formations (Plattin, *et cetera*) are found as far south as Cross and Crittenden counties. This indicates a marked change in strike of the truncated older rocks. With sufficient cover these older beds may be excellent oil traps. The St. Peter sandstone is considered a particularly good possibility.

There is also a possibility that oil traps may be associated with intrusive igneous bodies similar to the nepheline syenite plugs near Little Rock.

9. "Surface and Subsurface Correlation of Wilcox Formation in West-Central Louisiana," D. A. Robertson, C. M. Schwartz, and A. H. Trowbridge. (Work completed as students of Centenary College, Shreveport, Louisiana).

Surface samples of the Wilcox and Midway formations were collected and examined for lithologic characteristics and faunal content. These formations exhibit a cyclic pattern of deposition. Fossils are rare.

The surface equivalents were examined in the subsurface and it was noted that the cyclic pattern exhibited in the outcropping formations extended with marked regularity into the subsurface.

Microfossils and macrofossils were examined from cuttings and a number of these were used along with the cyclic pattern, to correlate the surface formations with their equivalents in the subsurface.

10. "Cairo Field, Union County, Arkansas," L. A. Goebels, The Carter Oil Company, Shreveport, Louisiana.

The Cairo field was liscovered in July, 1948. Production is from the Reynolds oölite member of the Smackover limestone of Jurassic age. The field is almost completely developed with 15 producing oil wells and 3 dry holes. The reservoir does not have a gas cap. The structure of the field is essentially an anticline trending northeast-southwest and oddly enough at right angles to the Schuler structure. There are no indications of faulting. The Cairo field is unique in several features. 1. Although regionally updip from the Schuler field, its apex is almost 100 feet lower than that of Schuler. Wells on the west flank of Cairo produce oil 180 feet below the oil-water contact at Schuler. 2. It is the first field in South Arkansas to show definite south limits of the Buckner red shale and anhydrite section. 3. Each producing well has a different oil-water contact. Evidence can be shown to support the theory that the various oil-water contacts are part of a tilted surface rather than the result of different zones of porosity. 4. Wells on the east side of the field where the oil-water contact is high recover oil-saturated porous limestone in cores but on drill-stem tests recover salt water. The subsea depth of 7,540 feet appears to have been the original oil-water contact. Factors which might have affected the original oil-water contact are discussed.

High recoveries with the diamond core-barrel and a complete analysis of all cores made possible a detailed study of the lithologic character of the oölitic limestone. Oölite zones vary laterally and vertically and it is difficult to correlate them from one well to another. The highly porous, loosely cemented oölite zones are best developed in the central and south portions of the field. The transition from clastic to chemical deposition is evident in the top of the Smackover on the north flank of the structure. There is no evidence to suggest that the structure is of reef origin.

11. "Facies Changes in Gulf Cretaceous Beds in Mississippi," Tom McGlothlin, consultant, Laurel, Mississippi.

It has long been recognized that facies changes occur within Gulf Cretaceous beds in Mississippi. Sands which are marginal or near-shore deposits grade to dark gray shales which are considered deeper-water deposits. Red "non-marine" type shales grade to dark gray "marine" shales.

In tracing the various stratigraphic units across the state, it becomes apparent that the base of the Gulf Cretaceous chalk is not a true time line. Neither is the top of "the Marine Tuscaloosa shale."

By noting the general direction of the facies changes in Gulf Cretaceous beds, it is possible to establish in general the direction of the depositional strike and thus arrive at an estimate of the general direction of the shore line of the Gulf Cretaceous seas.

12. "Brookhaven Field, Lincoln County, Mississippi,"[1] Robert Womack, Jr.,[2] The California Company, New Orleans, Louisiana.

The Brookhaven oil field, located in Lincoln County, Mississippi, was discovered in 1943. A period of inactivity followed, due to poor results of the discovery well. In 1945 the second producer was completed which led to the development of the field. The Brookhaven structure is anticlinal and is probably due to deep-seated salt movement. The structure is crossed by three normal faults which

[1] Presented by permission of The California Company.

[2] The writer wishes to express his appreciation to the Brookhaven Unit Operators for permission to present the structure and isopachous maps of the lower Tuscaloosa formation and to give full credit for the preparation of these maps to the Brookhaven Geological Committee.

form a central graben area. Production is obtained at an average depth of 10,135 to 10,545 feet from the Tuscaloosa formation of Upper Cretaceous age. Accumulation is controlled by structure and the lenticularity of the producing sands. The faulting present does not affect the accumulation.

