comes an individual artificial reef and as such attracts tremendous numbers of marine life. Over 2,800 of these artificial reefs now stand in Louisiana waters, placed there by oil companies. These have caused a changing ecology in the Gulf of Mexico that has produced a fantastic accumulation of fish life. People connected with the sea, which include opposition in other areas, have received the associated rewards.

Colored slides and movies taken during scuba dives are presented that show how flora and fauna collect on progressively older platforms and how they attract fish life.

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*Sohio Petroleum Company, Oklahoma City, Oklahoma

REVIEW OF NEW CONCEPTS BASED ON INFORMATION FROM JOIDES (Joint Oceanographic Institutes, Deep Earth Sampling)

THOMAS L. THOMPSON*

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Drilling and coring by JOIDES consists of over 150 stations in the world oceans including coring beneath water depths in excess of 20,000 feet, sub-bottom penetration of over 3,000 feet, and re-entry of the drill hole beneath 13,000 feet of water. Oil was discovered beneath 11,700 feet of water in the Gulf of Mexico and other cores have supplied supporting evidence for concepts of sea floor spreading, and plate tectonics as derived from bathymetry, geomagnetism, earthquake seismology and tectonic events recorded by the rocks on land.

Evidence is accumulating that the ocean basins are geologically young (less than 200 million years); that new oceanic lithosphere forms along crests of oceanic ridges; that older oceanic lithosphere is resorbed beneath linear trends of deep focus earthquakes associated with oceanic trenches; that extensive plates of the earth's lithosphere move laterally at rates up to several inches per year; that these plates interact to cause deformation, mountain building, and unconformities; and although the areal extent of continental material may be increasing on balance, the distribution of land and sea may be a passive and ephemeral consequence of interactions between adjacent plates of lithosphere.

The practical consequences of these concepts may lie in the potential for reconstruction of land-sea relationships of the past and thereby the distribution of sediment along continental margins of the past and present; the potential for predicting structural style resulting from plate divergence, convergence and oblique interaction; and the effects of abnormal temperature in the generation of petroleum.

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STRUCTURAL GEOLOGY OF THE OUACHITA MOUNTAINS

GEORGE W. VIELE*

April 26, 1971

Nappes form the structural framework of the Quachita Mountains. Fabric studies and recent mapping reveal three structural subprovinces; a southern nappe largely in Ordovician shales; a northern nappe composed of Ordovician through Devonian strata; and an outer belt of orogenetic landslides and thrust faults in Carboniferous strata.

The southern nappe is broadly arched. Near Benton, Arkansas, on its thoroughly cleaved upper limb, axial surfaces of digitate isoclinal folds dip gently southward. Northeastward, across the axial surface of the nappe, sole marks, cross laminae, and graded beds indicate an overturned lower limb. All planar structures, bedding, cleavage, and axial planes, are flat-lying, although steepening northeast dips develop progressively northeastward. Still farther northeastward the axial surface of the nappe is recrossed, for the stratigraphic succession indicates a digitate upper limb.

A slide marks the lower limb of the northern nappe. From southwest to northeast it comprises an overturned lower limb, an axial zone, a strongly digitate upper limb, and, near Little Rock, a second slide. All structural elements dip northeastward. Southwest of this second slide, homogeneous macroscopic folding deformed the thoroughly cleaved lower Paleozoic strata. Northeast of the slide, however, orogenetic landsliding of Carboniferous