cific environmental indicator on a simple presence or absence basis. However, since glauconite occurrences differ in kind of and variety of pellets, recognition of pellet types and their distribution is potentially useful for stratigraphic correlation or environmental determinations.

Glauconite is the only clay material occurring in sedimentary rocks which is known to be authigenic in origin, is abundant, and is relatively free from impurities. Thus the geochemistry of glauconite should be a fruitful area of study. At present, most of the emphasis has been restricted to age-dating aspects, but there are numerous other possibilities.

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November 23, 1964

DAVID A. SIX, Midwest Oil, Fort Worth

"Pennsylvanian-Atoka Producing Sands, Red Oak-Norris Gas Field, Arkoma Basin"

The Red Oak-Norris Gas field was the first of several recently discovered fields in the deeper part of the Arkoma basin which produces gas from the lower Atoka Spiro sand. However, this field is also capable of producing gas in large quantities from sands of lower-upper Atoka (Fanshaw sand) and upper-middle Atoka (Red Oak and Panola sands).

Not only is the Red Oak-Norris Gas field the largest single gas producing field in areal extent and reserves discovered in the deeper part of the Arkoma basin to date, but it is believed that it is also the most complexly faulted. Overthrust faulting from the south as well as normal down-to-the-north faulting are in evidence. Considerably more is to be learned concerning the geology of this field as continued development progresses along the north flank. Additional subsurface control is needed in this area in order to fully evaluate the areal extent of the Fanshaw, Red Oak, Panola and Spiro sands. Difficulty has already been encountered in making sand depositional studies along this flank which can only be ascertained by the drilling of additional wells.

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November 30, 1964

DAN E. FERAY, Texas Christian Univ., Fort Worth

"Tectonic and Environmental Factors in Sedimentation"

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 limestones, carbonate muds, and evaporates 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 4000 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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December 7, 1964

ERNEST W. SHAW, Imperial Oil Enterprises, Calgary

"Canadian Rockies Orientation in Time and Space"

The Canadian Rockies are located between the Rocky Mountain trench on the west and the edge of the disturbed belt on the east; to the north they plunge out near the Yukon-British Columbia boundary and to the south they extend over 150 miles