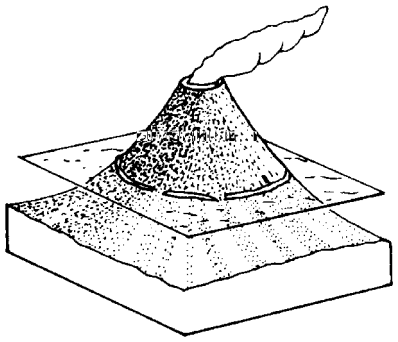
Source: King, Dr. Michael and illustrated by S. Belew and M.King. **Coral Reefs in the South Pacific Handbook**.

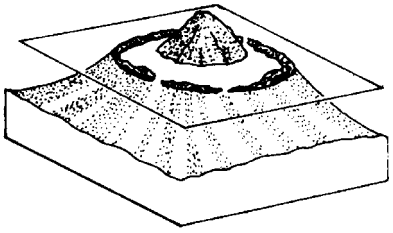
17. TYPES OF REEFS

There are three basic types of coral reefs - fringing reefs, barrier reefs, and atolls.

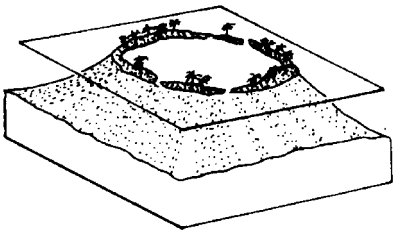
FRINGING REEFS
grow at the edges of continents and islands. The reef front contains actively growing corals, and pieces of broken coral are washed up as rubble on the reef flat.



BARRIER REEFS
are separated from the shore line by a lagoon which is often deep. Corals grow in the calm waters of the lagoon as well as on the reef front.



ATOLLS
are coral reefs growing in the shape of a circle. The reef, which often has small islets on it, surrounds a lagoon.



One explanation of how an atoll forms involves the gradual sinking of an oceanic island over thousands of years. The reef front of the fringing reef around the original island actively grows as the island slowly sinks. Eventually a lagoon forms between the sinking island and the growing coral which becomes a barrier reef. When the island sinks beneath the sea, the barrier reef becomes a circular atoll.

Source: Activity contributed by Jeannie Flint. J.L. Scott Marine Education Center and Aquarium, Biloxi, Mississippi. Used with permission.

Follow-up Activity: Cooking Up Coral Reefs

These edible models of the different kinds of reefs are a fun way to reinforce teaching and involve children in an explanation they will remember.

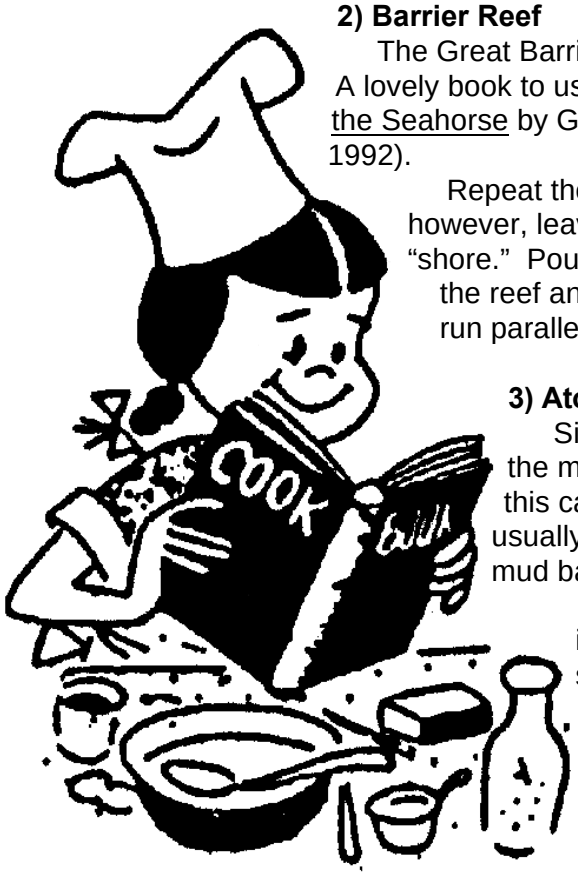
1) Fringing Reef

A fringing reef is a submerged platform of living coral animals that extends from the shore to the sea. Use a shallow (one inch thick or less) sheet cake to illustrate this type of reef. Cut the cake in half lengthwise. Lay the two halves end to end in the middle of a large piece of cardboard.

To create a shore, spread a thick layer of pink or white icing on the cardboard along one of the long sides of the cake. The icing "shore" should be a little deeper than the cake "reef." Sprinkle the shore with sugar to simulate sand. Mention to the students that the sand is actually fragments of coral skeletons that have been crushed by the action of waves and tides.

Place assorted decorative candies on top of the cake as you describe various kinds of coral. Explain how corals of a fringing reefs extend the reef platform toward the sea.

Tint a container of vanilla icing with blue-green food coloring. Melt the icing to a watery consistency by heating it for 40 seconds in a microwave oven. State that fringing reefs grow in shallow tropical waters as you submerge the "reef" by pouring the watery icing over the cake, candy, and a portion of the shore. The "water" will harden while you handle questions and discussion. Eat the reef.



2) Barrier Reef

The Great Barrier Reef of Australia is a grand example of this type of reef. A lovely book to use while doing a presentation on barrier reefs is The Sign of the Seahorse by Graeme Base (New York: Harry N. Abrams, Inc., Publishers, 1992).

Repeat the above procedure to create a barrier reef. This time, however, leave a wide separation between the cake "reef" and icing "shore." Pour blue icing "water" over the reef, filling the space between the reef and shore. Point out to the students that reefs follow (i.e., run parallel to) shore lines.

3) Atoll

Since an atoll reef is basically a ring-shaped coral island in the middle of the open sea, use a tube or bundt pan to prepare this cake. Again, use candies to show how the corals build up, usually around a crater of a sunken volcano or on a submerged mud bank.

After you have built the reef, use watery (warmed) blue icing to create a lagoon in the center of the atoll. Cut out a slice of the cake to show how channels may connect the atoll to the open sea. Pour more icing "water" into the lagoon, allowing it to run into the channel.

This is fun marine science with a purpose. Enjoy!

Correlation to National Standards from McREL (http://www.mcrel.org) :

Geography

7. Knows the physical processes that shape patterns on Earth's surface