SEDİMANTER KAYAÇLAR

Figure 6.3 Sedimentary rock layers exposed in the walls of the Grand Canyon, Arizona. Beds of resistant sandstone and limestone produce bold cliffs. By contrast, weaker, poorly cemented shale crumbles and produces a gentler slope of weathered debris in which some vegetation is growing. (Photo by Tom Till)

Figure 6.1 Sedimentary rocks in Arizona's Monument Valley are very colorful. In the background, harder, more resistant sandstone stands above weaker, crumbling shale. Sedimentary rocks are exposed at the surface more than igneous and metamorphic rocks. Because they contain fossils and other clues about our geologic past, sedimentary rocks are important in the study of Earth history. (Photo by Carr Clifton)

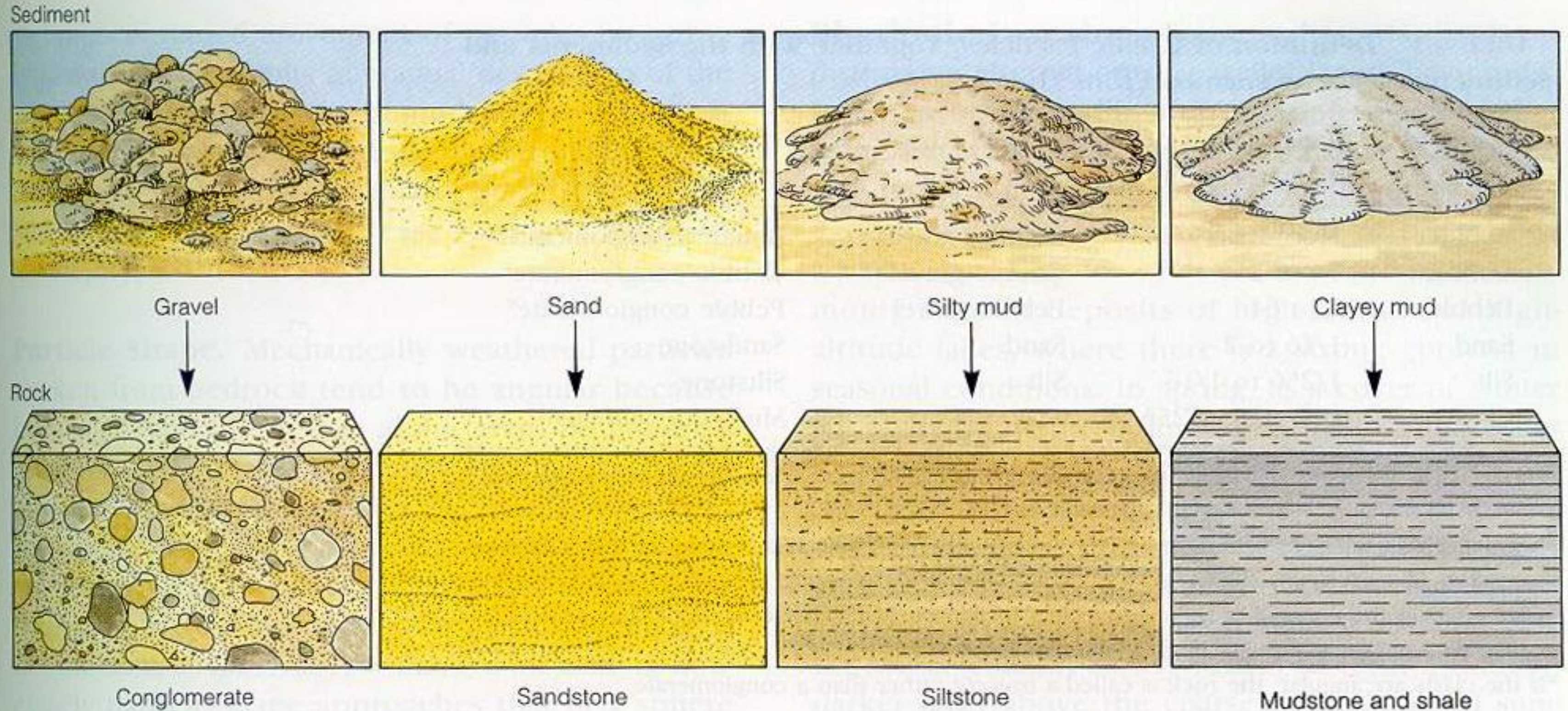


FIGURE 4.2 Principal kinds of clastic sediment and sedimentary rocks formed from them.

