

Coral Colonies

- 1▶ Coral colonies require a series of complicated events and circumstances to develop into the characteristically intricate reef structures for which they are known. These events and circumstances involve physical and chemical processes as well as delicate interactions among various animals and plants for coral colonies to thrive.
- 2▶ The basic element in the development of coralline reef structures is a group of animals from the Anthozoa class, called stony corals, that is closely related to jellyfish and sea anemones. These small polyps¹ (the individual animals that make up the coral reef), which are for the most part only a fraction of an inch in length, live in colonies made up of an immeasurable number of polyps clustered together. Each individual polyp obtains calcium from the seawater where it lives to create a skeleton around the lower part of its body, and the polyps attach themselves both to the living tissue and to the external skeletons of other polyps. Many polyps tend to retreat inside of their skeletons during hours of daylight and then stretch partially outside of their skeletons during hours of darkness to feed on minute plankton from the water around them. The mouth at the top of each body is surrounded by rings of tentacles used to grab onto food, and these rings of tentacles make the polyps look like flowers with rings of clustered petals; because of this, biologists for years thought that corals were plants rather than animals.
- 3▶ Once these coralline structures are established, they reproduce very quickly. They build in upward and outward directions to create a fringe of living coral surrounding the skeletal remnants of once-living coral. That coralline structures are commonplace in tropical waters around the world is due to the fact that they reproduce so quickly rather than the fact that they are hardy life-forms easily able to withstand external forces of nature. They cannot survive in water that is too dirty, and they need water that is at least 72° F (or 22° C) to exist, so they are formed only in waters ranging from 30° north to 30° south of the equator. They need a significant amount of sunlight, so they live only within an area between the surface of the ocean and a few meters beneath it. In addition, they require specific types of microscopic algae for their existence, and their skeletal shells are delicate in nature and are easily damaged or fragmented. They are also prey to other sea animals such as sponges and clams that bore into their skeletal structures and weaken them.
- 4▶ Coral colonies cannot build reef structures without considerable assistance. The many openings in and among the skeletons must be filled in and cemented together by material from around the colonies. The filling material often consists of fine sediments created either from the borings and waste of other animals around the coral or from the skeletons, shells, and remnants of dead plants and animals. The material that is used to cement the coral reefs comes from algae and other microscopic forms of seaweed.
- 5▶ An additional part of the process of reef formation is the ongoing compaction and cementation that occurs throughout the process. Because of the soluble and delicate nature of the material from which coral is created, the relatively unstable crystals of corals and shells break down over time and are then rearranged as a more stable form of limestone.
- 6▶ The coralline structures that are created through these complicated processes are extremely variable in form. They may, for example, be treelike and branching, or they may have more rounded and compact shapes. What they share in common, however, is the extraordinary variety of plant and animal life-forms that are a necessary part of the ongoing process of their formation.

1. The word "they" in paragraph 1 refers to

- (A) coral colonies
- (B) events and circumstances
- (C) intricate reef structures
- (D) chemical processes

2. The word "that" in paragraph 2 refers to

- (A) the basic element
- (B) the development of coralline reef structures
- (C) a group of animals
- (D) the Anthozoa class

3. The phrase "an immeasurable number" in paragraph

7. The word "They" in paragraph 3 refers to

- (A) coralline structures
- (B) upward and outward directions
- (C) skeletal remnants
- (D) external forces of nature

8. The word "them" in paragraph 3 refers to

- (A) sea animals
- (B) sponges and clams
- (C) skeletal structures
- (D) many openings

9. The word "borings" in paragraph 4 is closest in