After the slow start the field was developed rapidly due to early expiration of the leases. It was noted during the early production history that the reservoir pressures were declining rapidly. This led to a study of the reservoir conditions that resulted in a voluntary unitization agreement among the various operators and royalty owners for a pressure maintenance program to prolong the life of the field and to increase the ultimate recovery.

13. "LaGrange Oil Field, Adams County, Mississippi," M. W. Sherwin, Sohio Petroleum Company, Houston, Texas.

The LaGrange field, Adams County, Mississippi, is the largest field producing from the Wilcox in Mississippi. Originally a Tuscaloosa field opener in February, 1946, the discovery well was plugged back and recompleted as a Wilcox producer in August of the same year. Production is being recovered from several sands of the middle Wilcox at a depth of approximately 6,200 feet. In its short life, the field has been extended to encompass 3,000 acres. As of January 1, 1949, it had 99 producing wells (including 19 twins) and had a cumulative production of more than 3 million barrels. Daily runs are in excess of 11,000 barrels. With the field still not completely defined, eventual production is estimated in excess of 15 million barrels.

The field is located on the flank of the Mississippi basin. The local structure is an elongate west of south-trending anticlinal nose. Although closure is developed on a series of nodes along the axis of the fold, reservoir traps are, in good part, controlled by stratigraphic conditions. Discovery of the field resulted from combination of geophysical and subsurface information.

14. "Occurrence of the Genus *Choffatella* in Wells in South Florida and at Other Localities,"[1] Louise Jordan, Sun Oil Company, Tallahassee, Florida, and Esther R. Applin, U. S. Geological Survey, Tallahassee, Florida.

The paper discusses the occurrence of the genus *Choffatella* in deep wells in south Florida and at other localities in the Atlantic and Gulf Coastal Plain of the United States. The limited stratigraphic range of the genus and its value for correlation are mentioned and a few diagnostic structural features are illustrated with plate figures. The ecology of *Choffatella* is suggested, and occurrences in other portions of the western hemisphere are listed.

15. "Drilling Difficulties in the North Florida-South Georgia Area," Donald J. Munroe, Sun Oil Company, Tallahassee, Florida.

16. "Stratigraphic, Structural, and Correlation Studies of Florida Tertiary,"[2] Robert O. Vernon, Florida Geological Survey, Tallahassee, Florida.

The completion of field work in Citrus and Levy counties, Florida, has made it possible to redefine the "Ocala limestone" and restrict the term to the upper Jackson upper Eocene; to erect a new formation containing two members that compose the lower Jackson group; and to provide exact horizons in the Jackson on which structural maps can be accurately drawn. These shallow beds are usually reached by water wells and are readily accessible for exploratory drilling. The beds are probably the most distinctive in Florida and are divisible both lithologically and paleontologically.

A distinct unconformity is present at the base of the Jackson group in the area and is recognized by gravel beds in the base of the Jackson and by overlap of eroded middle Eocene limestone.

The division and correlation of the Jackson group have been recognized in approximately 600 wells and a structural map has been constructed, drawn on the top of the lower member of the lower Jackson group. Three well developed shear zones have been recognized. These faults have been dated as probably pre-Miocene, post-Oligocene and isopachs of the Miocene indicate filling of grabens and overlaps of areas standing high during the Miocene. The Hawthorn formation of lower Miocene age appears to be equivalent to the phosphate fixation period during which time the hard rock phosphate of Florida was formed—the Hawthorn is thus correlated with beds included in the Alachua formation, formerly thought to be Pliocene.

17. "Preliminary Report on Buried Pre-Mesozoic Rocks in Florida and Adjacent States,"[3] Paul L. Applin, U. S. Geological Survey, Tallahassee Florida.

In the southeastern Coastal Plain, information is available on 60 widely scattered oil test wells that have been drilled through the Cenozoic and Mesozoic deposits into older rocks representing a wide variety of types.

In Florida and Georgia these buried pre-Mesozoic rocks fall in three general classifications which are:

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[2] Published by permission of the Florida Geological Survey.
[3] Published by permission of the director of the U. S. Geological Survey.