



FIGURE 9.2.

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The coelacanth, a primitive lobe-finned fossil fish that existed in shallow waters 350 million years ago, is almost identical to its modern form, the *latimeria*, discovered in the deep waters of the Indian Ocean. (Courtesy Field Museum of Natural History, Chicago.)

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### AMPHIBIANS

Amphibians such as present-day salamanders and frogs are not fully land animals. They solve the problem of water retention by partially living in water or returning to it frequently. Similarly, they must depend on water to lay their eggs and grow in the early stages. But in their adult stage they differ from fish. Amphibians breathe air and crawl or hop about on land. If, over time, a primitive form of fish were able to change into an amphibian, the problems of air breathing and locomotion would have to be solved.

Scientists have interpreted the fossil record to indicate that amphibian-like fish existed in shallow water environments about 350 million years ago. One such primitive fish is the *coelacanth*, a lobe-finned fish that has fins with bone and strong muscular attachments to its body. It was thought to have become extinct 70 million years ago. But in this century it has been discovered alive and well in the Indian Ocean off the coast of Africa. The present species, called the *Latimeria*, is larger than its fossil ancestor and lives in the ocean depths rather than the shallow water it is thought to have inhabited in primitive times. The fact that it lives in deep water may dispute its position as a possible missing link from water to land.

There are other fish living today that possess some rather amazing characteristics. Fish that fly for short distances of fifty yards or so are known off the waters of California and Mexico. In fact, these flying fish are the most common bait used by sportsmen fishing for marlin. There are also fish that actually climb trees. They are known as mudskippers. These small fish live in the muddy estuaries and mangrove swamps in many parts of the tropics. They crawl out of the water and onto the glistening mud to feed on insects. They edge themselves forward with their muscular fins supported by internal bones. They often cling to the aerial roots of mangroves and even clamber up the trunks.