great that the Reagan sandstone of Cambrian age was locally exposed, from which it can be deduced that 11,000 feet of pre-Pennsylvanian rocks and probably at least 5,000 feet of Pennsylvanian strata had been stripped away.

The orogenic product derived from this deformation was the Collings Ranch conglomerate, a massive limestone boulder deposit which has an exposed thickness of 2,000 feet and a probable initial thickness of 3,000 feet. From the character of the rocks comprising the conglomerate, it is certain that the source areas were the Arbuckle and Tishomingo anticlines.

A slightly later surge of orogeny continued and even intensified the deformation. Block faulting, accompanied by some folding, broke the folded complex along previously established structural lines into grabens and horsts elevating the anticlines to greater heights and permitting the exposure, after erosion, of large granite areas in the Tishomingo and Belton anticlines. The Collings Ranch conglomerate was mostly eroded except where preserved in grabens, and the new orogenic deposit, the Vanoss conglomerate of latest Pennsylvanian age, was spread as a feldspar-rich blanket on the strongly folded and eroded edges of the older rocks. This younger conglomerate has a maximum thickness of 650 feet on the western edge of the Mill Creek syncline, nearest the Arbuckle and Tishomingo anticlines. At a few places the lower part of the Vanoss conglomerate is faulted and slightly folded by a final weak pulse, but the overlying younger rocks, including the Hart limestone which is considered to be the base of the Permian system, are virtually flat and mark the close of the Arbuckle orogeny in this region.

One of the major problems in Arbuckle Mountain structural interpretation concerns the nature of the northwest-trending through-going faults, principally the Washita Valley fault, Reagan fault, and the Sulphur fault zone. These have been variously interpreted as normal, thrust, scissor, and rift faults. Dips observed or inferred on the outcrop, together with information from drill holes, indicate that these faults locally have normal and locally thrust relations, and the conclusion is reached that both the Washita Valley and Reagan faults have a component of strike-slip movement. The Tishomingo anticline is believed to have moved northwestward between these two faults, probably as a result of stress transmitted from the Ouachita Mountains.

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Continuous Dipmeter, New Geological Tool

One of the newest tools of the exploration and exploitation geologists is the continuous dipmeter which was introduced to the industry in 1952. This paper describes the basic instruments and outlines some of the methods of calculation of dip and strike from data acquired by the instruments. The accuracy of the graphical method of calculating is plus-minus $\frac{1}{2}°$ of dip and plus-minus 1° of strike. This is not the over-all accuracy of the dipmeter, but merely the accuracy of the calculations. The over-all accuracy is influenced most by stratigraphy and micro-structure which are uncontrollable in the calculation procedure.

Several examples of continuous dipmeter surveys are given, with examples of the pitfalls in working dipmeters. A plea is made for competent company personnel to interpret the logs rather than leaning so heavily upon service-company personnel.

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Stratigraphic Study of Palo Duro Basin, Texas Panhandle

It was recognized as a basin in 1926 by Charles N. Gould who gave it its present name. Exploration and drilling have been slow and sporadic since that time, the present deep-well saturation being less than one test per 150 square miles. At present, there are one small gas field and one oil field within its limits; around its margins eight other oil pools are producing, of which the Anton-Irish is the largest.

It is bounded on the north by the Amarillo Mountains and their westward continuance, the Bravo dome; on the west by the New Mexico Highlands; and on the south by the Matador line of basement peaks. Having approximately 1,000 feet of general closure along its deepest axis, it opens eastward into the Hollis-Hardeman basin, and southward into the Midland basin.

Structure within its limits is complex with sharp folding accompanied by high-angle faulting trending primarily northwest-southeast. Subordinate to this prominent trend, a low-relief countertrending system of folding is becoming more apparent with latest control.

The basin probably had its inception near the beginning of Pennsylvanian time when the surrounding regional structural components had their initial movement. Structural movement along these axes has continued through the most recent deposits in the area. Movement along the buried Amarillo Mountains was noted as recently as three years ago when the last tremor emanating from the area was felt.

Historically, the area was an embayment of the major Permian-Pennsylvanian sea on the south and east. Sediments in this interval are closely akin to their counterparts in the surrounding area. Lower Permian and Pennsylvanian shales, carbonates, and sands appear identical with the same