of dissolving or precipitating waters. Evidence of compaction is common in the reservoir, but early partial cementation and migration of oil prevented excessive compaction by retarding pressure solution. The lower energy mixed-facies environment produced an unsorted calcarenite with abundant mud matrix and poor porosity; pressure solution reduced porosity even further.

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Thalassia testudinum, HABITAT AND MEANS OF DISPERSAL FOR SHALLOW-WATER BENTHONIC FORAMINIFERA

The marine grass *Thalassia testudinum* König is distributed throughout the West Indian region and the island of Bermuda. Its distribution is controlled by temperature, salinity, turbulence, and depth. It supplies a substrate for many organisms including benthonic Foraminifera. Sixty-six benthonic foraminiferal species were found living on *Thalassia* in a relatively small area in the Florida Keys. Of these only 18 species were abundant and these same species were noted living on the marine grass wherever it was examined throughout the area of its distribution. The distribution and abundance of these Foraminifera are controlled by competition with other organisms living in the same environment as well as by interspecific competition. Tropical and subtropical shallow-water benthonic foraminiferal faunas are composed essentially of the same species throughout the West Indian region. The *Thalassia* blades provide a means of dispersal for the benthonic species. When the tops of the blades die, or when complete plants are broken off by storms or strong wave action, they float and can be transported great distances by currents. The organisms living on the grass blades are carried to different areas where they can survive and reproduce if environmental conditions are favorable. Even sediment-preferring species can be transported by this means, because juvenile specimens, and even some adult specimens, are usually of such low specific gravity that they can be thrown into suspension by storm waves and may settle onto blades of *Thalassia.* In this manner a fauna of organisms as minute as the Foraminifera, which otherwise might be restricted to microenvironments, can become cosmopolitan.

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GEOCHEMISTRY, MINERALOGY, AND ABSOLUTE AGES OF CARIBBEAN SEDIMENT CORE

Chemical and mineralogic variations in a deep-sea core dated by the Io/Pa method show that during interglacial periods the content of detrital minerals (quartz and muscovite) reach a maximum, whereas clay minerals are more abundant during glacial periods. The concentration of Mn is higher during glacial periods. The data suggest that in the Caribbean area chemical weathering was at a maximum during glacial periods; during interglacial periods conditions were more arid.

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UPPER SEDIMENT COLUMN OF GULF OF MEXICO PRESENTED IN NEW TYPE OF MAP

Many types of investigations actually require information on the lithologic characteristics of the upper sediment column as well as the surface sediment characteristics.

Selected cores from the Gulf of Mexico are presented as lithologic models. A chart symbol is used to indicate gross lithology. A numerical code has been developed which expresses lithologic percentages and indicates by positional notation vertical succession or intercalation of facies.

For one area several cores were compared to demonstrate the validity of the developed technique and to show ratio changes.

This new type of sediment-distribution map is of value in studies of sediment transport and deposition, basin filling, geotechnical properties, sea-laboratory preparation, salvaging of sunken objects, acoustical measurements, interpretation of shallow continuous reflection seismic profiling, *etc.*

The sediment thickness represented on this new map is limited to the depth of penetration of the coring devices.

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GEOMETRY OF FLUVIAL AND DELTAIC SANDSTONES (PENNSYLVANIAN AND PERMIAN), NORTH-CENTRAL TEXAS[1]

Upper Pennsylvanian and Lower Permian rocks of the eastern shelf in north-central Texas are composed of 10–15 repetitive sequences including open shelf, deltaic, fluvial, and interdeltaic depositional systems. Sediments derived from the Ouachita Mountains and associated piedmont were transported westward across a narrow coastal plain. Fluvial and deltaic sandstone facies define a southwest paleoslope of about 5 mi. Sandstones are delta-front, distributary-mouth-bar, distributary- and fluvial-channel, and destructional-bar facies.

Distributary patterns represent distal deposition in the upslope area. Belt sandstones, typified by unusually thick fluvial channels, prograded far downslope. Composite patterns include distributary and belt sandstones representing complex progradational history. Rocks display ½° northwest regional dip; negative structure residuals outline a broad area within which 70% of the deltaic facies were deposited.

Elongate sandstones generally are arranged parallel with paleoslope in vertically offset patterns controlled by differential compaction of fluvial and deltaic sands and interdistributary muds. Multistory sandstone bodies were deposited along narrow, structurally unstable belts which were periodically overloaded and later reoccupied by prograding deltas. Initial Cisco deltas followed a paleosurface grain controlled by underlying bank limestones; this paleoslope orientation was maintained during deposition of 1,200 ft of Cisco strata. Each fluvial-deltaic system inherited its geometry from previous systems and, in turn, provided control for the next deltaic episode. Stratigraphic and structural mapping utilizing mud decompaction techniques confirm the roles played by compaction and structure in controlling the geometry of sandstone bodies.

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[1] Publication authorized by the Director, Bureau of Economic Geology, The University of Texas at Austin.