



**FIGURE 8.1.**

Fossil records preserved in sedimentary rock. These may be impressions or chemical replacement of the original parts by more durable material. The original shells or bones are very rarely preserved.

with external coverings in the form of shells and armor made of durable calcium carbonate. Shells are far less subject to immediate decay than soft tissue, internal organs, and other organic parts. They leave a far more durable and complete record.

There was something very different about this new form of life that appeared in the sea. It was multicellular. Animals today are composed of millions and in some cases billions of cells. There are 100 trillion cells in the human body. Furthermore, these cells are organized into tissues and organs with different forms and functions that cooperate to act as a functioning whole unit.

This new kind of life required specialized kinds of cells for different purposes. There are cells for tissues or skin; cells for nerves; cells for fat and muscles; cells for circulation, digestion, excretion, reproduction, and respiration. Even the very simplest kinds of multicellular organisms have several different kinds of cells. The more complicated ones have as many as two hundred different specialized varieties.

The advantages of multicellular organization are several. First of all, the cells can become more specialized and therefore more efficient at their tasks. Secondly, in marked contrast to single-celled organisms, multicellular organisms can replace individual cells, as when your cut finger heals. The only permanent cells in the human body are those of the nerves and the brain. Ten years from now all other cells in your body will have been replaced by new ones.