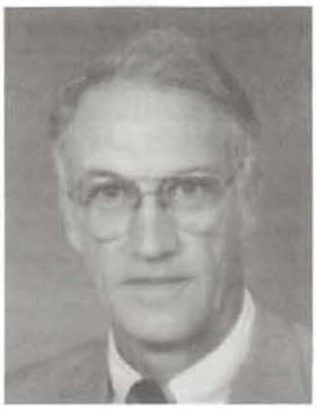
LUNCHEON MEETING—MARCH 29, 1989

JAMES M. COLEMAN—Biographical Sketch



Dr. James M. Coleman, dean of Basic Science at Louisiana State University in Baton Rouge, has established an international reputation as one of the world's foremost authorities on deltas and on mass movement processes and slope instability in nearshore waters. He has been affiliated with LSU's Coastal Studies Institute since his undergraduate days. He became assistant director of the Institute in 1971 and director in 1975. Upon reestablishment of the School of Geoscience in 1985, he directed the effort to unite the Department of Geology and Geophysics, the Coastal Studies Institute and the Basin Research Institute into a cohesive education/research organization. The university component of the Louisiana Geological Survey also became a part of the school in 1988.

In 1983 Dr. Coleman was chosen co-chief scientist on Leg 96 of the Deep Sea Drilling Project, one of the largest international cooperative oceanographic programs ever undertaken in the world's oceans. He has received the Shepard Award for Excellence in Marine Geology from the Society of Economic Paleontologists and Mineralogists; and the A. I. Levorson Award, presented to the authors of the best paper presented at the Gulf Coast Association of Geological Societies; the Boyd Professorship, the highest honor LSU gives its faculty; the LSU Distinguished Research Master Award; and the LSU Foundation Distinguished Faculty Fellow Award.

The author of approximately 165 papers published in scientific journals, Dr. Coleman also lectures frequently and leads numerous field trips. He was chosen an American Association of Petroleum Geologists Distinguished Lecturer in 1976 and 1977.

VARIATIONS IN DELTAIC CYCLES

Several hundred thousand cubic miles of Gulf Coast Tertiary sediments have been deposited in a deltaic setting. Published literature attributes sedimentary sequences ranging from a few thousand feet to only several feet in thickness to delta sedimentation. Are such highly variable sequences the result of delta deposition and, if so, what factors control such spatial and temporal scales? Basin tectonics, climatic changes, long-term relative sea-level patterns, eustatic sea-level changes, regional and local variations in subsidence rates, changes in basin drainage areas, variations in basinal marine climates, and numerous other similar factors all play a major role in controlling the spatial magnitude of deposits interpreted to be deltaic in nature. In modern or relatively young deposits, recognition of these process controls is sometimes possible, but in older (Tertiary) sequences such factors as lack of precise chronostratigraphic control, poor knowledge of quantitative faunal and sedimentary characteristics of a large number of deltaic environments, relatively meager understanding of past environmental conditions and regional depositional patterns, etc., add extreme complexity to basic recognition of variable delta cycles.

One of the major characteristics of deltaic sedimentation is cyclicity displayed at various temporal and spatial scales. Periodicity of the delta cycles recorded in the sediments at any one vertical site ranges from only a few years to several million years, with corresponding thicknesses from a few tens of feet to several thousand feet. Such nested frequencies and lack of criteria to recognize them make it extremely difficult to develop consistent terminology. A 2000-foot, well-developed coarsening upward sequence commencing with marine shales and capped by in situ terrestrial organic deposits can be described as a delta cycle beginning with deposition of prodelta shales, grading upward into alternating sandstones and siltstones of the delta front, to sandstones of the distributary mouth bar, and capped by delta plain deposits. In other instances, a 20-foot cored section containing a marine shale at the base, coarsening upward to a sandstone, and capped by in situ organic deposits has had similar terminology applied to the various facies. Both sequences may be the direct result of sediment being deposited directly from a river system, but the temporal and spatial scales of the sedimentary units, lateral continuity of units, and processes of deposition were probably quite different.

Relatively thick, coarsening upward sequences can result from long-term changes in basin tectonics, regional climatic changes and relative sea level changes, whereas delta cycles on the order of 100 feet thick often result from high frequency eustatic sea level changes, variations in regional rates of subsidence, and alongshore and on/offshore shifting sites of deposition. Very thin delta cycles (a few feet thick) result from short-term hydraulic variations, catastrophic events and localized sediment loading patterns. Some of the basic processes that control such variations in delta cycles and some of the resulting characteristics of the deposits will be discussed and illustrated.