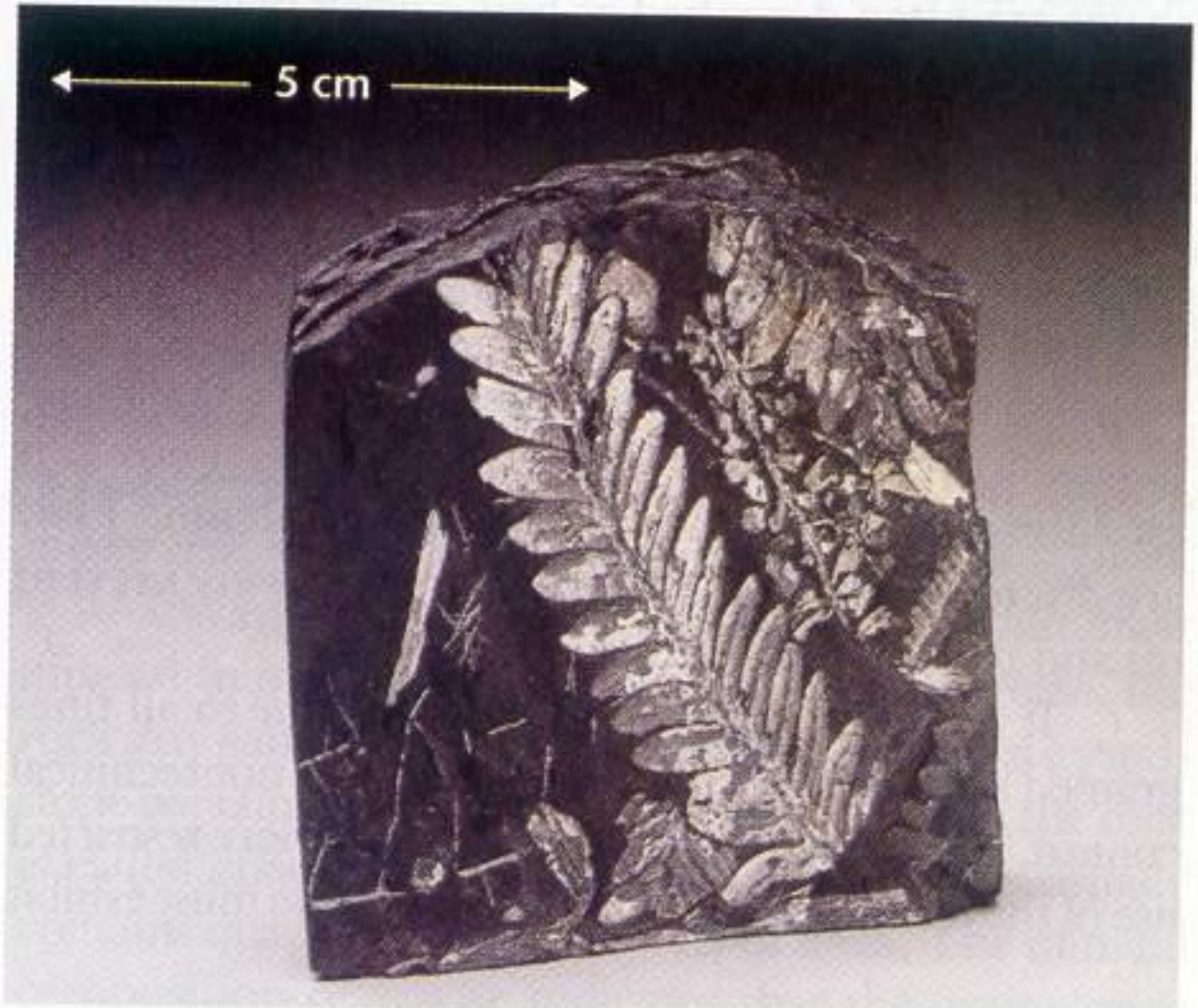


Figure 6.2 Shale is a fine-grained detrital rock that is by far the most abundant of all sedimentary rocks. Dark shales containing plant remains are relatively common. (Photo by E. J. Tarbuck)

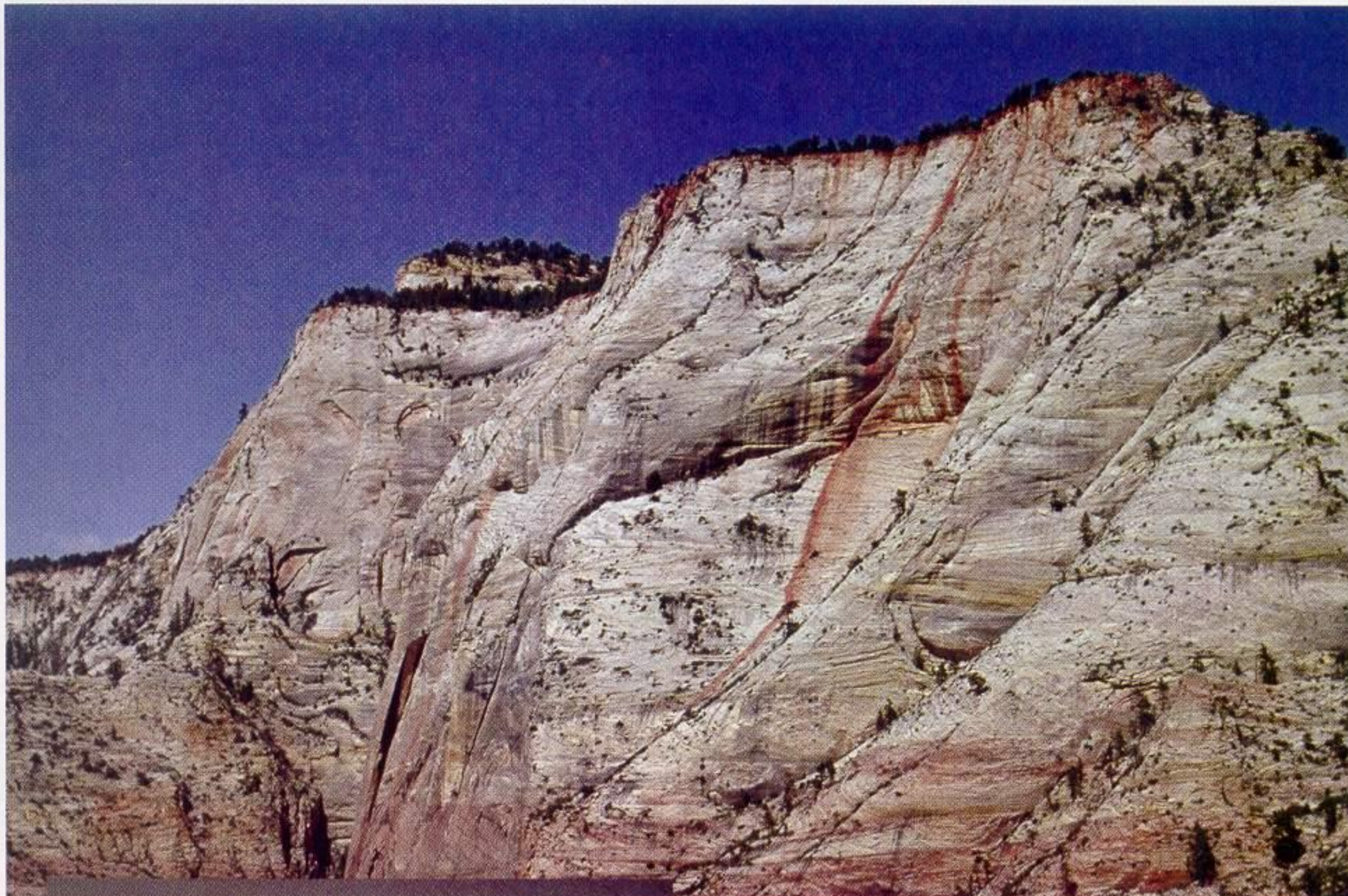


Figure 6.4 Quartz sandstone. After shale, sandstone is the most abundant sedimentary rock. This thick layer of sandstone, called the Navajo Sandstone, is exposed in and near Utah's Zion National Park. The hand sample comes from this layer.

