

anthracite coal gave negative values (-1.617697×10^{-6} per gram).

It is suggested that magnetic susceptibility measurements can give a first approximation as to the relative concentrations of trace elements in shales and similar rocks. Attempts are being made to establish magnetic susceptibility measurements as a simple and fast analytical method.

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NEOGENE CALCAREOUS NANNOPLANKTON, SIGSBEE ABYSSAL PLAIN, GULF OF MEXICO

A detailed study of calcareous nannoplankton from 11 upper Miocene to Holocene cores recovered by the D/V *Glomar Challenger* in the Sigsbee abyssal plain at Site 3, Leg 1 of the JOIDES Deep Sea Drilling Project, was conducted with the use of optical and scanning electron microscopes. Results show the presence of 8 of the 11 nannoplankton zones established for the late Neogene by Martini. The zones present, from youngest to oldest, are: *Emiliania huxleyi* zone, *Gephyrocapsa oceanica* zone, *Pseudoemiliania lacunosa* zone, *Discoaster surculus* zone, *Reticulofenestra pseudoumbilica* zone, *Discoaster asymmetricus* zone, *Ceratolithus tricorculatus* zone, and *Discoaster quinqueramus* zone. Three of Martini's zones were not detected because there was no core coverage for the intervals where they most likely would be present. These include two late Pliocene zones, *Discoaster browneri* zone and *Discoaster pentaradiatus* zone, and the Late Miocene *Ceratolithus rugosus* zone.

A total of 84 species was recognized; however, a sizable part of the assemblages consists of reworked specimens. Nearly 70% of the species present in the Pleistocene assemblage are reworked; in pre-Pleistocene sediments, 25-50% are reworked. Relative abundances of individuals vary considerably throughout the 11 cores, but only 2 samples of the 88 examined were found to be entirely barren of nannofossils. Late Neogene calcareous nannoplankton from the Sigsbee abyssal plain occur in a succession of zones that agrees with the Neogene Standard Zonation sequence; they are also comparable to nannofossil assemblages known from continental shelf deposits in the Gulf Coast region.

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REGIONAL EXPLORATIONS FOR OIL AND GAS IN USSR
No abstract available.

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MINERALOGY OF SOME HAWAIIAN COASTAL AND MARINE CARBONATES

The Hawaiian beaches are predominantly calcareous sands of skeletal origin washed in across the reef flats. Calcareous deposits also are present in the island shelf and bank environments. The carbonate minerals listed in order of decreasing abundance are high-Mg calcite, aragonite, and low-Mg calcite. Relative abundance of these carbonate mineral assemblages was determined by X-ray diffraction analyses to correlate the mineralogy, the sources, and the depositional environments. Beaches of the island of Hawaii, the youngest of the Hawaiian Island chain, have a higher aragonite content (65%) than those of the other islands, and the older

the island, the lower is the aragonite content of its beach sands. This phenomenon is probably due to the maturity of the reefs. Coral and *Halimeda*, being the first to develop, formed the aragonitic framework which gradually was filled by high-Mg calcite skeletal sands, and, locally by low-Mg calcite skeletal sands.

Aragonite is most abundant in the upper part of the island shelf (50 m) and high-Mg calcite increases in abundance in the lower part of the island shelf. Low-Mg calcite makes up less than 20% of the island shelf and is uniformly distributed in it. Aragonite in the lower part of the island shelf is transported from the shallow part of the shelf. The abundance of high-Mg calcite and aragonite in Hawaiian marine sediments indicates the recentness of the calcareous deposits.

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HYDROLOGIC SYSTEMS

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TRENDS IN MODERN AGGLUTINATED FORAMINIFERIDA ACROSS CONTINENTAL MARGIN OF NORTHERN CALIFORNIA AND OREGON

Along the eastern margin of the North Pacific agglutinated forams generally increase in number from very few in the innermost sublittoral region to maxima in the middle sublittoral to upper bathyal regions. South of 30°N lat., the maxima range upward to approximately 20% of the total benthic fauna; north of 40°N lat. values range from 80 to 100%. The transition between these two realms occurs over only a few degrees of latitude. Off Oregon, the frequency of agglutinated forams decreases seaward of the maxima to values around 30% between 600 m and 1,800 m, then increases again into the abyssal region. Maxima in the latter region, however, do not reach values as high as those found in the sublittoral.

The sublittoral agglutinated populations between 37 and 43°N lat. are dominated by *Textularia earlandi* and *Spiroplectammina bifurcata*. These are replaced northward by *Recurvoides turbinatus* and *Eggerella advena*. There is an orderly progression of agglutinated species into the abyssal region off Oregon.

It is suggested that calcium carbonate availability may not be the only or even the principal factor controlling the ratio of agglutinated to calcareous benthic forams in the area under discussion. The amount and character of suspended detritus may be more important.

Trends of modern agglutinated forams may not be directly applicable to an interpretation of the geologic record. Many agglutinated tests are more easily destroyed than are calcareous tests. The frequency and quality of preservation of agglutinated tests drop off noticeably below the sediment surface.

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PETROLEUM GEOLOGY OF SUBANDEAN BASIN OF ECUADOR, NORTHERN PERU AND SOUTHERN COLOMBIA

The Subandean basin is an arcuate structural depression aligned in a north-south direction between the Guyana shield and the Andes. Nevadan orogenic movements there were followed by miogeosynclinal conditions that characterized sedimentation throughout the Cretaceous Period. The initial deposits of an Aptian-