CHAPTER 6

TIMEKEEPERS IN TEXAS

Most people in the United States automatically associate the words "Texas" and "oil." By 1949 the oil fields of Texas were producing 42 per cent of the oil of our nation. Since the petroleum industry is one of our major sources of information concerning deep underground deposits and local stratigraphic columns, it is not surprising that the many oil fields in the various parts of Texas have supplied us with a great deal of information about the past.

The area from which our best stratigraphic time records come is that of western Texas (and southeastern New Mexico). During the 1940's this part of Texas became the leading oil producing district of the state.[1] One of the major oil reservoirs there consists of an ancient, buried organic bank or reef which has a porous texture similar to that of the Canadian reefs. We use the term "organic bank" because some geologists feel that the scarcity of coral fossils in it makes it advisable to avoid the term "reef." Nevertheless, this organic bank is usually called the "Capitan reef," and gives every evidence of having grown in the ancient shallow sea which formerly covered that part of the United States. The word "organic" in the term "organic bank" refers to the fact that the bank or reef is made up almost entirely of materials produced by organisms. Many of the marine organisms which produce the calcareous fecal pellets and skeletal parts, of which a bank such as this is largely composed, can not produce strong, wave-resistant structures like the coral reefs in the oil fields of Alberta. These organisms can, however, produce enormous amounts of skeletal debris as they live and die generation after generation. Some of the kinds of organisms which are found embedded in the drilling cores taken from the Capitan reef are calcium-secreting sponges, bryozoans, crinoids, hydrozoans, brachiopods, and foraminifera. The hard, limy deposits of various kinds of encrusting algae are abundant among these other organisms. Such algae are very effective in binding and stabilizing reefs, as we regularly observe in the reefs of Bermuda and of the south Pacific. Also, some hydrozoans of this early geologic period built hard crusts which probably gave further aid in producing the necessary wave resistance.

It is significant that large numbers of (well preserved) sponges and bryozoans are found in their original growth position (in situ) in the reef.[2] The sponges are very similar to some of our modern sponges. As they grow they secrete thousands of tiny, needle-like "spicules" in their body wall. These calcium carbonate needles give the sponge support and protection in life; and, when the animal dies, either the needles drop down and contribute to the sediments, or else the whole sponge is fossilized in place. The bryozoans are tiny marine animals which grow in large colonies. Each individual animal forms a calcium carbonate tube surrounding it, for its protection. All the tubes join together in branching fashion to form