Close up

Figure 6.5 Sorting is the degree of similarity in particle size. The wind-transported sand grains in this dune are well sorted because they are all practically the same size. Mesquite Flat Dunes, Death Valley National Monument, California. (Photo by David Muench)

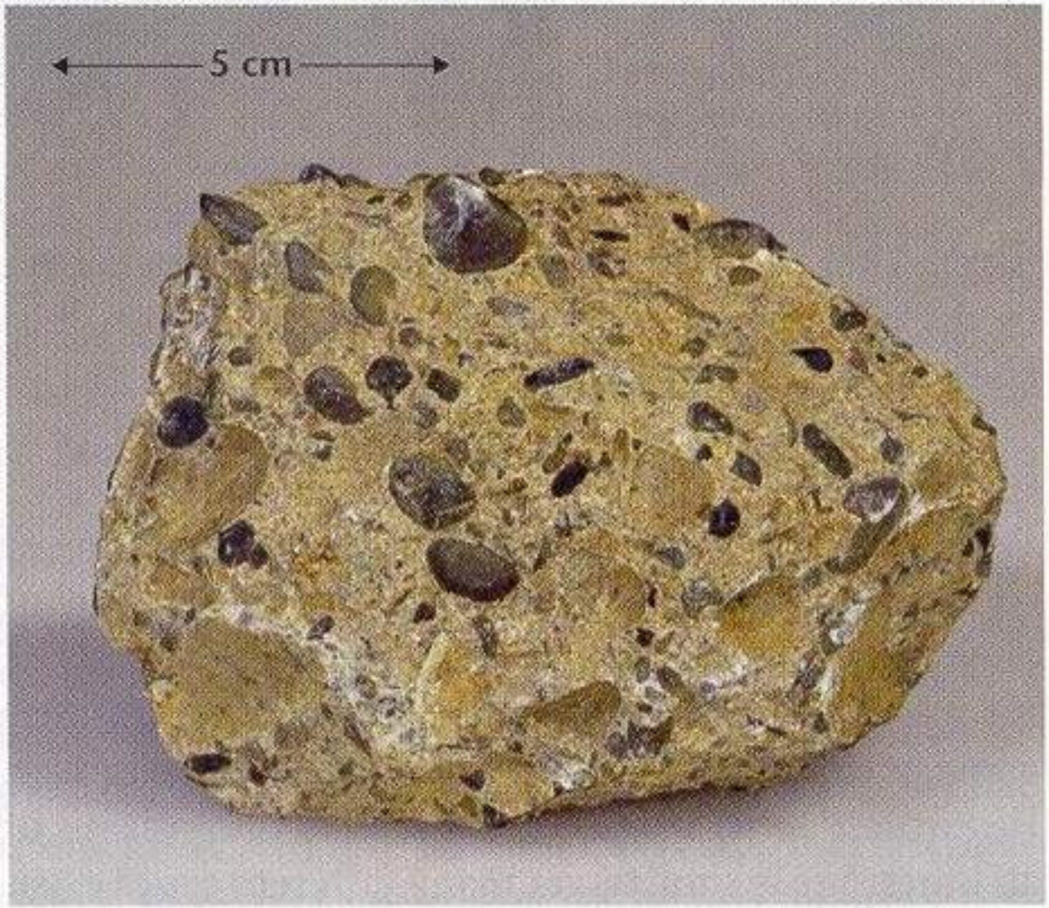


Figure 6.6
Conglomerate is composed primarily of rounded gravel-sized particles.

Close up

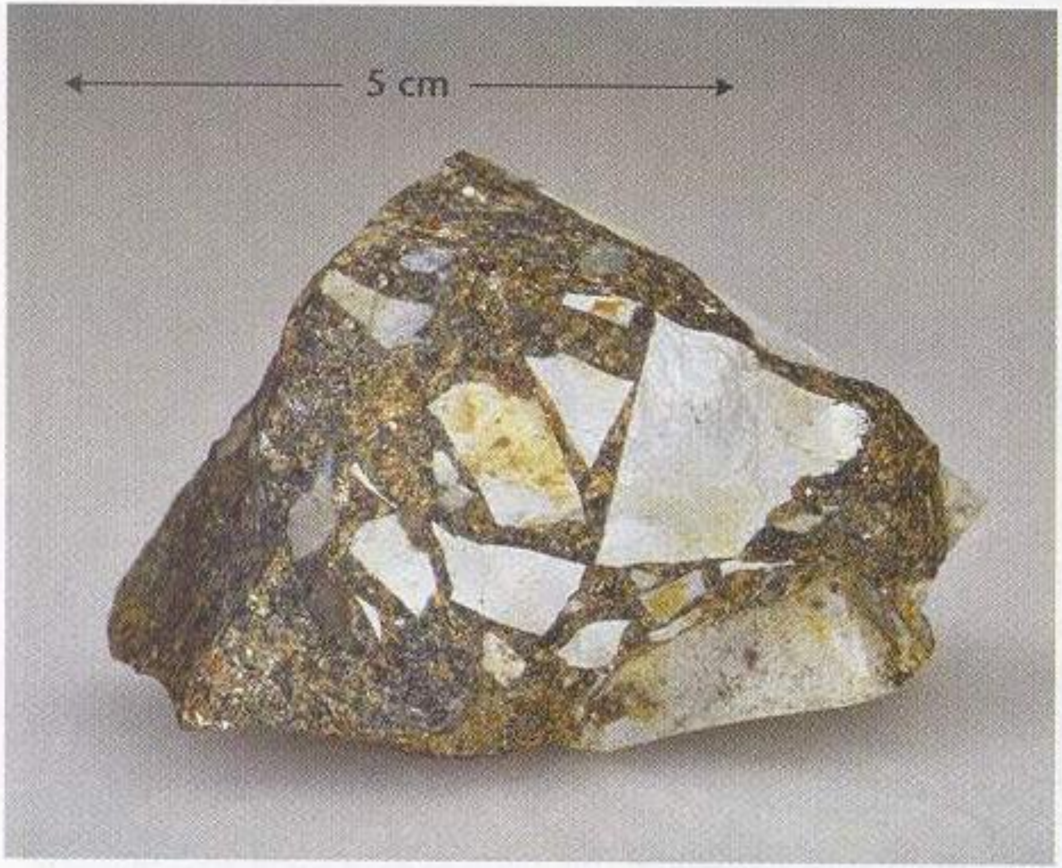


Figure 6.7 When the gravel-sized particles in a detrital rock are angular, the rock is called breccia. (Photo by E. J. Tarbuck)

