

maps indicate the extent of sands, their depositional position, and the development of the shale wedge.

In Orange and Jefferson counties the Frio (Oligocene) formation is divisible into three lithologic units: an upper unit consisting primarily of sands; a middle unit of marine shale; and a lower unit consisting of sands and shale. Isopach maps reveal the location of ancient offshore bars and re-entrant basins and also show local thinning of beds in areas of structural uplift. The variation in stratigraphic position of certain foraminiferal associations is believed to be due to ecological changes and to the marine progressive overlap.

3. Salt-Dome Configuration, Marcus A. Hanna, Gulf Oil Corporation, Houston.

Factors which cause modification of a symmetrical plug to the configuration of the various salt stocks found in the Gulf Coastal area are evaluated. This configuration includes the limestone, gypsum, and anhydrite cap rock, as well as the spines, overhangs, and leaning plugs. Considered also are certain salt-stock rim-synclinal effects, as well as some resulting structural changes in the surrounding sediments.

The character of the salt as a metamorphic rock, the orientated fabric of certain of the anhydrites, and the modifications caused by density differences in the salt and surrounding sediments, and the effect of circulating waters are cited. Several of the theories of salt-plug origin and growth are considered in light of present information.

4. Sedimentary Facies of Upper Cenozoic and Recent in Gulf Coast Geosyncline, Shephard W. Lowman, Shell Oil Company, Inc., Houston.

Production of oil in the Tertiary formations of the Texas and Louisiana Gulf Coast is distributed in elongate trends that parallel the present coast. These trends coincide with the distribution of shallow marine and brackish sedimentary facies in the producing zones. There are also three prominent crosstrends along which the majority of the production is concentrated. These coincide with the three transverse embayments that cut perpendicularly across the elongate producing trends. These crosstrends indicate the intersection of another set of sedimentary conditions which are related to the embayments.

Sedimentary facies is defined as the present aspect of the rock, including its fossil content. Fossil assemblages in the Recent characterize environments, such as brackish, continental shelf, and continental slope. These relationships seem to be readily applicable to the Tertiary, but the various methods of applying them, all require a broad empirical base of stratigraphic correlation. The network method of stratal correlation is described and the facies nature of formation and of fossil zones is discussed against the combined background of faunal control in the Recent and network of correlations in the Tertiary.

Sedimentary facies and stratigraphy in the Gulf Coast Upper Tertiary are applied to two general problems. First, the presence and probable character of the Gulf Coast geosyncline are considered; second, the stratigraphic and facies data are applied to the problem of subsidence under load.

5. Tertiary History of Gulf Coast Geosyncline, M. M. Sheets, Production Maintenance Company, Houston.

The Gulf Coast geosyncline was first described by Barton and Ritz in 1933 as a long, narrow trough-shaped depression located parallel with and just inland from the shore of the Gulf of Mexico in Jefferson County, Texas. Since that time well data have made it impossible for such a trough to be present at drillable depths under the land. Geophysical data completed within the last few years seems to eliminate the possibility of such a trough under the continental shelf. In light of the new data, the former idea of the Gulf Coast geosyncline in the form of a long, narrow trough must be changed to a new concept of a bowl-shaped depression corresponding more or less with the form of the present Gulf of Mexico. Many additional data on sedimentation and structure, particularly faulting, supports this change in views.

This change in ideas may necessitate radical revision in the Tertiary history of the Gulf Coast, and doing so may cause radical revision of ideas of the thickness and character of the Tertiary and post-Tertiary sediments near shore and under the continental shelf.

In general it now seems that the Tertiary history of the Gulf Coast involves the following fundamental principles.

1. A large semiround bowl-shaped depression at the close of the Cretaceous and remaining relatively stable through the Tertiary.