NAME DATE CLASS

Chapter 17

ENRICHMENT

Use with Section 1

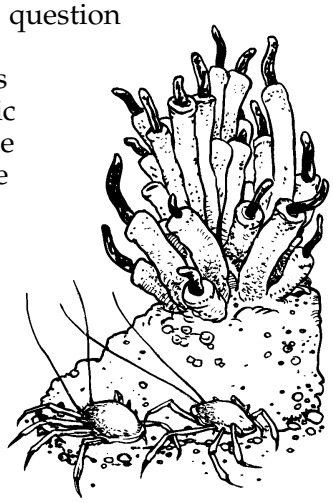
Living and Nonliving Environments

Life on the Ocean Floor

In 1974, scientists exploring the floor of the Pacific Ocean in the deep-sea submersible *Alvin* made a great discovery. They were exploring west of the Galapagos Islands at a depth of about 2700 meters. The water, which is usually between 3ºC and 5ºC, was getting *warmer.*

Here, as in several other places, fissures or cracks open in the ocean floor. Water seeps into the rocks, becomes superheated, and picks up minerals as it rises. Finally, the water shoots up through volcanic vents in the ocean floor; and this water is *hot*, about 300ºC.

An even greater surprise to the scientists: near the vents were giant tube worms, huge clams, and eyeless, colorless crabs. Immediately the question arose: What is the source of energy for these organisms?



As the water moves away from the vent, it cools. In these waters scientists found unusual chemosynthetic bacteria. Chemosynthetic bacteria are able to absorb chemicals, in this case hydrogen sulfide carried up from under the earth's crust by water flowing from the vents. The chemosynthetic bacteria use the energy in the hydrogen sulfide molecules, rather than the energy in sunlight, to build up organic molecules such as glucose. These bacteria become the food source, or source of energy, for the tube worms, clams, crabs, and other organisms.

These organisms make up an extraordinary ecosystem. The producers are not green plants, as in land and other water ecosystems, but chemosynthetic bacteria. This ecosystem depends on heat energy from deep within Earth; it does not depend on energy from sunlight.

Conclude and Apply

1. What are chemosynthetic bacteria? _____

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2. Why is the area described here an ecosystem rather than a community? _____

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3. Why is this ecosystem unusual? _____

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4. What are the biotic and abiotic factors? _____

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