Close up

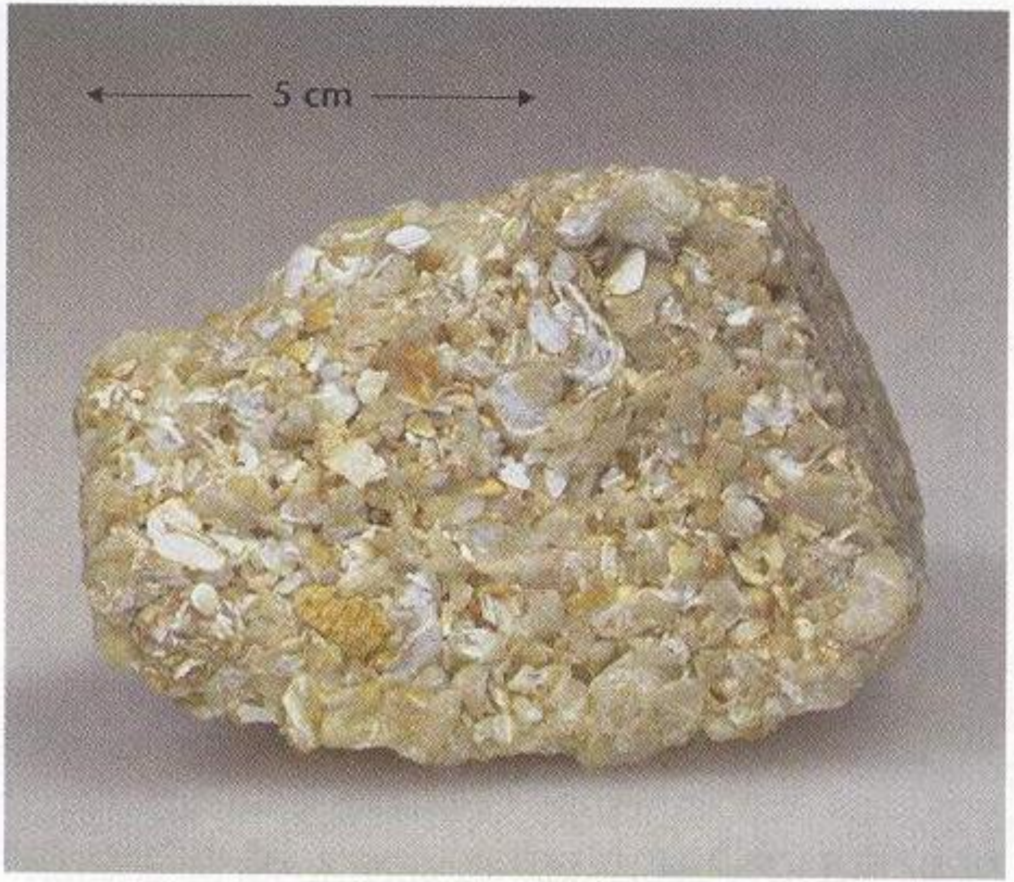
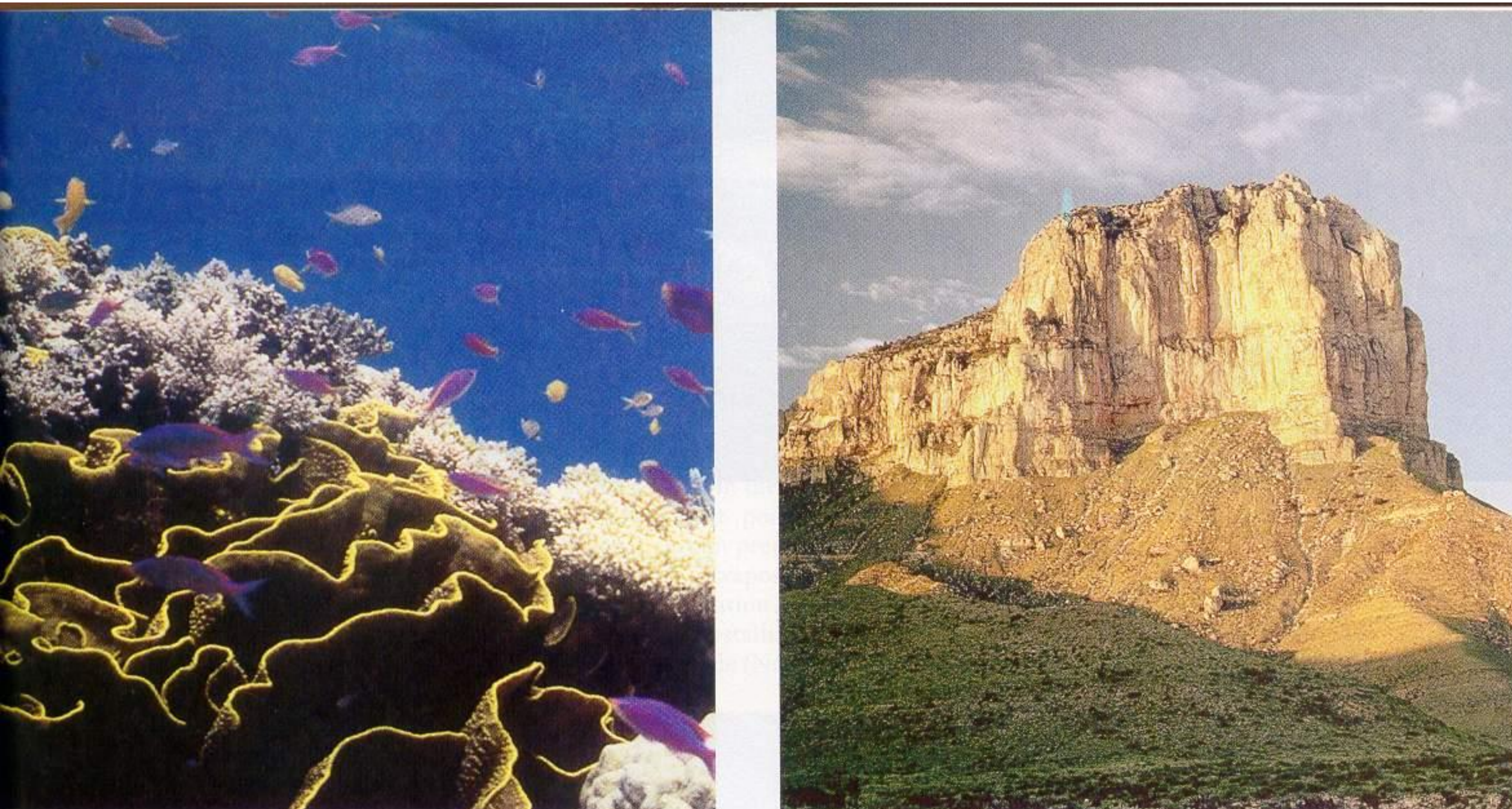


