of Permian Shales in Western Oklahoma.

Samples for this preliminary report were obtained from four-inch cores supplied by the U. S. Army, Corps of Engineers. Information from the unpublished master of science thesis of Mr. A. Gordon Everett was used to supplement the core-hole data.

The framework clay mineralogy of the Wichita, Hennessey, Flowerpot, Blaine, Dog Creek, and Marlow Formations is a mixture of illite and chlorite. The intensity and width of the first-order (001) reflections suggest variations in the degree of crystallinity of the illite and chlorite.

A 7-angstrom clay mineral in the overlying Rush Springs Formation marks a significant change in the clay mineralogy. Part and perhaps all of this 7-angstrom material is a trioctahedral analogue of kaolinite. This may be related to the 7-angstrom chamosites, but a detailed study has yet to be completed.

The overlying Cloud Chief Formation contains montmorillonite as the major clay mineral. This well-crystalline montmorillonite has a widespread distribution and defines a significant change from the mineralogy of the preceding units.

The mineralogy of the Doxey Member of the Quartermaster Group is similar to that of the lower units, except the 14-angstrom material may be a vermiculite.

A source for all the clay minerals cannot as yet be accurately defined. However, the abundance of illite and chlorite in the lower Paleozoic rocks of the Ouachita Mountains area suggests a source for the illite and chlorite of the Permian strata. The polytypism (2 M) of the illite in the Permian rocks is the same as the polytypism of the illite in the Ouachita Mountains. This fact lends support to the above hypothesis. The abundance of montmorillonite in the Cloud Chief Formation suggests a source area of basic igneous rocks, possibly volcanic.

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April 5, 1965

EYSTEINN TRYGGVASON and BOB QUALLS, Univ. of Tulsa, Tulsa

"Crystal Structure of Oklahoma"

During the summer of 1964 a long range seismic refraction profile was shot and recorded NE-SW across Oklahoma. This reversed profile was 376 km. long and extended from near Chelsea northeast of Tulsa to near Maniton southwest of Lawton. A model of the near surface layers of the earth fitting the observed wave propagation consists of three horizontal layers in the crust and a horizontal boundary (moho) between the crust and the upper mantle. In addition there is a low velocity surface layer of sedimentary rocks approximately 0.5 km. thick. The first crustal layer extends to a depth of 13.7 km. and has a P-wave velocity of 5.96 km./sec. An intermediate layer extends to a depth of 29.6 km. and has a P-wave velocity of 6.66 km./sec. The third crustal layer has a P-wave velocity of 7.20 km./sec. and extends down to moho at a depth of 50.9 km. Below moho the upper mantle velocity is 8.32 km./sec. Compared with other continental areas, the observed upper mantle velocity and the mean velocity in the crust is unusually high. The total thickness of the crust is also greater than in most continental areas, and greater than earlier estimates for Oklahoma.

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April 12, 1965

DANIEL A. BUSCH, Consultant, Tulsa

"Oil Production in Israel"

Approximately 5,000 barrels of oil per day is the current rate of production in Israel. Production is from three contiguous pools situated just northeast of the Gaza Strip of northernmost Egypt. They are known as the Brur, Heletz, and Kokhav pools. The producing formations include about 10 thin sand members of Early Cretaceous (Barriasian)age and the Zohar Limestone of Jurassic (Oxfordian) age. The Lower Cretaceous sands of the Coastal Plain area grade abruptly into a marly shale in a general westward direction. Oil and gas occur in the updip wedge edges of these sands where they shale out on the east flank of a pronounced anticlinal feature. Isolated bar-like trends of oil productive sands also are present. These producing sands both overlie and underlie a reefal dolomite; their western margins, trends, and positions appear to be genetically related to it. Jurassic production is principally from fracture porosity on a well-defined structural anomaly in the Kokhav pool. Although there are only three wells producing oil from the Jurassic (Zohar Limestone) at the present time it is believed that these strata offer the greatest potential for really significant future production in Israel.

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