near Dinosaur National Monument includes: (1) large-scale tabular-planar cross-stratified units with many low-relief, asymmetric ripples oriented up and down slip-face deposits; (2) raindrop imprints on slip-face deposits; (3) contorted stratification, lamination style, and burrowing in the Weber match those of modern eolian deposits; (4) well-sorted quartz sandstones interbedded with poorly sorted, micaceous siltstones and conglomerates at Rangely oil field; interpreted to be interbedded eolian dune and fluvial sediments respectively; (5) consistent southward transport directions in the Weber Sandstone considered more compatible with a wind-driven depositional system than a marine depositional system; (6) the general lack of appreciable clay or chert in the study in contrast to the occurrence of these minerals in marine rocks of the Weber farther west; (7) thin lenticular carbonate rocks (commonly only 0.30 to 0.60 m thick) restricted to extensive diastems indicating deposition in nonmarine ponds associated with interdune areas; and (8) striking differences between the lenticular, brecciated, nonfossiliferous dolomites in the Weber Sandstone here and the thick, fossiliferous cherty limestones of equivalent age in marine deposits within the Weber and the older, underlying Morgan Formation elsewhere.

Shortly after deposition, the eolian deposits of the Weber Sandstone became saturated with water and were then subjected to penecontemporaneous deformation, which produced complex folding and breaking of laminations.

FUNKHOUSER, L. W., Standard Oil of California, San Francisco, CA, and F. X. BLAND and C. C. HUMPHRIS, JR., Chevron U.S.A., Inc., New Orleans, LA

Deep Tuscaloosa Gas Trend of South Louisiana

The deep Tuscaloose gas trend of south Louisiana is one of the most significant exploration plays in the United States in recent years. This trend, productive from an expanded Tuscaloosa sand-shale sequence of Late Cretaceous age, covers a band approximately 30 mi (48 km) wide and 200 mi (322 km) long, from the Texas line on the west and extending past Lake Pontchartrain on the east.

Regional studies initiated by Chevron in 1964 demonstrated the probability of and unexplored sedimentary section lying just to the south of the Lower Cretaceous carbonate bank edge which crosses south Louisiana. Improved regional seismic data later verified the presence of such a unit, located between reflectors identified as Upper Cretaceous chalk and Lower Cretaceous carbonate rocks.

The discovery well of the Tuscaloosa wedge was drilled at False River area in May 1975, where Chevron tested 20 MMcf of gas per day from a sand at 19,800 ft (6,035 m) in the No. 1 Alma Plantation, 15 mi (24 km) northwest of Baton Rouge. Chevron confirmed the trend in December 1975, by discovering Rigolets field, 125 mi (201 km) to the southeast.

The productive section of the Tuscaloosa is interpreted to be a shallow-water deposit that has been built by progradation southward across the Lower Cretaceous carbonate bank edge. Down-to-the-south faulting in this expanded section, along with deep-salt movement, has produced most of the structural features that are now productive from the Tuscaloosa.

Fifty-two exploratory wells have been completed to the present along the Tuscaloosa trend, resulting in the discovery of 14 fields. Proved plus potential reserves discovered through September 1979 are estimated to be approximately 4 Tcf of gas.

GAGOSIAN, ROBERT B., Woods Hole Oceanog. Inst., Woods Hole, MA

Early Transformation Reaction of Steroids in Marine Environment

Several processes control the distribution of organic compounds in recent sediments, including biologic production and consumption, geochemical and biologic transport processes, and chemically and biochemically controlled transformation reactions. In transformation reactions of specific biogenic organic compounds, steroids illustrate the reactivity and organic compounds which contain "biologic markers."

Steroid alcohols (sterols) can degrade through several possible chemical or microbiologic pathways in sediments to produce steroid ketones (stanones), reduced alcohols (stanols), and hydrocarbons (sterenes and steranes). Two marine sedimentary environments describe some of the potential mechanisms of the transformation pathways involved: (1) the highly productive upwelling areas of Walvis Bay, South Africa, and (2) the strongly reducing conditions of the Black Sea.

GALLAGHER, J. J., Cities Service International, Houston, TX, and MARTHA O. WITHJACK, Cities Service Research, Tulsa, OK

Basement Tectonics of China—Continental-Scale Cataclastic Flow

The basement rock of China deforms by cataclastic flow because at the continental scale (10^3 km) China maintains the continuity during deformation necessary for flow. Moreover China's constituent basement elements undergo cataclasis because they rearrange by brittle mechanisms in response to compression in the west and extension in the east. Structures, sedimentologic patterns, and earthquakes suggest brittle basement elements at two scales which are distinguished by their mechanical behavior. Larger elements have characteristic dimensions of 10^2 km and behave as rigid blocks. Smaller brittle elements, 10 km and smaller, occur in zones with flow characteristics at the scale of 10^2 km. Clay models support the interpretation of flow for China as a whole and for ductile zones in particular. The geology of China is used as a guide to prepare clay models and pieces of wood to simulate rigid basement elements. The space between the pieces is filled with clay which simulates zones of ductile basement and both the wood and the clay are covered with a layer of clay which simulates sedimentary rock cover. Wood blocks are moved in a sequence, in directions, and for distances suggested by the tectonic history of China. The resulting location, trend, type, and relative degree