EVENING MEETING—JANUARY 7, 1980

JAMES LEE WILSON—Biographical Sketch

James Lee Wilson was born in Waxahachie, Texas. He attended Rice University and the University of Texas where he received his B.A. and M.A. degrees. He received his Ph. D. from Yale University in 1949.

His geologic experience includes that of a field geologist in the Rocky Mountains, Associate Professor at the University of Texas at Austin for three years, Research Geologist for Shell Development Company in Houston and for Shell International Research in Rijswijk, Netherlands from 1952-1966. He was associated with Rice University Geology Department for 15 years, from 1972 being Wiess Professor and Chairman of the Department. In recent years he has also taught at the University of Calgary and the University of Munich. In January of 1979 he resigned from Rice University and accepted a Professorship of Geology at Michigan University in Ann Arbor.

Dr. Wilson was President of the Society of Economic Paleontologists and Mineralogists in 1975. Also in 1975 he completed a book entitled "Carbonate Facies in Geologic History" (Springer-Verlag).

Dr. Wilson is a member of numerous geological societies and regularly participates in carbonate field and lecture courses with various universities and industrial corporations in Europe and the U.S.A. as well as with Continuing Education Programs with A.A.P.G. Recent field experience includes work in Mexico, New Mexico, North Africa, and the Austroalpine area.

PLATE TECTONIC INFLUENCES ON CARBONATE PLATFORM AND BANK DEVELOPMENT (Abstract)

Shallow marine carbonate sediment so prevalent in the geologic record, is produced dominantly in the photic zone in warm, clear, tropical water. The underlying controls on its depositional patterns are hydrography and tectonic framework. Orientation and shapes, sizes, and sequences of several sedimentary bodies of first order magnitude, all displaying the general spectrum of carbonate facies, may be recognized in the geologic record based on a plate tectonic model.

1. Isolated carbonate platforms may develop on rifted cratonal margins following the patterns of (a) slivered horst blocks parallel to the cratonal margin or (b) equidimensional blocks at the margin where marginal rifts have been transected by faults trending normal to cratonal edges. These two patterns are recognized at progressively developing passive divergent margins and may be part of the following sequence: arkosic red beds with basalt, evaporites, carbonate platforms, and lastly a major halo of tidal flat dominated sheet carbonate around the craton. The role of a preceding orogenic belt in helping to form trends at cratonal margins may be important. Examples are taken from north and east sides of the African craton in the early Mesozoic and the western Gulf of Mexico Cretaceous.
2. Tectonic trends *within* cratonal basins also cause some distinctive expression of carbonate buildups. (a) Fringes around the basins (e.g. Cretaceous of northern Gulf of Mexico). (b) Pinnacles along platforms below basin margins (north central Texas Pennsylvanian, Silurian of Michigan basin, Zama-Rainbow in the Devonian of Alberta). (c) Transverse platforms and linear reefs across basins developed on shifting basement fault blocks (Late Devonian Leduc and Swan Hills of Alberta).
3. Finally, elongate carbonate platforms may occur as plasters against margins of cratonal plates as they override oceanic plates. These are presumed to be reefs and platforms developed around volcanic archipelagos in the trench arc system, scraped off the plate and thrown against the craton. These may have faunas exotic to the craton upon which they lie and be outside the proper latitude for their age. Examples are from Jebel Kaur in Oman and some of the Permo-Triassic terranes of British Columbia and southern Alaska along the Pacific coast of North America.

If trends and shapes of major bodies of carbonates can be so genetically linked to tectonic framework, is it possible that secondary packages seen in the geologic record may be also? Or do these lie completely within the control of hydrographic factors?