruptions of the seaward progression occurred in the Cretaceous and Tertiary. The geographic positions and stratigraphic thicknesses of these depositional axes are shown on maps and cross sections.

The stratigraphic and sedimentary history of the area, along with Recent geologic events, indicate that subsidence has been a major factor in creating a linear, arcuate geosyncline in the Gulf Coastal Plain of the United States.

2. "Control of Petroleum Accumulation by Sedimentary Facies in South Louisiana," Max Bornhauser, Continental Oil Company, Houston, Texas.

This paper, with the aid of electric logs and cross sections, presents some new ideas concerning the effects of sedimentary facies upon the accumulation of oil in south-central Louisiana. It covers the section from the Wilcox to the Cockfield.

3. "Structure of South Louisiana Deep-Seated Domes," W. E. Wallace, Sohio Petroleum Company, Lafayette, Louisiana.

This paper is a continuation and re-examination of a paper of the same title published in the *Bulletin* in September, 1944. Structure maps and cross sections of several heretofore unpublished fields are included, with a discussion of later trends of thought about the nature of deep-seated domes.

4. "New Method of Local and Regional Correlation, Using Resistivity Value from Electrical Logs," A. Claudet, Schlumberger Well Surveying Corporation, New Orleans, Louisiana.

A method is presented of correlating electrical logs of specific sub-strata penetrated by the drill over very short or very long distances by the use of exact resistivity values of the shales.

Cross sections showing the subsurface correlation derived from electrical logs recorded on wells spaced over large distances in Mississippi and Louisiana illustrate the resistivity changes in shales which occur with changes in locations or geological age.

These clay or shale resistivity gradients may be extrapolated for distances of about 50 miles so that correlations may be anticipated at the new locations. This method of using the exact values of the shale resistivities provides an important tool for subsurface correlation by means of the electrical log. The silhouette of the curves of the electrical logs opposite sand sections has been used for many years for correlation.

The method discussed gives invaluable added factors which will help in eliminating uncertainties in subsurface correlation. It will also help in a general study of sedimentary cycles and local structures.

5. "Interior Salt Domes of East Texas," G. C. Clark, Stanolind Oil and Gas Company, Tyler, Texas.

(From report prepared by L. S. Melzer and G. C. Clark)

In the East Texas district, 27 salt domes have been definitely identified. Of this number, 10 are classed as deep-seated and 17 as piercement. Two of the piercement domes, Boggy Creek and Kittrell, are found to be productive from the Woodbine and the lower Claiborne respectively. Seven deep-seated domes are found to be productive from formations varying in age from Comanche to Nacatoch. All domes, both deep-seated and piercement, are reflected as gravity minima, with the exception of Marquez and Kittrell which are shown by gravity surveys as maxima.

All piercement domes in the East Texas district grew from the deepest part of local synclines and all are situated within the regional province known as the Tyler basin. The Upper Cretaceous beds are found to thicken and dip steeply away from the salt core, indicating structural movement both during and after deposition. Thinning of Upper Cretaceous sediments over the deeper-seated domes where the evidence has not been obliterated confirms this structural growth. The basin position of these domes and the time of origin indicates that the Lower Cretaceous sediments dip toward the domes.

Deep-seated domes are found to have many of the aspects of anticlinal structures. These domes began their growth much earlier than piercement domes and are located, and have always been located, on locally high areas. Thinning of Lower Cretaceous sediments furnishes evidence for their early origin, and uniform thinning of Upper Cretaceous beds suggests that these domes grew uniformly throughout Upper Cretaceous and Tertiary time and were never subjected to the violent displacements which affected their neighbors, the piercement domes. These structures are ideal reservoir anomalies and seven out of ten are now producing, with the possibility that some of the others will produce with subsequent development.

6. "Merigale-Paul Field, Wood County, Texas," Hastings Moore, Danciger Oil and Refining Company, Henderson, Texas. Prior to 1947, this field was classified as two separate fields—Merigale and Norman-Paul fields.

The Merigale-Paul field in central Wood County is the most important sub-Clarksville (upper Eagle Ford) reserve now known.

The Merigale-Paul field was discovered in December, 1944, by Bobby Manziel. As of July 1, 1949, the field had produced 3,269,813 barrels from 160 sub-Clarksville wells and 64,790 barrels from the single Woodbine producer.

The oil column is 235 feet; maximum net effective sand thickness is 38 feet, with the average about 16 feet.

Reservoir energy is gas expansion plus a probable limited water drive.

Structurally the Merigale-Paul field is a faulted monocline dipping southeastward, 550 feet to the mile. The trapping fault is a low-angle continental fault (average dip 32°), which parallels very closely the strike of the strata.

The eastern end of the field is at the intersection of the water table with the fault zone, and the western end is at the facies change of the sub-Clarksville sands into ash beds.

7. "Blackfoot Field, Anderson County, Texas," D. O. Branson, Stanolind Oil and Gas Company, Tyler, Texas.

This paper presents a review of the structure, stratigraphy, and history of the Blackfoot field, Anderson County, Texas.

The Blackfoot producing structure is a relatively small, faulted, elongate, domal, closure situated on an anticlinal trend which extends from northeastern Freestone County through west-central Anderson County into southeastern Henderson County and is known as the Blackfoot-Bradford Tennessee Colony trend.

Productive formations include the Rodessa and Pettit limestones, and the Travis Peak sands of the Trinity group. The productive limits are not defined since the field is only partly developed.

Faulting, although present at Blackfoot, is thought to be of minor significance and known faulting does not effect the local accumulation of gas and oil. Control furnished by development wells shows a typical graben fault pattern; however, the exceptional feature in Blackfoot is the termination of both faults at the point of intersection.

8. "Petroleum Exploration in Eastern Arkansas," C. A. Renfroe, Arkansas Resources and Development Commission, Division of Geology, Little Rock, Arkansas.

The area with which this paper is concerned lies in the Gulf Coastal Plain in Arkansas north of the Arkansas River. The following conclusions are based on a study of the available samples and electric logs.

Tertiary rocks are for the most part non-marine in origin. Some of the beds in the Jackson and Claiborne groups may be thin tongues of either marine, deltaic, lagoonal, or estuarine deposits. The Wilcox group is predominantly thick, coarse-grained sandstones which are ordinarily water-bearing. The Midway group consists of two formations: the Porters Creek clay and the Clayton. None of the Tertiary rocks is considered promising as a potential oil reservoir.

In the Cretaceous two formations offer possibilities for oil and gas: the Nacatoch sandstone and a basal transgressive sandstone, probably Ozan in age overlying the Paleozoic floor. The Nacatoch is of sufficient thickness and porosity to serve as a reservoir bed. However, local variations in porosity or in the sand-shale ratio should be expected. The basal sand is coarse- to medium-grained, commonly pyritic and glauconitic. Electric logs show a well developed self-potential curve in this unit. If found on structure or as a wedge-edge pinch-out, this basal sand has good possibilities as a future oil source.

Paleozoic rocks, ranging in age from Pennsylvanian to Cambro-Ordovician, are present below the Cretaceous. A paleogeographic map of the pre-Cretaceous surface shows that older Paleozoic