attention to this lamentable state, to plead for wider employment of clearly defined names, and to offer a general system of nomenclature which could provide a means of achieving greater uniformity and precision in terminology.

This system is not in the least revolutionary but merely proposes restricted meaning for many existing names and a general scheme for systematically deriving other names. Guiding principles are: (1) names should be based on petrographic features; (2) these features should be established, not inferred; (3) the system for naming rocks should be flexible enough to apply both in the field and in the laboratory; and (4) names should be just as quantitative as the means of examination permits.

The classical concept of sedimentary rocks as mixtures of mechanical and chemical fractions is the principal nomenclatural basis in this system. The main name reflects the most abundant constituent of the dominant fraction. A finer division of silicate sandstone than is customarily made is believed practical and desirable.

Three terms are proposed to fill a conspicuous gap in terminology. *Aggregal* and *integral* describe textures of mechanical and chemical origin, respectively, but are defined petrographically. *Accretic,* a correlative term with clastic, describes aggregal textures composed of grains formed by accretion. Integral textures include those which are crystalline and amorphous.

The most important point concerning nomenclature is that the reader understand the terminology employed by the writer. This can be assured by reference to an explicit classification or nomenclatural system.

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CRITERIA USEFUL IN INTERPRETING ENVIRONMENTS OF UNLIKE BUT TIME-EQUIVALENT CARBONATE UNITS, CAPITAN REEF COMPLEX, WEST TEXAS AND NEW MEXICO

The Tansill Formation and the Lamar Member of the Bell Canyon Formation are the uppermost carbonate units equivalent to the Capitan Formation of West Texas and southeastern New Mexico. The Lamar is restricted to the Delaware basin and is equivalent to the lower and middle parts of the Tansill. Surface and subsurface stratigraphic studies by many workers show the Tansill-Capitan-Lamar to represent classic examples of shelf, shelf-margin, and basin deposits.

Because these units will continue to serve as a model for environmental studies of ancient rock, this paper reviews some of the criteria useful in distinguishing the various environments.

In the Guadalupe Mountains area, carbonate units of the Tansill Formation are predominantly light colored, well-bedded dolostone which grades shelfward into evaporite. Along the margin of the Northwestern shelf, the Tansill quadruples in thickness and becomes less dolomitic before grading into the Capitan Formation. Well-preserved depositional textures and sedimentary structures in Tansill carbonates suggest shallow-water environments ranging from supratidal flats and evaporite lagoons to shoal-water areas.

The Capitan Formation of Tansill-Lamar age consists of light-colored, massive to thick-bedded carbonate along the shelf margin and steeply dipping, massive beds of carbonate detritus along the basin margin. Texture and skeletal components of the Capitan are different from those of the Tansill. The Capitan generally is interpreted to be a shelf-edge and slope deposit.

The Lamar Member is a basinward-thinning tongue of limestone debris derived largely from shelf (Tansill) and shelf-edge (Capitan) deposits. It tends to be dark-colored, cherty, and evenly bedded but contains some slump structures. Units of micritic skeletal-intraclast calcarenite grading upward to micrite are common near its transition with the Capitan Formation. Farther basinward, the Lamar is characterized by evenly laminated micrite. Relative to the Tansill the Lamar is interpreted to have been deposited in deeper water (partly by turbidity currents) on a smooth basin floor.

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RELATION OF GRAIN SIZE TO SEDIMENTARY PROCESSES

Sand samples from known environments of deposition along the Gulf and East Coasts of the United States were collected to determine the effects of provenance, tidal range, average wave height, and sand supply on grain-size distributions. More than 300 samples were collected along profiles across 26 different tidal inlets, bays, and beaches. Samples were taken from the dune ridge to the plunge point, and in many places beyond the breaker zone. Additional samples were analyzed from the mouth of Southwest Pass of the Mississippi River.

At each sample locality information was collected on (1) the beach profile, (2) sedimentary structures, (3) tidal cycle, (4) average breaker height, and (5) relation to sources of sediment supply. The information gathered was compared with log-probability plots of the size distributions. Probability plots of similar form were grouped to determine how different physical conditions affected the size distribution, and to determine the presence of genetic associations.

Specific aspects of the grain-size distributions were found to be uniquely associated with differing depositional environments. The dune, swash zone, plunge zone, and wave-rippled sands exhibit characteristic size distributions even though they included samples from widely divergent provenance, energy, and tidal conditions.

Grain-size distributions of samples collected from both the Gulf and East Coasts illustrate the environmental and provenance variations. Localities with high wave energy and limited supply include Cape Hatteras, North Carolina, Long Beach, North Carolina, and Pensacola Beach, Florida. These three areas show a limited fine fraction and a large coarse fraction. Other beaches close to a major source of supply and of lower average breaker height include Folly Beach, North Carolina, Forest Beach, South Carolina, Indian Beach, Florida, and Grand Isle, Louisiana. These show a large fine fraction and little coarse material.

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TIME SURFACES, VACUITY, AND MAPPABILITY IN STRATIGRAPHY

Recognition of regional lithologic marker beds is accelerated by refined mechanical logging techniques and adequate drilling density. These correlative "punctuations" are considered to be geologically instantaneous, and to yield time surfaces bounding reli-