

DINNER MEETING—OCTOBER 12, 1983

CLEMONT H. BRUCE—Biographical Sketch



The University of Kentucky awarded Clem Bruce his BS and MS Geology degrees in 1948 and 1949, respectively. He joined Magnolia Petroleum Company (now part of Mobil Oil Corp.) upon graduation and has remained a Mobil employee ever since. His experience includes mid-continent work in Denver and in the Illinois Basin. More than 20 years of his time has been spent working Gulf Coast geology in

Jackson, Houston, Corpus Christi and Dallas. Bruce now serves as a research associate with Mobil Research and Development Corp. in Dallas.

Bruce is a member of AAPG's Advisory Council and Research Committee. He was formerly chairman of the Research Committee and a member of the Continuing Education Committee. Bruce was an AAPG distinguished lecturer in 1973-74. He was winner of AAPG's 1983 Matson Award for his paper, "Relation of Illite/Smectite Diagenesis and Development of Structure in the Northern Gulf of Mexico Basin."

RELATION OF ILLITE/SMECTITE DIAGENESIS AND DEVELOPMENT OF STRUCTURE IN THE NORTHERN GULF OF MEXICO BASIN

Water expelled from smectite into the pore system of the host shale during the process of diagenesis may migrate out of the shale early or may be totally or partly trapped and released slowly through time. When the water is trapped, abnormal fluid pressures develop which partly controls the geometry of growth faults and related structures in basins formed through rapid deposition. Dips of some faults in Texas have been observed to flatten rapidly within the interval of smectite diagenesis and some faults formed in the overpressured Miocene and younger sections become bedding plane types at depths near or above the temperature level required for thermal generation of petroleum. This observation suggests that while these faults may be important for fluid migration at shallow depths, they play a minor role in moving hydrocarbons out of deep shales in much of the Texas offshore area.

Fluid movement upward through microfracture systems overlying and extending upward from fault trends in the pre-Tertiary section is proposed as a mechanism for flushing fluids from the deep portion of the Northern Gulf of Mexico Basin. This flushing process would be enhanced by smectite diagenesis since large volumes of trapped water derived from smectite could cause the microfracturing process to continue for longer periods of time and to extend to greater depths than could be attained if only remnants of original pore water were present in the section.