Figure 6.9 This rock, called coquina, consists of shell fragments; therefore, it has a biochemical origin. (Photo by E. J. Tarbuck)

Close up



A. B.

Figure 6.10 A. This modern coral reef is at Bora Bora in French Polynesia. (Photo by Nancy Sefton/Photo Researchers)
B. El Capitan Peak, a massive limestone cliff in Guadalupe Mountains National Park, Texas. The rocks here are an exposed portion of a large reef that formed during the Permian period. (Photo by Steve Elmore/The Stock Market)

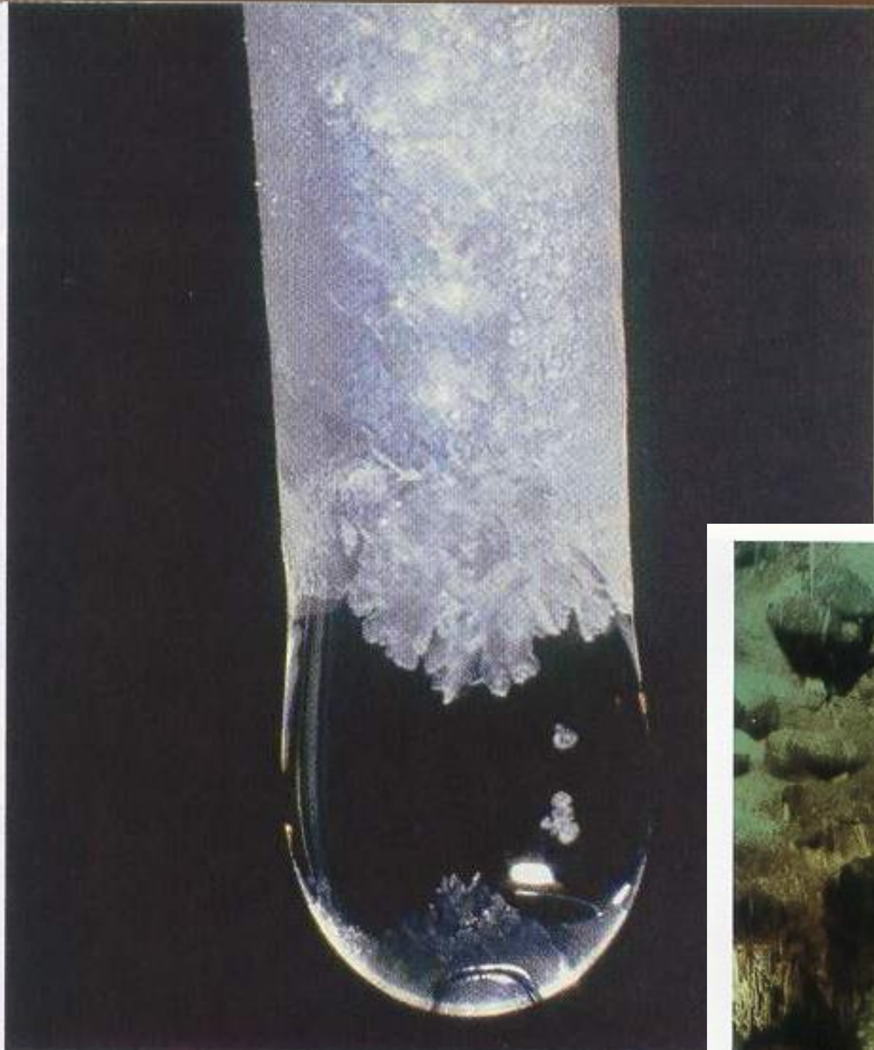


Figure 6.8 Because many cave deposits are create
seemingly endless dripping of water over long time
are commonly called *dripstone*. The material being
calcium carbonate ($CaCO_3$) and the rock is a form
called *travertine*. The calcium carbonate is precipitat
some dissolved carbon dioxide escapes from a wate
(Photo by Clifford Stroud, National Park Service)

