

occurring in the section at nearby Le Castella, the results of the present study indicate that none of the earliest Calabrian is exposed at that locality. Most of the Quaternary section exposed at Le Castella is younger than the youngest sediment exposed at Santa Maria di Catanzaro.

At Santa Maria di Catanzaro, the range of *Discoaster brouweri* Tan Sin Hok was found to be concurrent with the planktonic foraminiferal species *Globorotalia truncatulinoides* (d'Orbigny). Most of the section represents cooler water deposition.

At Le Castella, most of the exposed Quaternary sediments represent warmer water deposition (Emilian = "late warm Calabrian"), with cooler water deposition represented near the top (Sicilian). At Le Castella, the range of *Discoaster brouweri* Tan Sin Hok was found to be concurrent with *Gephyrocapsa caribbeana* Boudreaux and Hay.

The Calabrian at Santa Maria di Catanzaro, with the presence of both *Discoaster brouweri* and *Globorotalia truncatulinoides* in section deposited in cooler water, correlates very well with the American marine Nebraskan. The Emilian at Le Castella, with the occurrence of both *Discoaster brouweri* and *Gephyrocapsa* in section deposited in warmer water, is equivalent to the American marine Aftonian.

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SURFACE AND SUBSURFACE MORPHOLOGY OF TWO SMALL AREAS OF BLAKE PLATEAU¹

A detailed seismic profiler, bottom sampling, and bottom photographic study reveal considerable information about the surface and subsurface morphology of two small areas on the Blake Plateau. The northern area is a N-S-trending depression (32°N, 77°30'W) near the continental slope, and the southern area is defined by a narrow NE-SW linear depression (30°50'N, 78°30'W). Both of these topographic features are erosional in origin; subsurface strata crop out on the sides of the depressions. The north-south depression is flanked by numerous biohermal coral banks that have developed above the flat underlying strata. Sediments in the vicinity of these banks are dominated by coral fragments, particularly *Dendrophyllia*. With increasing distance from the banks the sediment becomes primarily a *Globigerina* sand and ooze, with varying amounts of pteropods. The distinctive sediment components in the southern depression area are manganese and phosphorite slabs and nodules; coral banks and coral sediment are practically absent. Indurated slabs of *Globigerina* "sandstone" are locally common in both depression areas, and are believed to be restricted to the uppermost sedimentary strata and to have been lithified at present depths.

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DIAGENETIC PATTERNS IN SUBSURFACE BAHAMAN ROCKS, SAN SALVADOR ISLAND

A 550-ft continuous core from San Salvador allows detailed study of depositional and diagenetic facies patterns with depth. From the surface to about 25 ft, the rocks are oolites and oolitically coated intraclasts,

cleanly washed and bedded. Below, to about 80 ft, the rock is grain supported, less well sorted, unbedded, and contains no coating. The rock is vuggy, with drusy calcite lining vugs at certain intervals. Similar transitions from bedded oolite to vuggy lagoonal facies have been cited at roughly this depth from other islands. Allochems are intraclasts and skeletal material, mostly mollusks, miliolid and peneroplid foraminifers, red algae, and *Halimeda* plates. Burrowing is evident below 55 ft. The rocks are sparites, but some mud matrix is present sporadically. From 80 to 110 ft, the rock is micrite or pelmicrite, the few scattered fossils are foraminifers and red algae. Pelmicrites predominate through the rest of the core; below 110 ft extensive dolomitization has occurred.

Cementation, leaching of cryptocrystalline grains and infill by drusy calcite, neomorphism of cryptocrystalline grains to microspar, loss of aragonite, and concurrent loss of Sr increase with depth. Stable isotope analyses show δO^{18} and δC^{13} becoming progressively more negative with depth. Fe concentration shows a peak at 90 ft and is probably indicative of major pedogenesis.

Thin sections show some of the difficulties associated with attempting to differentiate pore-precipitated calcite spar from neomorphic spar in grain-supported rocks which contain some mud matrix. This difficulty is heightened by the "micritization" of allochems, diffusing into the spar cement.

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VIRTUES AND VICIS OF PALEOMAGNETIC METHOD AS APPLIED TO MARINE SEDIMENTARY CORES

The geomagnetic polarity has changed irregularly at least 20 times during the last 5 m.y. These polarity changes are worldwide synchronous events and are readily recorded by most sediments of fine silt or smaller size. For reasons which are not clearly understood, polarity and faunal changes sometimes occurred simultaneously. It follows that the paleomagnetic method is a very powerful technique for resolution of Plio-Pleistocene stratigraphic problems.

Like many new techniques, the method is susceptible to misapplication. The misapplication may result from lack of consideration of (a) variable deposition rates, (b) disconformities and unconformities, (c) faunal redeposition, (d) magnetic recording lag of consolidating sediment, (e) imperfectly defined polarity history, (f) limitations of unoriented cores in low latitudes, and (g) experimental difficulties. Results from continuing studies of deep-sea sedimentary cores from the South Pacific illustrate some of the difficulties.

It is concluded that the study of paleomagnetism in marine sedimentary cores parallels the earliest conventional stratigraphic methods, in that integration of several disciplines is required for efficient and reliable exploitation of the technique.

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STRUCTURAL RELATIONS BETWEEN LESSER ANTILLES, VENEZUELA, AND TRINIDAD-TOBAGO

More than 2,500 nautical mi of seismic-reflection profiling, gravity, magnetic and bathymetric data were collected in 1968 by the ESSA Coast & Geodetic Survey ship *Discoverer*.

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