antler-like structure, with a great amount of space between branches. If one measures the rate of growth of the tips of these branches he will find it to be up to about 100 mm. (about 4 inches) per year in the Florida-Bahama region,[8] and up to 125 mm. per year in Samoa.[9] This is the fastest growing genus of the reef-forming corals; however, it must be remembered that the open nature of the colony (somewhat like the branches of a tree) prevents this coral from making anything like 100 mm. of solid buildup of reef per year. Wave action and other forces wear and break the branches, whereupon they fall to the base to add their volume to the reef mass.

Mayor found the average growth in height of healthy colonies of corals of the massive type, belonging to Genus Porites, to be 17 mm. per year. He also found this kind of coral to be one of the most effective reef-building types in Samoa. Since coral skeletons of this massive type are not readily broken up by wave action, Mayor estimates that "a reef-wall composed of massive Porites might attain a thickness of 55 feet in 1000 years, while a reef composed of branching Porites might grow upward at least 25 feet in the same period of time."[10] (This is of course assuming that the ocean level and other environmental conditions would remain favorable for the entire period.) It should also be noted that Samoa has a latitude, water temperature, and other conditions which are more favorable for coral growth than is found in the Florida-Bahama and Hawaiian areas.[11] It is important here to realize that the term "average" in these reports refers to a figure obtained by measuring the growth of numerous healthy colonies of coral over a period of time (a year or more), and averaging them. Just measuring the growth rate of a single colony would not give an accurate picture.

The growth rates of reef-forming algae also have some effect on the growth of the reef. These organisms are, as stated in the early part of this chapter, kinds of algae which secrete a hard, calcareous skeleton as a part of the plant body. There are several kinds of red algae and of green algae which have this characteristic, and contribute large amounts of mineral to reefs. Encrusting types of red algae often produce a thick crust over colonies of corals which have died. Different kinds of green algae which grow on the floors of reef lagoons produce multitudes of small calcareous plates and needles which make a sizeable contribution to the reef. Scientific reports of reef studies practically always include some observations of the algal mineral deposits being made. Most observers, including Mayor and Hoffmeister, have recognized the rate of mineral deposited by algae as similar to, or somewhat less than the rates observed for coral.[12] One must of course remember that a mass of encrusting algae growing over a mass of coral stops the growth of the coral.

Coral Growth Rates vs. Reef Growth Rates

As a swimmer passes over a submerged reef, he sees numerous clumps (colonies) of coral growing on the surface of the reef. These colonies have their own growth rates, as explained in the previous section, but most of them are destined to be drastically changed