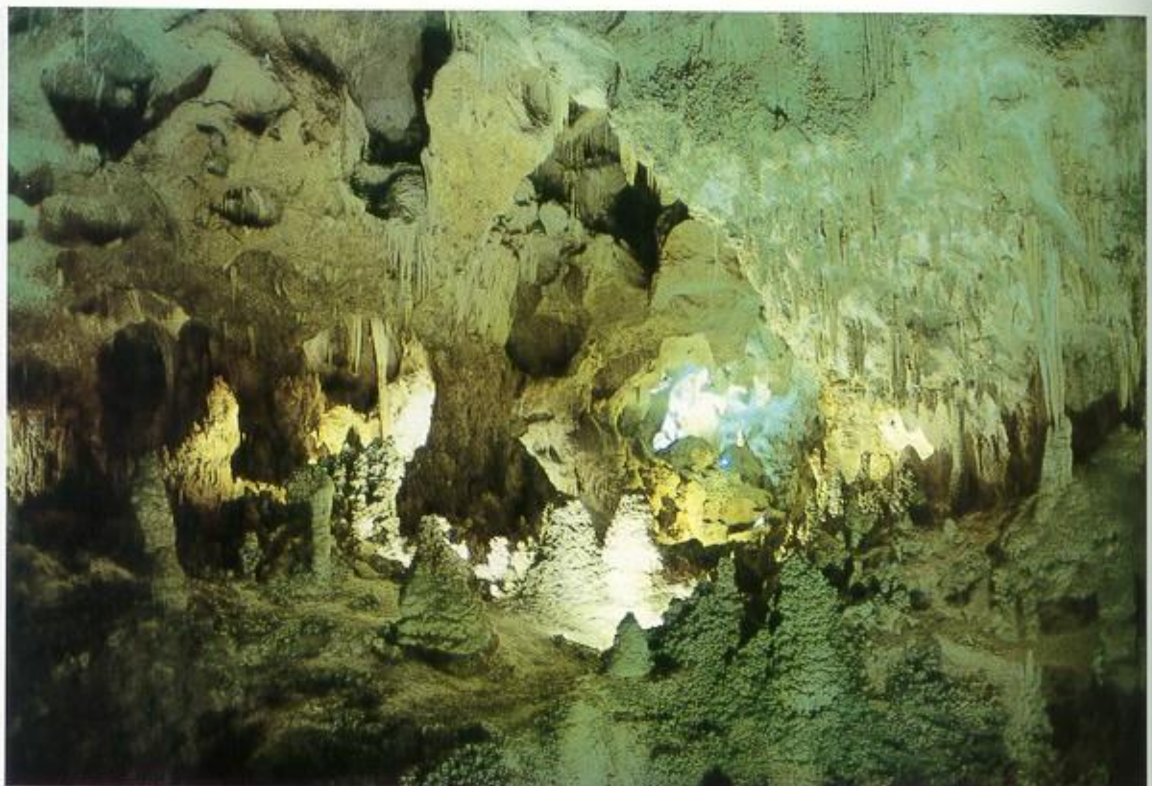


Figure 13.19
Carlsbad Caverns, New Mexico, show many of the forms of dripstone illustrated in Figure 13.18.

Figure 6.12 Agate is the banded form of chert. (Photo by Jeff Scovil)

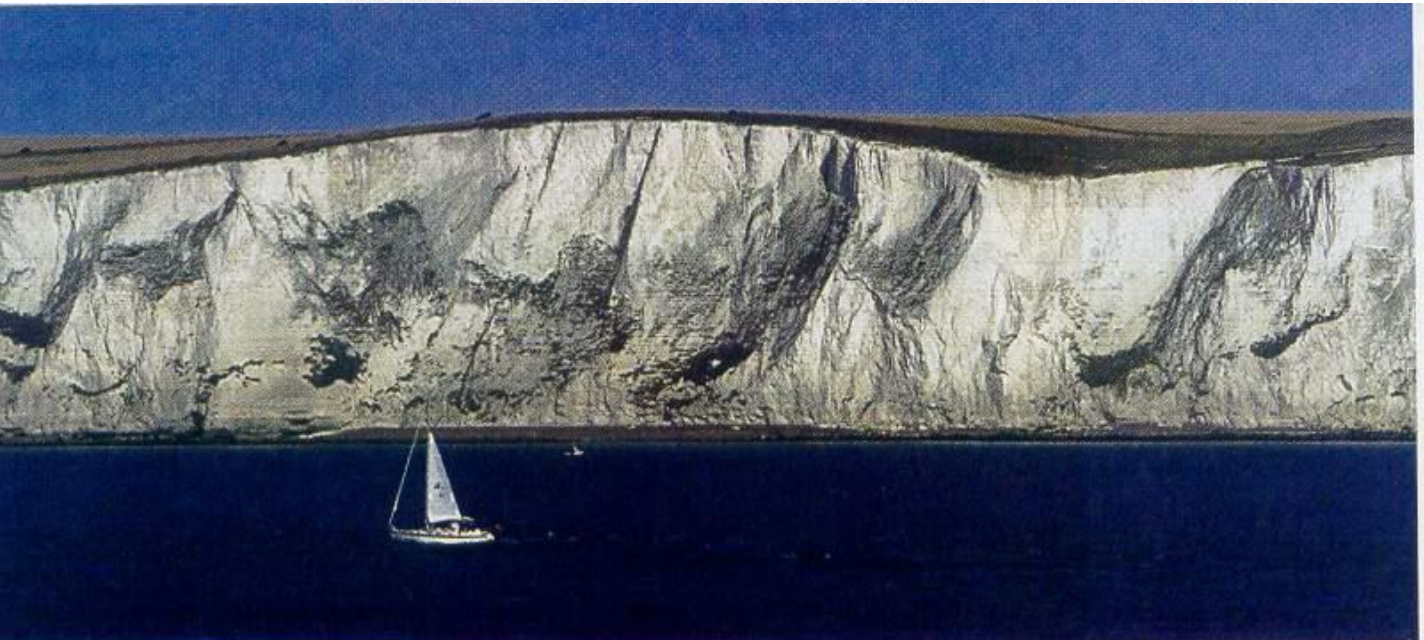


Figure 6.11 The White Cliffs of Dover. This prominent chalk deposit underlies large portions of southern England as well as parts of northern France. (Photo by Laguna Photo/Liaison International)



Figure 6.13 These salt flats in Utah are examples of evaporite deposits and are common in basins located in the arid West. (Photo by Scott T. Smith)

