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ENVIRONMENT OF GLAUCONITE ON CONTINENTAL SLOPE OF CALIFORNIA

Glauconite pellets are a major constituent of the sediments of the continental slope southwest of Point Conception, California. In areas where other sedimentation is limited, it may constitute more than 90 percent of the surface sediment. Such material commonly is interpreted as relict, but a possible evolutionary sequence of glauconite types is present. Initially, glauconite occurs as a filling or as recognizable internal molds of small shells, particularly those of benthic foraminifers. In later stages, the glauconite appears to be consolidated and concentrated as fecal pellets, mostly of burrowing echinoderms. Five transitional grades of glauconite are defined in the surface sediment. The initial stages disappear with depth in cores.

All evidence indicates that the depositional environment of these glauconites is completely normal bathyal marine. The U.S. Navy Civil Engineering Laboratory has sampled bottom water intensively in areas of high glauconite concentration. The temperature, salinity, dissolved oxygen, Eh, and pH of the bottom waters are normal for the appropriate depths in the northeastern Pacific. The oxygen minimum layer coincides with one area of glauconite concentration, but abundant glauconite occurs at other depths. A current meter in one area of high glauconite concentration registered near-bottom currents averaging 5 cm/sec predominantly parallel with the slope. The fauna is normal benthic, primarily echinoderms and polychaetes. No sign of anoxic conditions is seen in the water column or in the sediments. If the glauconite is authigenic, authigenesis must occur either in normal marine water or in the intestines of the mud-eating fauna.

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FACIES STRUCTURE BASED ON FUNCTIONAL CLASSIFICATION OF STRATIGRAPHIC COMPONENTS

Sedimentary facies are identified by their characteristic elements of lithology and paleontology. The environmental concepts represented by these characteristic elements constitute the stratigraphic components. The distribution of the components, spatially at a particular stratigraphic level and temporally through stratigraphic sequence, determines the facies structure. The stratigraphic facies components define a characteristically unique steady-state at any stratigraphic level. If a particular level is analyzed systematically in relation to the total temporal-spatial system, the results form a systematically organized pattern correlative with the integrative properties of the previous and subsequent stratigraphic systems. Each system has general and specific characteristics, represented in a form of unified characteristic information concerning the particular component.

Stratigraphic analysis assumes that elements, members, and sets of spatial and temporal systems are unique. Uniqueness has exactness if any of the numerical orders is applied to it. Numerical values of the two systems form a framework through which the stratigraphic components are interwoven forming a higher order structure, based on the stratigraphic system theory.

Functional classification is based on the principle of the motions and movements of figures throughout the structure dimensioned from the outside of the system of functions. Within the system of functions, components are grouped by their functional characteristic properties. Movement of each group of stratigraphic components throughout the lattice has defined meanings in relation to stratigraphic system theory. The value of a related meaning dimensions the component and partly completes the structure. The additional two projections make the facies structure complete, built by the projection of factors that make the cluster with its specific characteristics related to a particular facies.

AT HOME AND ABROAD

NEWS OF THE PROFESSION

SIEGFRIED MUESSIG has been appointed manager of the newly formed Minerals Exploration & Mining department of Getty Oil Co., Los Angeles, Calif.

ROBERT L. KIDD, director and retired Chairman of the Board for Cities Service Oil Co., was elected president of the International Petroleum Exposition at the annual IPE executive Directors' meeting in Tulsa, Okla., Jan. 9, 1968.

RALPH O. KEHLE, LYNTON S. LAND, and LELAND J. TURK have joined the staff of the Department of Geological Sciences at The University of Texas at Austin.

ROBERT A. TEITSWORTH, vice-president, Occidental Petroleum Corp., Bakersfield, Calif., has been made manager of North American exploration. STANFORD ESCHNER was named assistant to Teitsworth.