

## INTERNATIONAL EXPLORATIONISTS GROUP EVENING MEETING—JANUARY 15, 1986

### DAVE R. KINGSTON—Biographical Sketch



Dave R. Kingston is with Esso Exploration Inc. in Houston working in worldwide basin evaluation and new play development for Exxon Corporation. He received both his undergraduate and graduate education at the University of Wisconsin, completing his M.S. and Ph.D. in geology in 1952 and 1956 respectively. In 1953 he began work with the then Standard Oil Company of New Jersey, present day Exxon Corporation. For

15 years during the 50's and 60's, he was field party chief of the legendary Exxon "Rover Boys" doing surface field work and regional studies in the frontier areas of South America, Europe, the Middle East and Africa.

From 1963 to 1969 Dave was chief geologist and then exploration manager of Europe-Africa for Esso Exploration Inc. (Exxon). It was followed in 1969 to 1971 by work in the U.S.A. as district exploration manager in Midland, Texas for Humble Oil Company (Exxon). In 1971, Dave returned to international work as manager of the Global Study Group for Esso Exploration Inc. in Houston. He was responsible for the systematic study and evaluation of all known basins in the world and developed the Global Basin Classification System. Since 1978, he has continued with Esso Exploration Inc. in Houston doing interregional studies and special projects - primarily in the Far East and China.

The paper Dr. Kingston is presenting to the International Explorationists Group draws on his broad experience and has won the Wallace Pratt Award for best AAPG paper published in 1983. Dave is a 1985-86 AAPG Distinguished Lecturer and is a member of the American Association of Petroleum Geologists, Sigma Xi, the West Texas Geological Society, and the Houston Geological Society.

#### WORLDWIDE BASIN CLASSIFICATION AND OIL PLAY PREDICTION

A system is proposed which classifies sedimentary basins worldwide into specific, as well as general, categories. The system is based on the origin and evolution of basins in the context of their geologic history. The main elements used to classify basins are basin-forming tectonics, depositional cycles, and basin-modifying tectonics. Basin-forming tectonics are deduced by knowledge of the type of underlying crust, past plate tectonic history, basin location on the plate, and type of primary structural movement involved in the basin

formation — such as sagging or faulting. The result is eight single tectonic-cycle or simple basin types that are termed interior sag, margin sag, interior fracture, wrench, trench, trench associated, oceanic sag, and oceanic wrench.

Basin modifying tectonics include episode wrenches, basin-adjacent foldbelts, and completely folded basins. These have been identified and placed on a scale of increasing magnitude, from movements of slight to major structural efforts. More complex basins may contain several different tectonic cycles, plus basin-modifying tectonic events. These are called polyhistory basins. The eight simple basin types, their depositional fills, and tectonic modifiers have been given letter and number symbols so that the specific geologic history of each basin may be written as a formula. These formulas may then be compared between basins, and similarities or differences noted.

After the basins have been classified, major hydrocarbon plays are located and the specific parameters that are responsible for these plays are noted. For example, certain types of basins may commonly be the site of rich source rock or clean reservoir sand deposition, or to contain block fault or wrench type structures. From producing basins, these oil play parameters may be projected into frontier areas via the global basin classification system, and the oil play predictions made.