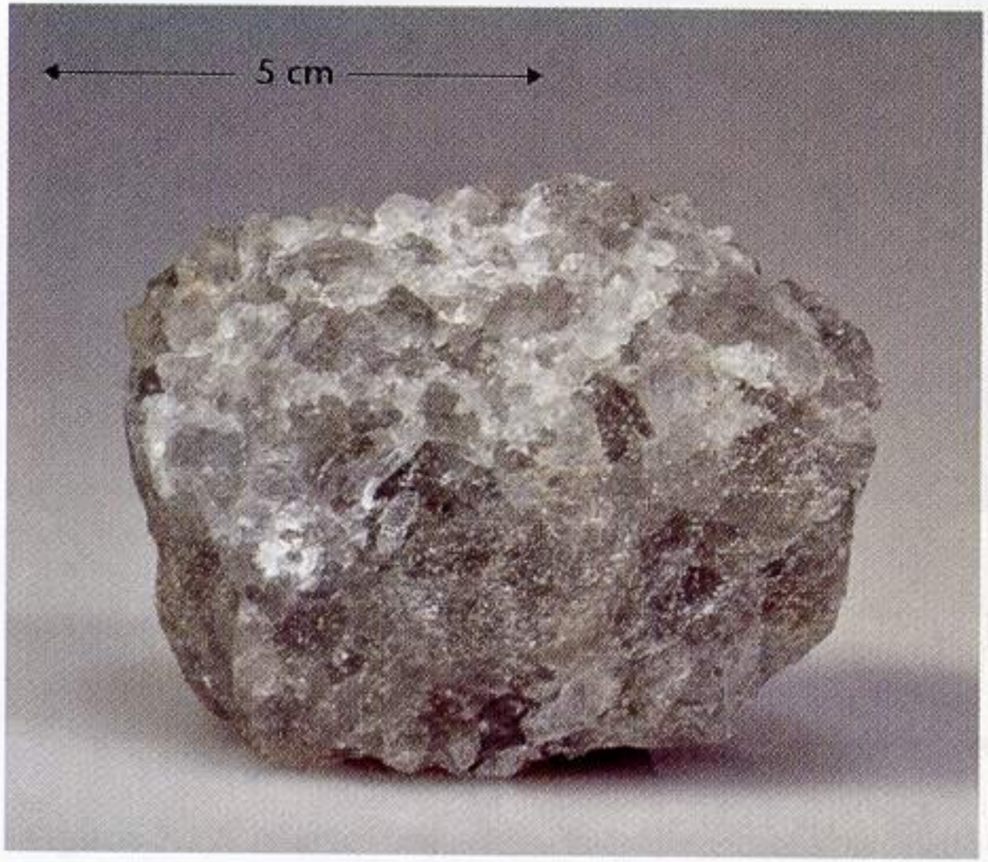


Figure 6.16 Like other evaporites, this sample of rock salt is said to have a nonclastic texture because it is composed of intergrown crystals.

