

## NOON MEETING MARCH 31, 1976

### S. DUFF KERR, JR.— Biographical Review

Duff Kerr is a geologist with Kirby Exploration Company in Denver, Colorado. He received a B.S. degree in 1950 and a M.S. in 1951 at the University of Cincinnati.

He began his professional career with Shell Oil Company in 1953, working in the Midland Area Office doing stratigraphic studies of the Permian Basin. In 1966, he transferred to Shell Development in Houston to supervise and conduct research on carbonate, clastics and paleontology of most of North America. In 1965, Duff was sent to the Shell Office in Denver to conduct exploration activities within the Rocky Mountain basins. He has been in his present position with Kirby since 1974.

Mr. Kerr has published papers on evaporite genesis, carbonate reservoirs, and modern carbonate sediments.

climate evaporites of the younger portion. These culminate in a thick basin-filling evaporite body which levels topography at the end of the Paleozoic.

### STRATIGRAPHIC FRAMEWORK FOR HYDROCARBON ENTRAPMENT—PERMIAN BASIN, TEXAS AND NEW MEXICO (Abstract)

by: S. Duff Kerr, Jr.

The Permian Basin of west Texas and southeast New Mexico historically has contained about 20% of U.S. crude oil and natural gas reserves. Well over half of these hydrocarbons are found in reservoir rocks of Permian and Pennsylvanian age, primarily in stratigraphic traps. Episodic tectonic events related to the development and collapse of the Ouachita-Marathon tectonic system provided a framework for development of the stratigraphic features of the basin. Isolation from the greatest influx of clastic debris contributed by the major areas of tectonism permitted development of carbonate sequences of world-preeminent magnitude, some of which overshadow their structural foundations.

Patterns of reciprocal sedimentation dominate throughout the late Paleozoic. Episodes dominated by carbonate deposition, when major elements of basin topography were constructed, alternate with episodes of clastic dispersal when a filling and levelling process took place in the central basins. Porosity is characteristically best developed in massive carbonate sedimentary bodies which form the most distinct stratigraphic features bordering the basins. Shelfward (updip) termination of such porous elements constitutes a trapping mechanism, repeated with considerable frequency throughout the sequences. It is the separation and delineation of individual terminations of porosity which provide the challenge for exploration in Permian and Pennsylvanian strata. An understanding of sedimentary genesis and later diagenetic history is essential to stratigraphic exploration. Significant pods of quartzose clastics, especially within basin-fill sequences, provide additional reservoir situations. Hydrocarbons to charge all the reservoirs have been generated from organic-rich beds which are most abundant within the basinal areas. Continual changes in climate are reflected by a shift from humid-climate coal and fluvial deposits of the older part of the sequence to arid-