

slopes and dips are functions of sediment load. In general, the greater slopes and dips are toward localities of greater loads of sediments within the basin. The conclusion is that, at comparable locations with reference to the shore, the pre-Trinity deposits in South Texas are thicker than in East Texas, Louisiana, and Arkansas.

Some criteria are suggested for locating the Jurassic shore line. Importance for possible oil and gas production along the continental shore, and the shores of peninsulas and islands, is stressed. Probability of the presence of undiscovered salt domes in South Texas is pointed out.

26. JAMES L. TATUM, Plymouth Oil Company, Sinton, Texas
JARVIS GARST, Plymouth Oil Company, Sinton, Texas
Plymouth Field, San Patricio County, Texas

The Plymouth oil field is located in northeastern San Patricio County, Texas, in the Coastal Bend province of the Gulf Coastal Plain. The discovery well was completed in April, 1935, in the Plymouth or 5,500-foot sand. Reflection seismograph led to the discovery. One hundred eighty-eight wells have been completed as of January 1, 1942. The field has a proved area of 3,000 surface acres and has produced 21,631,000 barrels of oil to January 1, 1942.

The field is located on strike with the most prolific lower Catahoula (Frio) sand fields of the Coastal Bend province. The sand conditions are excellent along this strike and reach their maximum thickness a short distance downdip from the Plymouth field. The structure is an elongate flat dome of moderately low relief. The maximum proved closure is approximately 100 feet. The dome is bounded on the southwest flank by a graben. The structural uplift is probably caused by a deep, buried salt core. The dome becomes more pronounced and steeper with depth; on the Greta sand there is only a broad nosing, on the 5,600-foot sand there is a broad flat dome, but on the 6,100-foot sand there is a very pronounced doming with steeper dips. There is good evidence of at least one erosional unconformity.

There are four producing oil sands: (1) Plymouth sand, 5,500 feet; (2) Heep sand, 5,600 feet; (3) Magnolia sand, 5,800 feet; (4) 6,100-foot sand. Of these, the Heep is the most important oil reservoir.

27. CHARLES E. DECKER, University of Oklahoma, Norman, Oklahoma
A Silurian Graptolite Zone in Crane County, Texas

In June, 1941, William Hilsweck of the Gulf Oil Corporation of Fort Worth, Texas, sent the writer a piece of core from a well taken at a depth of 9,340 feet in Crane County, Texas. While he did not determine the species, he correctly concluded that the graptolites on the core proved the presence of a Silurian zone for one which had commonly been called Devonian. A few fragments of graptolites occur on the surface of the core, but they have sufficiently diagnostic characteristics to identify the species. The stratigraphic conditions are noted, and the species is illustrated and described. Also, it is compared with specimens of the same species which were sent to the writer from the Chicago region by Alfred and Helen Loeblich.

28. F. R. DENTON, Consulting Geologist, Tyler, Texas
R. M. TROWBRIDGE, Consulting Geologist, Tyler, Texas
Developments in East Texas during 1941

The marked increase in exploratory tests in East Texas during 1941 resulted in the discovery of three oil fields. Two of these fields are producing from the Woodbine formation and one from the Rodessa zone of the lower Glen Rose formation.

In the Hawkins field, which was the major 1940 discovery, a rapid development program took place and 243 oil wells, 3 gas wells, and 8 dry holes were drilled.

The number of completions in other proved fields exceeded that of 1940.

29. O. L. BRACE, Consulting Geologist, Houston, Texas
Review of Developments in 1941, Gulf Coast of Upper Texas and Louisiana

More refined methods of oil exploration have resulted in a slight increase in the discovery rate on the Texas Gulf Coast for 1941 but the generally second-grade type of individual pool that has resulted from exploratory activity during the past few years still characterizes the discovery column. Coastal Louisiana has had a successful year, with 17 new productive areas but there is no one of these that seems at this time to compare with some of the outstanding discoveries of recent years.

Activity along the Eocene Wilcox trend has been rather successful in Texas for

1941 but has failed to result in a new discovery in Louisiana. Louisiana, however, has made impressive additions to the reserves of previously discovered fields by extension and through the opening of new producing sands.

30. R. E. BAXTER, Colorado School of Mines, Golden, Colorado
HARRY A. AURAND, Consulting Geologist, Denver, Colorado
Oil Shales of the Rocky Mountain Area

Great areas of oil shale occur in the Rocky Mountain area. These shales, when subjected to destructive distillation, yield oil in varying quantities. Relatively little is known about the retorting of the shales on a commercial scale, the methods or costs of mining, or the probable value and expense of disposing of the spent shale.

The main value of the oil derived from the retorting of the shales apparently lies in the special products such as high grade lubricating oils and medicinal materials such as ichthyol.

31. V. F. PARRY, U. S. Bureau of Mines, Golden, Colorado
Coals of the Rocky Mountain and Great Plains Region with Special Reference to Their Value for Hydrogenation

The author discusses occurrence, reserves, and properties of western coals, and reviews the present status of hydrogenation of these fuels. Six lantern slides are used to present the data.

32. SIMON W. MULLER, Stanford University, Palo Alto, California
HUBERT G. SCHENCK, Stanford University, Palo Alto, California
Standard of Cretaceous System

A preliminary report on this subject was read before the Pacific Section of the Association on October 16, 1941. The present paper incorporates slight revisions based on suggestions from several colleagues, notably John B. Reeside, Jr., and his associates, Gayle Scott and Hans E. Thalmann.

The standard of the Cretaceous system represents a composite time-rock column—a total or complete sequence of strata between the Jurassic and the Cenozoic. This standard has been built up by fitting together continuous sections which are especially well exposed in several areas in Europe. The system is subdivided into Series, Stages and Zones. These divisions are based on paleontologic evidence, with no regard being paid to thicknesses of strata and their lithologic character. Particular attention is drawn to the early work of d'Orbigny in setting up the Stages, and a detailed analysis of a representative Cretaceous Zone is presented to clarify the meaning of the term zone. The study of the boundaries between the underlying Jurassic and the overlying Cenozoic leads to the conclusion that the lowest Cretaceous stage is the Berriasian and the highest is the Danian.

33. WAYNE LOEL, Consulting Geologist, Los Angeles, California
Sediments and Tectonics of the Upper Santa Clara River Drainage Area, California

The area is separated by the San Gabriel fault into two separate provinces. The Tertiary sediments of the Eastern province, or extreme upper portion of the Santa Clara drainage system, are principally of terrestrial origin, while those lying westerly from the San Gabriel fault are almost entirely marine. Sedimentation in both provinces was concurrent during most of Tertiary time. The paper consists of a paleogeographic analysis of the area.

34. JAMES R. DORRANCE, The Texas Company, Bakersfield, California
California Exploration and Development in 1941

California's decline in discovery rate was sharply checked in 1941. Thirteen new areas of production were officially acknowledged. Eight are definitely established as fields, this figure including one new gas field. The status of the remaining five remains unsettled either by virtue of their imperfect state of development, or because subsequent drilling may prove them extensions of old fields. In addition, there were discovered three significant extensions to old fields, and a deep zone in one of the new fields of this year.

Increase in discovery rate was associated with increased exploratory effort as indexed by wildcat drilling, geophysical activity, and geological employment.

Although numerically impressive, the addition to reserves by 1941 discoveries was disappointing, amounting to a tenth or less than the year's production. Nevertheless,