tered, apparent dates ranging from Precambrian(?) to Paleozoic(?). R. E. Denison had earlier determined K-Ar and Rb-Sr mineral dates from the northern rocks to range from approximately 380 to 550 m.y.B.P., although these dates were considered spurious as plutonism in southern New Mexico has conventionally been assumed to be either Precambrian or Mesozoic-to-early Tertiary. Field relations for the northern block suggest some alkali granites-syenites are intrusive into the Bliss Formation (Cambrian-Ordovician) but younger than mid-to-late Paleozoic rocks, although the intrusive contacts have been questioned. New major and trace element chemical studies indicate a transition from alkali granite to syenite for the northern block and, more important, fresh material from drill cores has yielded Rb-Sr whole rock ages of 378 ± 19 m.y.B.P. (alkali granite suite) to 423 ± 24 m.y.B.P. (syenite suite) with a composite date of 405 ± 18 m.y.B.P. This age confirms Denison's work and argues for previously unrecognized Paleozoic plutonism in southern New Mexico, although it is not known at present whether this date represents a western extension of Ouachita-dates (i.e., parallel to the Texas lineament) or a separate, isolated event. Regardless, other apparent-Paleozoic dates from southern New Mexico must now be reexamined in light of the dates from the Floridas.

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Unusual Ponding of Sediments on Deep-Water Reef

The Florida Middle Ground is a deep-water coral reef on the outer continental shelf in the northeastern Gulf of Mexico. The reef consists of two parallel north-trending ridges, each about 50 km long and rising 11 m from the shelf to a depth of about 26 m. The ridges are separated by a broad, flat, sediment-filled valley about 8 km wide. The south end of the valley is partly occluded by irregular knolls. Station data (in transects) were collected over several seasons by Shipek grab, scuba team, and manned submersible. Detailed textural and constituent analyses of valley sediments reveal sand-sized carbonate material unlike the finer sands and silts found on the adjacent continental shelf. The percentage of terrigenous material in the valley is substantially less than that of the surrounding shelf.

Hurricanes, frequent storm fronts, the Gulf Loop Current, and semidiurnal tidal currents together comminute and erode ridge constituents. Those constituents transported between the ridges are mixed and trapped with shelf sediments. An accumulation of up to 5 m of sediment, over twice the thickness on the adjacent shelf, is ponded in the valley.

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Entrada Oil Fields of Southern San Juan Basin, New Mexico

Twenty-two years elapsed between the discovery of the first Entrada (Jurassic) oil field at Media, Sandoval County (T19N, R3W) in 1953 and the discovery of Eagle Mesa, Sandoval County (T19N, R4W) in 1975. In the last two years, four additional but similar pools have been found at Ojo Encino, McKinley County (T20N, R5W), Papers Wash, McKinley County (T19N, R5W), Snake Eyes, San Juan County (T21N, R8W), and Leggs, San Juan County (T21N, R10W). These recent successes resulted from regional geologic studies, a reevaluation of the Media field, and the employment of high-resolution seismic techniques and processing. Oil is trapped in Entrada eolian sand dunes that have been preserved by the overlying lacustrine limestone and anhydrite of the Todilto Formation. Hydrodynamic influences have tilted the oil-water contacts in some of the fields. The oil, which is believed to have been generated within the Todilto limestones, is of medium gravity and high pour point. The geology, drilling, completion, and production of sample fields are discussed.

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Diagenesis of Lower Coralline Limestone (Chattian), Maltese Islands

The sequence of diagenetic fabrics in the lower Coralline Limestone (Chattian) on the Maltese Islands suggests that there was one phase of early marine cementation followed by at least two periods of phreatic cementation. Cements of marine origin include fine fibrous cement on algal and foraminiferal debris, and clouded syntaxial overgrowths on echinoid fragments. A younger generation of clear overgrowths on echinoid fragments displays luminescent zones that are restricted to the lower Coralline Limestone and lower member of the Globigerina Limestone and can be correlated throughout the Maltese Islands. These clear overgrowths are phreatic and formed both before and during sediment compaction. Subsequent phreatic cementation produced fine to medium-grained, non-luminescing scalenohedral calcite crystals that postdate compaction. The final stage of phreatic cementation consists of fine to medium-grained equant void-filling spar that is non-luminescent. Vertical and lateral distribution of phreatic cements and compacted textures is irregular and discontinuous. In general, well-cemented horizons also show overcompacted textures.

The relative timing of these diagenetic features indicates at least two episodes of emergence and meteoric cementation related to the development of freshwater lenses within the lower Coralline Limestone. Erosional and unconformable horizons in the overlying Miocene formations may record times of freshwater alteration corresponding to periods of eustatic lowering of sea level and emergence of the entire central Mediterranean platform.

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Geologic History of Deep Southeastern Gulf of Mexico Basin—Seismic Stratigraphic Interpretation Ahead of Drill

A seismic stratigraphic analysis of multifold reflection data from the deep water part of the southeastern