Reefs and banks form stratigraphic traps which hold more than 40 per cent of the total petroleum production in the world. They are of special importance in the Permian basin exploration. Yet there is much confusion concerning the classification and terminology of these skeletal deposits. It is the purpose of this paper to attempt to define these structures on a genetic and morphological basis and indicate their exploration potentials.

Following Lowenstam (1950) and Nelson *et al.* (1962), the writer applies the terms "reef" and "bank" to denote the origin of the structures, whereas the terms "bioherm" and "biostrome" are used to designate the shape of the structures and their relation to the associated layered facies.

A *reef* is a structure built by the in-place growth of organisms which have the ecological potential to act as frame-builders. It is a wave-resistant, prominent structure on the sea floor and, therefore, influences, and modifies sedimentation in its vicinity.

A *bank,* in contrast, consists of organisms which did not have the ability to erect a rigid three-dimensional frame-work. Banks may be formed in place or by mechanical build-up following transport of the skeletal remains. Banks also are wave-resistant. They may or may not be prominent structures on the sea floor or influence the sedimentation around them.

According to their formation, banks are subdivided into (1) mechanical and (2) biogenetic accumulations. Biogenetic accumulations are subdivided further into banks resulting from (a) biogenetic baffling of sediment, (b) biogenetic binding of sediment, and (c) gregarious local growth of organisms without erecting prominent structures.

Thus, reefs and banks are distinctly different types of accumulations. In a reef, ***in situ*** growth of organisms is more important than sediment trapping and binding, and the organic productivity of the frame-building organisms alone is sufficient to elevate the structure above the surrounding sea floor. Frame builders in general are organisms that cement themselves to the substratum and form a rigid mass. Cementation appears to be very important in the resulting structure. Colonial hexacorals, stromatoporoids, calcareous sponges, rudistids, and crustose $CaCO_3$-secreting red algae can act as frame builders in a reef.

In contrast, in banks, the sediment-baffling and binding functions of the organisms are the main sources of sediment accumulation. Tetracorals, tabulate corals, bryozoans, crinoids, phylloid algae, pelecypods, gastropods, and brachiopods are organisms that can not erect a rigid framework. However, they can actively trap sediment and form banks. Furthermore, their local gregarious growth may lead to bank-type accumulations.

A *bioherm* is a massive, mound-shaped structure which is in discordant relationship with the surrounding layered facies of different lithologic types. A *biostrome* is coarsely layered and grades concordantly into the surrounding layered sediments.

According to these definitions, a reef, according to its shape and geological setting, represents a bioherm. A bank, however, may take the form of a bioherm or biostrome. Mechanically accumulated banks and biogenetic banks resulting from the sediment-baffling activity of organisms generally have the form of bioherms. Banks resulting from biogenetic binding of sediment may have the form of either bioherms or biostromes. Local gregarious growth of organisms usually leads to accumulations of the biostrome type. The fact should be stressed that the shape of a fossil structure is not necessarily the same as its shape at the time of formation. Differences in compaction capabilities of skeletal deposits *versus* clay or carbonate-mud-rich deposits tend to exaggerate the relief of the organic build-up.

Examples of various types of Recent and ancient reefs and banks are illustrated and discussed. Recent coral reefs of the Florida Keys reef trend and Cretaceous rudistid reefs in Sierra El Abra, Tampico region, Mexico, are examples of true reefs. Little Molasses Reef, Florida Keys, is interpreted as a bank which was formed by mechanical accumulation of skeletal debris. Rodriguez Key, Florida Keys, and mud mounds in Florida Bay are examples of banks representing biogenetic accumulations resulting from the sediment-baffling functions of organisms. Phylloid algal mounds from the Hueco Tanks area (West Texas), Dry Canyon near Alamogordo, New Mexico, and Marble Canyon, Alamogordo, New Mexico, are ancient counterparts of these biogenetic banks.

Algal stromatolites are representative of banks formed by the sediment-binding action of organisms. Cretaceous oyster beds are indicative of bank accumulations by local gregarious growth of organisms.

It is very important to emphasize the fact that structures, which superficially appear to be very similar, may, in fact have formed in very different environments and, therefore, require different genetic interpretations.

11 A. L. PORTER, New Mexico Oil Conservation Commission, Santa Fe, N. Mex.

Oil and Gas Conservation in New Mexico

Oil has been known to exist in New Mexico for more than 50 years, but significant production did not begin until the completion of the second well in the Hobbs pool in 1930. The Hobbs pool, developed during the time when the law of capture prevailed elsewhere, stands today as an example of the wise application of sound conservation policies.

For several years the development of oil and gas resources in New Mexico has been the state's biggest business, and has added much revenue to its economy.

The conservation act and laws passed by the state's legislators, creating the New Mexico Oil Conservation Commission, charged this commission to prevent the waste of oil and gas and to protect correlative rights.

The commission can point with pride to its conservation record and, as a regulatory body, its performance in the public interest reflects its flexibility in bringing about needed changes as technology improves.

12. FRANK SPIVA and A. K. DOSS, Consultants, Abilene, Tex.

Palo Pinto Limestone of Western Runnels County, Texas

The Palo Pinto Limestone (lower Canyon Series) of western Runnels County, Texas, is generally found at depths of 3,800-4,200 feet. The two productive porosity zones are in the upper 50 feet of the formation. The lower is by far the more productive. The Palo Pinto can produce from structural traps alone but the best producing fields are those in which stratigraphic pinchouts are associated with low-relief structures. Several of the presently productive fields produce 30-60 per cent water together with the oil; history now shows these fields to have considerably