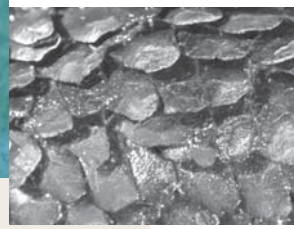
The scale-covered foot of this newly discovered mollusc species is fortified with pyrite (iron-sulfide), a condition not seen elsewhere in the animal kingdom, but perfectly suited for an animal that lives in the iron and sulfide-rich waters of hydrothermal vents.



Going with the Flow: Hot Springs in the Indian Ocean

Submarine mountain ranges that girdle the globe are oases for life that thrive near super-heated, mineral-rich hydrothermal vents, or hot springs. Recent explorations of animal communities colonizing hot springs in the Indian Ocean showed that most species here were new to science and that they were most closely allied to animals found at hot springs in the western Pacific. Given the general easterly trend for deep-ocean circulation, the new observations suggest that many of the western Pacific vent animals may have originated in the Indian Ocean. The dominant species at Indian Ocean vents, however, was a swarming shrimp known from Atlantic vents north of the equator. This shrimp thus has one of the greatest ranges so far known for any vent species.

Among the many newly discovered species from Indian Ocean hydrothermal vents was a very strange snail with a muscular foot covered by scales fortified with pyrite. This scaly-footed structural theme is not known for any other living snail, although it was present in various animal groups 500 to 550 million years ago, during the Cambrian Explosion. The scaly-foot snail is host to symbiotic bacteria housed in a remarkable gland that also is not known in any other living snail. The bacteria function in a manner analogous to plants, deriving their nourishment from the fixation of carbon dioxide, but the energy to turn carbon dioxide in organic carbon comes from chemical reactions rather than sunlight.

Cindy L. Van Dover, College of William and Mary, OCE 97-12358, and the Shipboard Scientific Party of R/V *Knorr* 162-13 (2001).

These "hairy gastropods" (so-named because they have a hairy shell) are well-known from hot springs in the western Pacific but are not known in the Atlantic. The gills of these snails house bacteria that provide food for the snail.

Mussels are typical members of hot-spring communities; Indian Ocean hot springs were no exception. The species illustrated here is almost impossible to distinguish from a mussel that occurs at western Pacific hot springs.

Swarming Indian Ocean shrimp behave and look just like shrimp at hot springs on the Mid-Atlantic Ridge south of the Azore Islands. The pair of white patches on their backs are modified eyes that are sensitive to very dim light.