

# THE ROLE OF TECTONIC AND ENVIRONMENTAL FACTORS IN THE ORIGIN AND DISTRIBUTION OF SEDIMENTS

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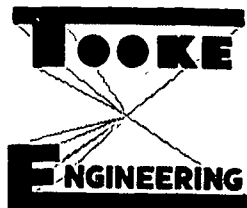
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**ABSTRACT.** Ancient sediments (sedimentary rocks) are interpreted in light of evidence available from the examination of modern processes based upon the concept of uniformitarianism. Recent sediments models of the Bahamas, Florida Keys, Mississippi Delta and Northern Gulf of Mexico are reviewed as to their application to the interpretation of ancient sediments deposited in geosynclinal and stable shelf areas.

Puerto Rico, being in an area of active tectonic uplift and subsidence, demonstrates a variety of environmental conditions of diastrophism, physiography, and climate related to a variety of sediment types including graywackes, subgraywackes, arkoses, fine-grained terrigenous clastics, bioclastic limestones, reef limestone, carbonate muds, and evaporites all in various facies relationships. Sources of sediments involve an orogenic belt of plutonic, volcanic, metamorphic and sedimentary rocks ranging in elevation from sea level to 4,000 feet above sea level. The climate of the source area varies from tropical rain forest to desert. Depositional sites include fluvial, bay and lagoonal, littoral margin dunes, deltas, shelf basin-bank-reef complex, slope, and abyssal environments. The facies relationships between terrigenous clastics and carbonates provides a Recent sediment model of great significance when applied to evaluation of ancient sediments.

The sedimentary rocks of Pennsylvanian age in north-central Texas consist of a sequence of conglomerates, sandstones, shales and limestones exhibiting facies relationships representing fluvial, deltaic, lagoonal, littoral, and shelf environments of deposition. The shelf sediments involve both carbonate banks and reefs in a terrigenous clastic sequence. The effects of sea-floor topography on sedimentation are significant both in regard to type and thickness. Evidence of deep water or continental shelf-slope relationships are absent indicating deposition of sediments in a subsiding shelf environment.

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