CHAPTER 3

CORAL REEFS AS A RECORD OF THE PAST

Just before the destruction of Eniwetok and Bikini atolls in the Pacific atomic tests, the U. S. Geological Survey opened up an important window into the past for evangelical Christians. This "window" was to give us an insight into the long and extensive process of the making of certain biologically produced rock formations. Here was to be found a natural record of at least many hundreds of thousands of years of the growth and building activity of coral animals and other lime-secreting organisms. In this record Christians would have an opportunity to see step-by-step some of the results of the creative acts of God which are described in the first chapters of Genesis. Soon after the Second World War the U. S. Government decided that extensive drillings should be made into the atolls (circular type coral reefs) of the Pacific before the bomb tests were carried out. These investigations were made during the period of 1946 through 1952, and the reports were published as a part of the U. S. Geological Survey Professional Paper series.

Coral reefs are built by the slow growth of coral animals and other organisms which live with them. Since the limy materials deposited by coral animals gradually build up over the skeletal matter left by the previous generation, a hardened, mineral record of the past is built as time progresses. This gives us a natural, accurate record of animal and plant growth on the reef over a long period of time. In some ways this is comparable to the record we have in the successive generations of peat moss which accumulate, one upon the other, to form a peat bog. There are, however, several basic differences between the formation of a peat bog and the formation of a coral reef. One of these is that the reef-forming organisms must have sea water, which is laden with minerals, as their source of building material. Another is that, after the limy skeletons of the coral animals and other organisms have been formed, the continued action of the surrounding sea water fossilizes a great many skeletons, thus forming very long-lasting structures which make up the framework of the reef.

When we speak of the "skeletons" of these organisms, we are not referring to bones. Coral animals and the other organisms which form a reef do not have bones, as the vertebrate animals do. Any hard structure which supports the living cells of a marine animal or plant, and thus gives stability to the organism, is properly called a skeleton. Since sea water contains an abundance of mineral matter (approximately 3.4%, by weight), marine organisms have no problem in obtaining the material for their skeletons. The main mineral used for this purpose is calcium carbonate ($CaCO_3$). Surprisingly, numerous kinds of algae build supporting skeletons of calcium carbonate within their plant bodies. So the corals, snails, oysters, and other hard-bodied marine animals are not the only organisms which contribute skeletal materials to a reef.