

estimated to comprise 19 to 22% of available measured stratigraphic sections.¹

The percentage of limestone and dolostone is similarly stated by B. B. Hanshaw of the U. S. Geological Survey, as "20% of the sedimentary record." He also explains that "carbonate rocks contain about 50% of the world's known petroleum reserves."²

The 19 to 22%, to which these authors refer, means far more thickness of limerock than most people imagine. For example, when one considers the entire area of the United States east of the Rocky Mountains, he finds an average of approximately 4,500 feet of sedimentary rock above the Precambrian base.³ This means an average of nearly 1,000 feet of thickness of limerock underneath the surface, for the larger part of our country. Pettijohn cites research which determined that the average thickness of sedimentary rock and other sediments for the entire earth is approximately 2,400 ft.⁴ It is probable that this figure will be somewhat revised after all of the Deep Sea Drilling Project reports are in, but it is not likely that the revision will be to a lesser thickness--at least not for carbonate deposits.

We have already referred, in Tables 2 and 5, to some of the thousands of feet of thickness of fossil-bearing limestone and dolostone in certain oil fields, and could cite many more areas where similar thicknesses exist. In fact, these amounts of fossiliferous carbonate sedimentary rock are very representative of what is found in Europe, Africa, Asia, and under some parts of the sea floor.

Such huge amounts of carbonate rock can only mean that in the past, marine organisms have had at least some millions of years to live, grow, and produce the "biogenic" components of the sediments which became limerock and dolostone. (It will be remembered that a very high percentage of the components of nearly all known deposits of these rocks is made up of skeletal sand, fecal pellets, calcium carbonate needles, and other types of biogenic particles.) Obviously there was never any one time when enough skeleton-producing animals and plants lived contemporaneously--or even within the same ten-thousand year period--to produce this much limestone and dolostone. To hypothesize, as some have, that thousands of feet of limerock thickness were produced by the rapid piling up of skeletal matter is meaningless without sufficient available animal and plant skeletons. Most of the animals and plants which produce thick skeletons grow on ocean bottoms or on rock surfaces along the coasts. These could never have lived crowded upon one another in great, thick layers such as would be required for producing this much skeletal matter within a short time. The great bulk of shell-producing marine organisms are bottom-dwelling. Such animals require room to live and be in contact with the water, which provides life-supporting oxygen for them.