and are as of persistent a character as many other sedimentary deposits. Depositions of these beds occurred in large bodies of water in an environment where evaporation exceeded precipitation and where the temperature and other climatic factors were so controlling that they impressed upon the beds special traits which have continued through subsequent geologic time, and a study of these depositions, therefore, enables us to deduce the paleogeography and paleo-climate by applying physical and chemical tests to the sediments.

The primary purpose of this paper, therefore, is to show the combined use of physics, chemistry, and geology in the understanding of a particular environment, and to stimulate the geologist to the utilization of other scientific data to the better understanding of sedimentary processes. The paper begins with a discussion of the warming of a body of water by solar energy, and the change in evaporation with increase in salinity up to the point where water has been saturated as to one or more compounds, and then the order in which precipitation takes place as to different minerals. Actual sediments containing these precipitates are then discussed in order to show the time involved in their formation and the physiography and climate of the basin in which they were formed. The changes which take place in these sediments after burial and particularly the ones immediately following deposition, are discussed.

The paper does not go into any detailed sections in any particular salt series, except what may be necessary to demonstrate some particular points, but from the general principles of this type of sedimentation it is believed that geologists, working in areas where there are sediments of this kind, will understand better the particular areas where they are making correlations by subdividing the sediments of this class.

10. SUBSURFACE CORRELATIONS OF EAST TEXAS, NORTH LOUISIANA, SOUTH ARKANSAS, AND MISSISSIPPI, Roy T. Hazzard, Gulf Refinining Company, Shreveport, Louisiana.

A series of cross sections is presented, correlating the Cretaceous beds of East Texas through North Louisiana and South Arkansas, into Mississippi.

11. MESOZOIC IGNEOUS ROCKS OF THE NORTHERN GULF COASTAL PLAIN, C. L. Moody, The Ohio Oil Company, Shreveport, Louisiana.

Study of the outcrop areas of igneous intrusions in the Texas, Arkansas, and Georgia portions of the Gulf Coastal Plain furnishes clues which simplify interpretation of igneous rocks found in deep well samples in the Mississippi Embayment. Many of the known centers of later Mesozoic igneous activity, both outcropping and buried, are apparently the sites of ancient volcanoes which furnished to the depositional basins significant amounts of pyroclastic debris now in part preserved in the early and middle Gulf Cretaceous strata. Dikes transect the oldest known sedimentary rocks in the vicinity of the eruptive centers. The oldest igneous rocks of the Coastal Plain may bear a Triassic date; the youngest were emplaced in late Austin or early Taylor time.

11. GEOLOGY OF WEST TEPETATE OIL FIELD, JEFFERSON DAVIS PARISH, LOUISIANA, Fred W. Bates and Jay B. Wharton, consulting geologists, Lafayette, Louisiana.

The West Tepetate oil field, located in the Louisiana Gulf Coast area, was discovered by the Barnsdall Oil Company and Vincent and Welch in 1944. The presence of the structure was first suggested in 1930 by torsion balance exploration conducted by Vincent and Welch and was subsequently disclosed by various seismograph surveys during 1941 to 1944. The producing section lies below the *Heterostegina* zone in the Middle Miocene, and consists of nine oil- and gas-bearing sands ranging from 7,600 to 9,500 feet in depth. The structure is a gentle, irregularly elongate dome, believed to have been produced by the deep-seated intrusion of salt, though none has been encountered to date. There is about one hundred feet of effective closure at the producing levels. Only one fault has been

proved, though a major regional fault, downthrown on the south, is indicated by seismograph north of the field, probably being a westward extension of the similarly bounding fault in the Tepetate field. The productive limits thus far established enclose 1,400 acres, offering a reserve of 30–40 million barrels of liquid hydrocarbons.

12. THE DELHI, WEST DELHI AND BIG CREEK FIELDS, A. M. Lloyd and R. B. Totten, Sun Oil Company, Dallas, Texas, and Monroe, Louisiana.

The Delhi, West Delhi, and Big Creek fields are in northeastern Louisiana in parts of Richland, Madison, and Franklin parishes.

Production is from Tuscaloosa in Upper Cretaceous and Paluxy in Lower Cretaceous. Sands within a common reservoir constitute the most prolific producing zone. These sands consist of a basal Tuscaloosa sand and various underlying Lower Cretaceous sands in contact at the unconformity. Other producing sands in the Tuscaloosa are lenses in the marine Tuscaloosa above the basal sand. The Big Creek field produces from several lenticular sand members in the marine Tuscaloosa with the basal sand having been overlapped and not being present.

As of July 1, 1946, 236 wells had been drilled in the Delhi, West Delhi, and Big Creek fields, of which 197 were oil-producing, four gas, and 35 were dry and abandoned. The present productive area approximates 7,000 acres. The fields are in stages of development and the ultimate productive area is as yet unknown. The estimate of total recovery is in excess of 200,000,000 barrels of oil at the present stages of development.

The Delhi field was drilled on a seismic structure but subsequently it was found that the accumulation of the oil was due to a stratigraphic trap with structure playing but a small part. The discovery well primarily was located on the theory of a Tuscaloosa pinchout; the small seismic structure was of secondary importance only.

13. GEOLOGY OF THE GILBERTOWN FIELD, CHOCTAW COUNTY, ALABAMA, A. M. Current, The Carter Oil Company, Jackson, Mississippi.

Production in the Gilbertown field is controlled by faulting. The faults, with their relation to production in both the Selma chalk and the Eutaw formations, are discussed. Possibilities of additional chalk production, as well as Tuscaloosa production, are discussed.

14. THE TINSLEY FIELD, F. R. Shroeder and J. B. Storey, Union Producing Company, Shreveport, Louisiana, and Jackson, Mississippi.

The Tinsley field, located in Yazoo County, Mississippi, was discovered in the latter part of 1939. The structure is a faulted anticline and the structural features are displayed by structure maps, isopach maps and geological cross sections. The stratigraphy, reservoir conditions and other available data are summarized.

15. THE CRANFIELD FIELD, ADAMS AND FRANKLIN COUNTIES, MISSISSIPPI, George Zebal, The California Company, Natchez, Mississippi.

The Cranfield field, 16 miles east of Natchez, Mississippi, was discovered in October, 1943, by the California Company's National Gasoline Company of Louisiana No. 1. Though completed as a Wilcox "5,800-foot zone" oil well, gas-distillate sands were tested in the Tuscaloosa Basal sand horizon. The deep Ella G. Lees well No. 9 was completed in June, 1946, as a dry gas producer in the Paluxy formation.

The Basal Sand zone, by July, 1946, had produced approximately 4,250,000 barrels of oil. Total production from the Wilcox zone had been approximately 570,000 barrels.

Deepest penetration into the Cranfield structure encountered the Comanche Paluxy formation, Trinity group, and Washita-Fredericksburg unit. The Gulf series includes the