

THE SUBSURFACE OUACHITA STRUCTURAL BELT IN TEXAS¹

by
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ABSTRACT

The Ouachita structural belt in Texas, buried for about 850 miles of its 900-mile course, can be divided into two main segments. The northern limb of the belt, extending from the Ouachita Mountains of Oklahoma to central Texas, is clearly an extension of the Ouachita Mountains. It is composed of: (1) A frontal zone of essentially unmetamorphosed folded and thrustfaulted rocks which are mostly Stanley shale and sandstone; slices of pre-Stanley rocks are present along the course of the front and in places Ouachita facies rocks are thrust over foreland facies rocks; (2) an intermediate zone of very weakly metamorphosed dark clastic rocks; and (3) an eastern zone of highly sheared phyllites, slates, and metaquartzites which is interpreted as thrust over the frontal and intermediate zones. The tectonic break demarking the western edge of the highly sheared rocks may be analogous to the Blue Ridge front in the Appalachian system. The western limb of the Ouachita structural belt, extending from the Llano uplift westward to the Marathon area and thence southward into Mexico, is markedly different from the north limb. Immediately west of the Llano uplift in the eastern Kerr basin, lower Paleozoic Ouachita facies rocks appear to be thrust over foreland sediments; farther west there are indications that there is a major re-entrant in the Ouachita front and that the Kerr basin extends southward to include most of Uvalde and Medina counties; in Kinney, Val Verde, and Terrell counties highly sheared rocks have overridden the frontal zone of the belt and rest on foreland facies rocks; in Brewster County the frontal zone is exposed in the Marathon salient which at least in its northern part is allochthonous. Structural interpretation of the western limb is still tentative.

The Ouachita system was a major mobile belt extending along the southern margin of the North American continent throughout most of Paleozoic time; its present course was determined by the shape of the craton against which it was deformed.

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