

## REVIEW

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The eighth issue of the *Publications of the Institute of Marine Science* contains several papers of particular interest to geologists. The lead article, "Texas Bay Sediments," by Francis P. Shepard and Gene A. Rusnak, summarizes the findings of a group of Scripps Institution scientists who have been investigating the sediments of Texas bays, from San Antonio Bay southward to the Mexican border, during the past six years. The authors conclude that the properties of the Recent sediments, as well as the macroorganisms, Foraminifera, and Ostracoda associated with the sediments, have environmental characteristics which should be recognizable in Tertiary sediments of the Texas coast. For example, thick, unstratified clayey sediment containing layers of oyster shells indicates a relatively humid environment; absence of echinoids and glauconite indicates lagoons or estuaries; large quantities of sand suggest proximity to inlets or barrier islands; nearness to a stream mouth is indicated by an abundance of wood fragments; deposition at the mouth of a stream is suggested by the interlamination of silt and clay; forams and ostracodes, as well as macroorganisms, have assemblages in the bay environment which are distinct from those in the open Gulf; semi-arid bay conditions are indicated by gypsum and carbonate aggregates, calcareous oöliths, and calcareous coatings around shells and sand grains.

Two papers by Howard T. Odum, "Strontium in Natural Waters" and "Biogeochemical Deposition of Strontium," will be welcomed by geochemists, paleontologists, and paleoecologists. A purpose of the first paper, "Strontium in Natural Waters," was the gathering of information concerning the relationship of the strontium/calcium ratio to present day regional water types as an aid in using the trace element contents of fossils and rocks to make paleoecological interpretations. Three hundred new determinations of the strontium content of natural waters were made in characterizing the

strontium cycle in the hydrosphere. A discussion of the strontium content in the ancient ocean supports the conclusion that the oceanic Sr/Ca ratio has decreased or been the same during the history of the ocean. The second paper by Odum, "Biogeochemical Deposition of Strontium" is based principally on his Ph.D. dissertation, "The Biogeochemistry of Strontium," 1950, Yale University, but includes additional data accumulated since that time. This is a monumental work on Strontium and includes 900 analyses of the Sr/Ca ratio of minerals, tissues, skeletons, fossil sediments, rocks, and soils. Odum affirms the theory that the principal factor controlling the Sr/Ca ratio in shells is the ratio of Sr/Ca in the depositional environment and concludes that this ratio may be used to indicate (1) replacement, (2) the origin of a deposit as marine or nonmarine, (3) climate, (4) food habits; however, the Sr/Ca ratio should be used with other criteria in making paleoecological interpretations. Oölites, beach rock, Drewite, reef corals, and green aragonite algae have high Sr/Ca ratios which the author believes may be related to rapid deposition of carbonates associated with photosynthetic processes. "Biogeochemical Deposition of Strontium" is a major paper on this subject and many (20) specific conclusions are drawn which cannot be summarized in this short review; however, these conclusions will be of interest to the marine geologist, soils geologist, and geomorphologist, as well as the geochemist, paleontologist and paleoecologist.

"Self-silting by the Oyster and its Significance for Sedimentation Geology" by E. J. Lund is a result of a laboratory investigation with living oysters. Calculations based on the results of the laboratory experiments show that 35.9 cubic yards (8.36 tons dry weight) of silt would be deposited by a single continuous layer of oysters covering an area of one acre, in eleven days. Filtration and separation of the silt by the oyster is accomplished by its ciliary mechanism. The ingenious experiments performed by Lund show that even in waters of rela-

tively low turbidity oysters are agents of sedimentation many more times effective than gravity in the same area. Other papers by Lund in this issue, "A Quantitative Study of Clearance of a Turbid Medium and Feeding by the Oyster" and "Self-Silting Survival of the Oyster as a Closed System and Reducing Tendencies of the Environment of the Oyster" also touch on this usually overlooked sedimentary process, and is of extreme interest, especially to the sedimentationist.

A fourth paper by E. J. Lund, "Effect of Bleedwater, Souble Fraction and Crude Oil on the Oyster" is also the result of laboratory experiments using living oysters. The influence of various concentrations of bleedwater and crude oil on the oyster is discussed. This paper will be of interest to petroleum geologists who may be directly or indirectly concerned with problems of waste disposal.

Four papers in this issue are principally ecological in nature: "Ecological Survey of Baffin and Alazan Bays", by Joseph Breuer; "Ecological Survey of the Upper Laguna Madre of Texas", by Ernst G. Simmons; "Studies on the Ecology of Two Species of *Donax* on Mustang Island, Texas", by Harold Loesch, and "Metabolism of a Laboratory Stream Microcosm", by Howard T. Odum and Charles M. Hoskin. These papers contain principles applicable to paleoecological studies. The ecological sur-

veys of Baffin and Alazan bays and the upper Laguna Madre supply information concerning fauna inhabiting hypersaline waters. This information will be most useful in interpreting hypersaline areas in the geological record.

Five papers, "The Summer Marine Flora of Mississippi Sound", by Harold Humm, "The Effect of Suspended Materials on the Reproductive Rate of *Daphnia magna*", by Maryanne Robinson, "The Acanthocephalan Parasites of the Fishes of the Texas Coast", by W. L. Bullock, "Body Fluid of the Oyster *Crassostrea virginica*", by Milton Fingerman, Laurence D. Fairbanks, and Warren C. Plauche, and "Notes on the Reflex Inhibition of Water Propulsion by the Oyster," by E. J. Lund and Ernest Powell, are only remotely applicable to geological problems.

Twelve of the seventeen papers in this issue of the *Publications of the Institute of Marine Science* are of direct interest to geologists. The increasing prominence of geological investigations, and investigations which have geological application, in programs of marine laboratories throughout the world is of great significance to geology and will ultimately result in greater understanding of past geological processes and events.

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