could have been formed rapidly. The accumulation of the many thin layers (each usually less than one millimeter thick) obviously required time, just as it does in the growth of modern stromatolites. The primary cause of the sediment accumulation is the growth of the successive layers of mucilage-forming algae over the most recent sediment surface. The repeating of this process thus depends upon plant growth, and plant growth rates are controlled by stable natural laws.

Some Practical Uses of a Knowledge of Limestone

For the person who is interested in the natural record of past events in the earth, limestone is an invaluable source of information. It is not merely "dead, cold stone," but reveals periods of time, as well as the types of environment in which it was formed. As we have seen in this chapter, most kinds of limestone are literally loaded with biologically formed structures--sedimentary particles which have been formed by living creatures, and built together by intricate processes of ion-exchange and cementation.

We are here briefly summarizing some of the practical aspects of limestone geology which we encountered in this and the preceding chapter:

1. Wherever we find thick beds of undisturbed limestone we know that that site was once ocean bottom, or at least the bottom of a large, inland lake of high mineral content.

2. When limestone is found to be made up of a natural assemblage of several sizes of sediments, such as are produced together on the Great Bahama Bank, we will realize that it was formed on the same site where the sediments were produced. In such a case it is evident that no major disturbance interfered with the natural sedimentation process. Any thick body of such limestone will be known to represent long periods of time. This is because the rates of sediment production in all seas and all climates are slow, and because the calcium carbonate content of sea water is insufficient to support sediment production of more than a few centimeters per year, even if unusually ideal conditions existed continuously.

3. When a body of limestone contains large numbers of relatively immobile, sedentary organisms such as corals and calcareous algae, still in their natural growth position, we know that we are viewing the record of a gradual growth process, on the original shallow-marine site of development. (It should be kept in mind that neither corals nor algae can grow in the dark depths of the sea.)

4. The presence of thick beds of fossil-bearing dolostone is an indication that this rock was formed in a marine environment, and that the original calcium carbonate sediments were converted to dolostone by long periods of water circulation.

5. When thin layers of algal-mat limestone, or of limestone