HENRY J. MORGAN, JR., Atlantic Refining Company, Dallas, Texas.

Paleozoic Beds South and East of the Ouachita Folded Belt.

In recent years five wells have been drilled in the rearward areas of the Ouachita folded belt. These wells, under the old conception, should have either encountered pre-Cambrian rocks or the ordinary sequence of dark, steeply dipping, varyingly metamorphosed beds characterizing the Ouachita folded belt. Instead, these wells, under the normal thickness and facies of Mesozoic formations, found Paleozoic beds that showed no evidence of metamorphism, and that exhibited flat dips in cores. It is proposed to describe these occurrences in some detail and to assess the effect they have on presently held theories concerning Llanoria and the Ouachita folded belt.

AUGUST GOLDSTEIN, JR., and DUANE H. RENO, Stanolind Oil and Gas Company, Tulsa, Oklahoma.

Petrography and Metamorphism of Sediments of Ouachita Facies.

Sediments of Ouachita facies extend subsurface from the Ouachita Mountains of Oklahoma and Arkansas to the Marathon and Solitario uplifts of extreme southwest Texas. Although these sediments have been subjected to strong dynamic metamorphism, the metamorphic grade attained is uniformly low. Sediments of Ouachita facies are essentially unaltered in some areas; elsewhere they range in degree of metamorphism as high as the "biotite zone."

Mineralogical change and cataclastic effects are key criteria for discerning the stages of progressive metamorphism in sediments of Ouachita facies. Metamorphic changes are most easily observed in shales and argillaceous sandstones—limestones and cherts react less conspicuously to metamorphic stress. Mineralogical change resulting from metamorphism reduces the porosity and non-fracture permeability of sandstones to such an extent that they are not good petroleum reservoirs.

The petrography of the so-called "schists" of Luling field, Caldwell County, Texas, and of some other deep wells along the Luling-Mexia-Talco fault system is discussed briefly. It is shown that they are generally comparable in mineralogy and degree of metamorphism with sediments exposed in the Ouachita Mountains of McCurtain County, Oklahoma.

D. HOYE EARGLE and KEITH A. YENNE, United States Geological Survey, Austin, Texas.

Outcropping Carboniferous Rocks of Brown County, Texas.

The rocks of Brown County, central Texas, range from Strawn group (middle Pennsylvanian) to Wolfcamp series (lower Permian (?)). They are cyclic marine deposits of sandstone, shale, and limestone and channel deposits of conglomerate, sandstone, and shale. Fusulinids range from *Fusulina* through *Triticites* to *Schwagerina*. The best-defined faunal break in the sequence is at the top of the Strawn group. Lenticular sands near the top of the Strawn are highly petroliferous and channel sand and pinching marine sands higher in the section contain local accumulations of oil. Some oil is found in traps caused by facies changes and in lenticular sands of Marble Falls (lower Pennsylvanian) age.

M. G. CHENEY and LOUIS F. GOSS, Anzac Oil Corporation, Coleman, Texas.

Progressive Development of the Llano Uplift.

A clearer picture of when and how the Llano uplift attained its present segmented domal form is sought by interpretation of data from various outcrop and subsurface studies.

A series of thickness and structural maps have been prepared. These indicate that broad initial warping of the Concho arch, the uptilted southeast part of which forms the present Llano uplift, occurred during the interval between deposition of Ellenburger and Mississippian rocks. Pronounced development of the northeast, southeast and southwest flanks of the Llano uplift took place during Medial Pennsylvanian (Lampasas-Strawn) time when the deep Strawn and Kerr basins were formed as foredeeps paralleling the Ouachita orogenic system. Much rifting accompanied or followed these subsidences, particularly where the connecting trough crossed the central and eastern parts of the Llano region.

Considerable folding and elevation occurred along northeast-southwest trends at the close of Lampasas and probably at intervals during Strawn time. Maximum uplift and erosion evidently centered in northwest Mason County, Canyon sediments having been deposited on Cambrian rocks in this area where the extensive Bend flexure-Richland Springs and Concho axes intersect. Development of a pronounced west flank and general erosion of Paleozoic rocks of the Llano uplift awaited regional elevation to the east and subsidence to the west, mainly during Permian and Triassic time.

Periodic accentuation of the Concho-Llano-San Marcos structural axis may be attributed to the presence of a relatively buoyant or stable region in the earth's crust. However, the absence of positive tendencies along this trend during the Cambrian and Early Ordovician seems to contradict this theory. Deltaic loading, particularly by Lower Pennsylvanian sediments in the Ouachita and Marathon regions, may have brought compensating positive tendencies to the broad intervening region, thereby influencing subsequent diastrophic and depositional developments.