basin became deeper, but more restricted areally. During Silurian time, broad thick carbonate shelves developed around the northern, eastern, and western margins of the basin. A sediment-starved condition developed in the deeper parts of the basin where a thin sequence of micrites and green shales was deposited in Late Silurian time. By Early Devonian time much of the shelf area was exposed but the deeper parts of the basin remained submerged. During Early and Middle Devonian times deep-water cherts and siliceous limestones were deposited. The Caballos Novaculite indicates that the water depth in the Ouachita-Marathon geosyncline on the south also reached its maximum during Silurian and Devonian times. In late Middle or early Late Devonian time most of the remaining area of the Tobosa basin was exposed by mild uplift. In Late Devonian time the area was again invaded by the sea, and the dark Woodford Shale was deposited overlapping all the previous Devonian and Silurian deposits.

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SUBSURFACE GEOLOGY OF BASAL ATOKAN SANDSTONE, ARKOMA BASIN, OKLAHOMA

No abstract available.

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STEREO AND MOSAIC AERIAL PHOTO STUDY OF CENTRAL OUACHITA MOUNTAIN SYSTEM IN OKLAHOMA AND ARKANSAS

A careful study of stereo aerial photographs of a central part of the Ouachita Mountains in Oklahoma and Arkansas, followed by a related study of photo-index sheets of a much larger area in the Ouachitas, yields the following tentative conclusions:

1. The earliest structural dislocations of field dimensions are a series of approximately parallel bedding faults in the Stanley Shale, increasing in numbers downward in the section. A slight schistosity, also nearly parallel with bedding, may likewise increase downward. Some large overthrusts may have formed at this time. The prime source of this deformation was probably an underthrusting basement moving northward.

2. The next recognizable tectonic movements were uplifts of three main anticlinoria, although these could have followed episode 3. At this time the Ouachitas began to shed much coarse and finer clastic sediments toward the west and probably in other directions.

3. The next major episode seems to be steep faulting probably involving the basement and overlying sediments, producing semi-fault-block structures with tight broken anticlines; this was followed by a collapse of the sediments into deep synclines. Most of the high synclinal and more complicated ranges have straight or gently curved bordering faults in the adjacent lowlands.

4. The Mid-Continent regional uplift which included the Ouachitas must have produced a flood of coarse clastics adjacent to the mountains. These tectonic conglomerates have been removed by subsequent deep erosion, but their distal equivalents—the Garber, Duncan-San Angelo, and Whitehorse sands—are present in the Lower and Middle Permian of western Oklahoma and the western part of north-central Texas.

5. The nearly vertical Big Cedar fault extends nearly 200 mi from near Big Cedar, Oklahoma, to Jacksonville, Arkansas, northeast of Little Rock. It probably was formed during a period of relaxation or tension in Jurassic or Cretaceous time, and roughly parallels other faults in the coastal plain in southwest Arkansas. The Big Cedar fault touches 9 or 10 separate local structures along its length.

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PLATE TECTONICS AND NEW PROPOSED INTERCONTINENTAL RECONSTRUCTION

Published reconstructions of the pre-drift positions of North and South America have failed to take into account many geologic continuities present in the Paleozoic fold belts of southwestern United States, Mexico, Central America, and northwestern South America. The well-known Bullard "fit" terminates Mexico at about 23°N lat., but if southern Mexico and Central America are added, they overlap the Guianan shield of South America. Dietz and Holden attempted to solve this problem by postulating crustal blocks that filled the Gulf of Mexico and subsequently rotated southwestward to form part of Central America.

We propose a new reconstruction in which the Gulf of Mexico is completely closed by northern South America and where Mexico is adjacent to northern and northwestern South America. The evidence for this reconstruction is found in the similar geologic history of the Appalachian, Ouachita, Marathon, and Coahuila fold belts as well as throughout the eastern Andean Cordillera of Venezuela, Colombia, Ecuador, and Peru. We further propose that the Gulf of Mexico resulted from (1) the separation of North and South America by spreading and transform faulting, (2) the opening of a sphenochasm to produce the Mississippi embayment, and (3) great left-lateral displacements of the initially linear Paleozoic mobile belt along the Wichita, Texas, Coahuila, and other megashears.

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POLITICS AND THE GEOSCIENTIST IN ENVIRONMENTAL DECADE

The participation of the geoscientist in all levels of political decision making is essential to find the middle ground for natural resource utilization while insuring the quality of the environment.

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FILES AND THE COMPUTER—EXPLORATION TOOLS FOR 1970s

Computer processable well-data systems in the United States and Canada contain information on more than 700,000 wells. Examples illustrate the applications of well-data files in basin evaluation, analysis of regional plays, and selection of exploratory prospects. The regional evaluation of natural gas potential and a case study of the Muddy play in the Powder River basin are emphasized. Widespread application of these computerized data applications are increasingly important in the selection of oil and gas prospects to meet today's energy demands.

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DEPOSITIONAL TOPOGRAPHY—SEDIMENTATION MODEL FOR EXPLORATIONISTS

The term "depositional topography" refers to large-scale topographic irregularities formed by the processes of deposition in and beside a body of standing water whose bottom extended below the depth of significant wind-driven wave motion. This specifically *excludes* compaction features and terrestrial landforms. Modern examples include river deltas, barrier reef-lagoon complexes, and broad continental embankments. These have three principal elements: (1) a relatively horizontal part close to sea level (shelf or undaform), (2) a more steeply sloping part (slope or clinoform), and (3) a flatter deep-water part (or fondoform).

Ancient examples of depositional topography are extensively developed in the Pennsylvanian and Permian rocks of western Texas, where frequent fluctuations in relative sea level produced many cyclic intercalations of carbonate and clastic sedi-