Close up

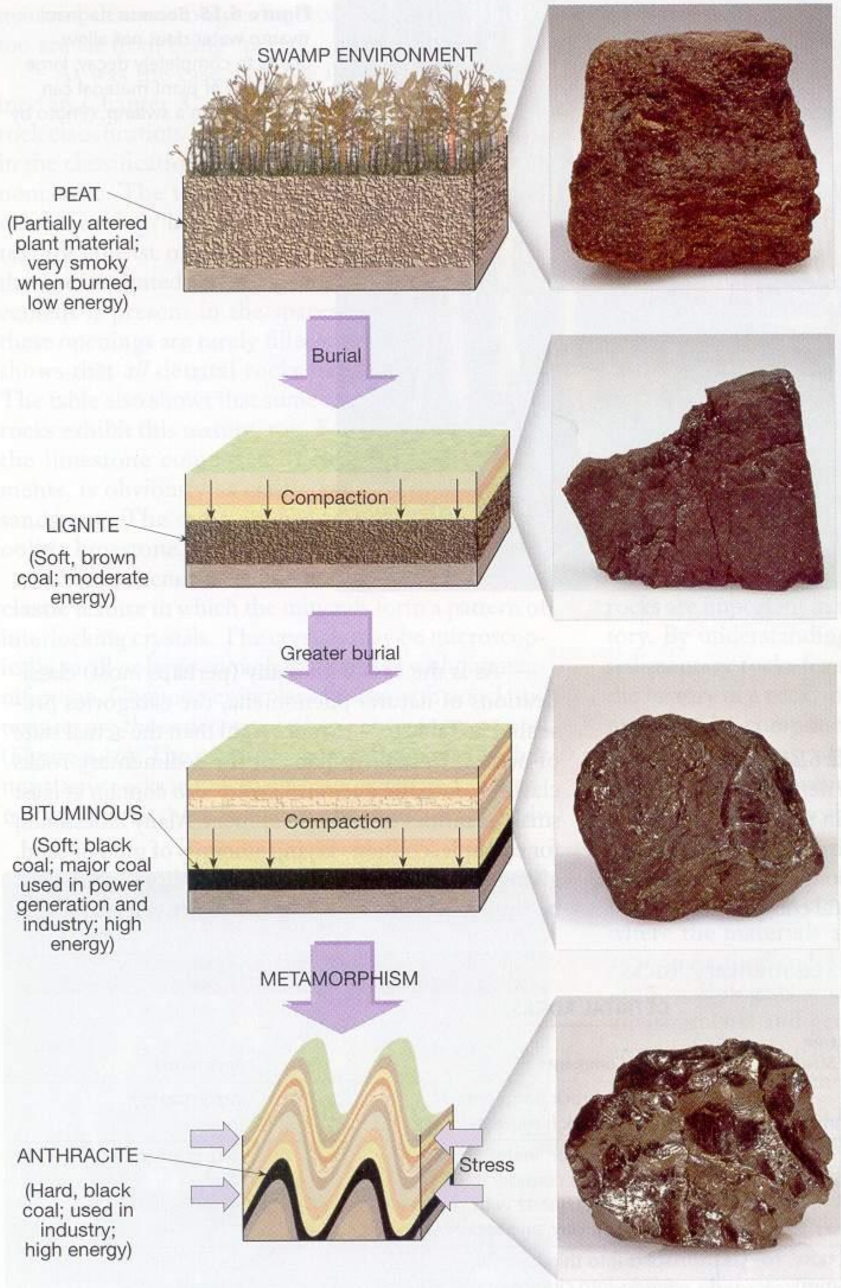


Figure 6.1
the formati

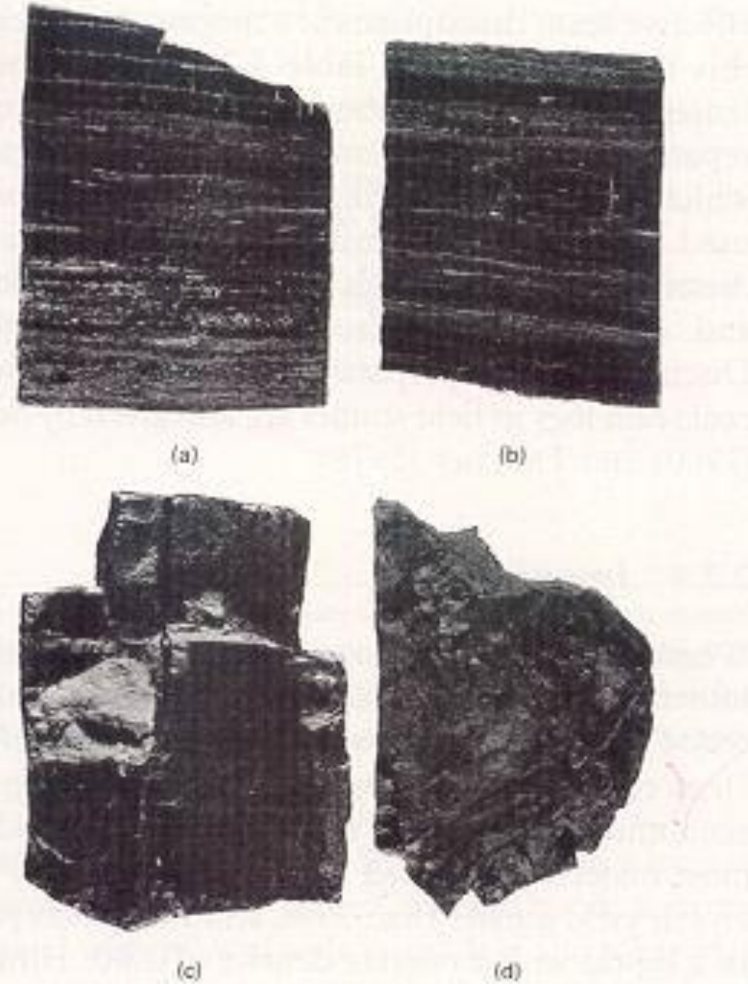


Fig. 3.1 Lithotypes in banded bituminous coal. (a) Vitrain in polished surface. Note that the three bands of vitrain at the top of the block are more highly jointed (cleated) than the rest of the coal (×0.8). (b) Clarain in polished surface. The lower three quarters of the block are composed mainly of clarain; the upper quarter consists of two durain bands (grey) and a vitrain band (black) (×0.8). (c) Durain in hand specimen (×0.3). (d) Fusain in bedding surface of hand specimen (×0.2).

Figure 6.15 Because stagnant swamp water does not allow plants to completely decay, large quantities of plant material can accumulate in a swamp. (Photo by Carr Clifton)

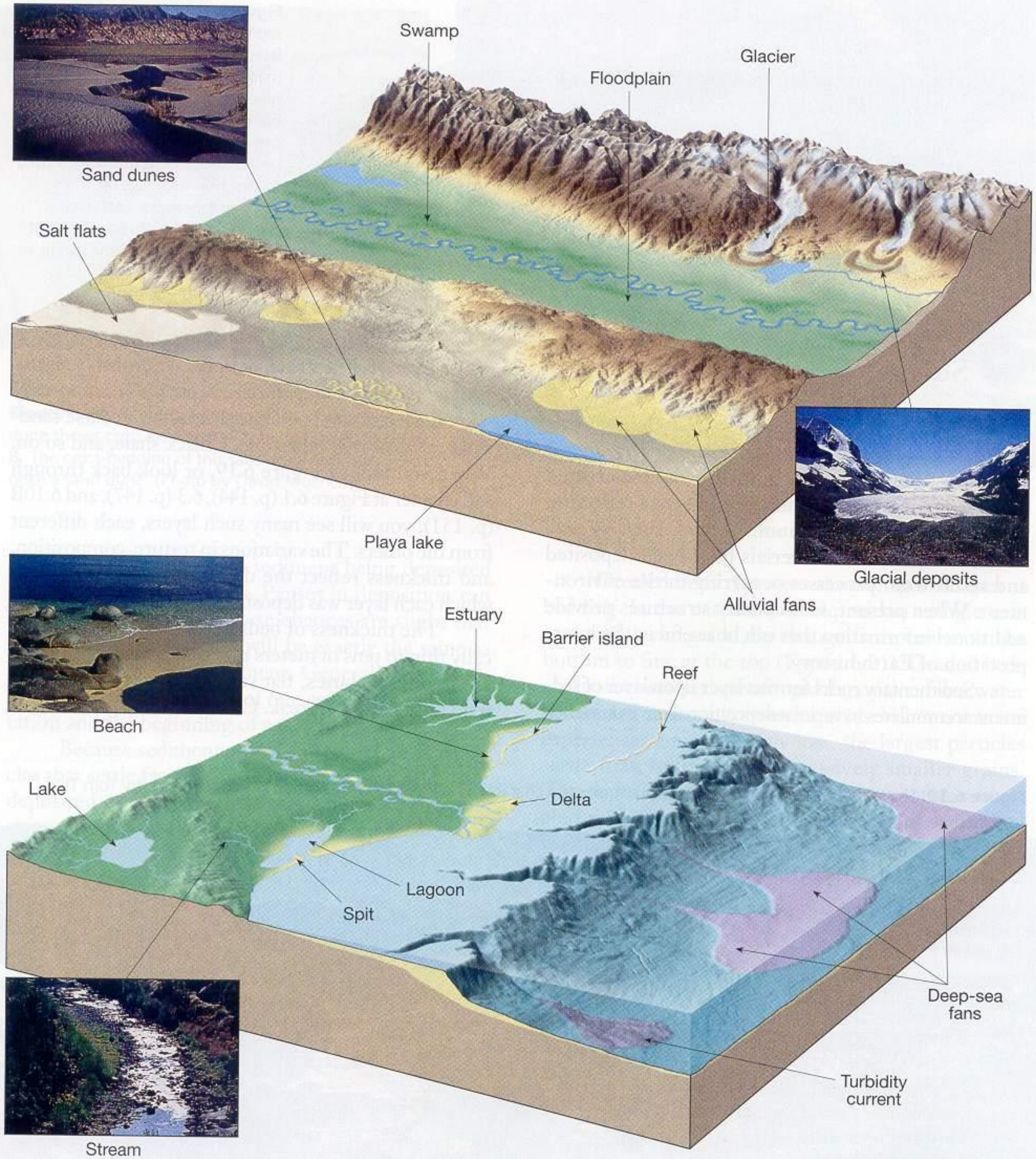


Figure 6.17 Sedimentary environments are those places where sediment accumulates. Each is characterized by certain physical, chemical, and biological conditions. Because each sediment contains clues about the environment in which it was deposited, sedimentary rocks are important in the interpretation of Earth history. A number of important terrestrial, shoreline (transitional), and marine sedimentary environments are represented in these idealized diagrams.

Figure 6.19 This outcrop of sedimentary strata illustrates the characteristic layering of this group of rocks. (Photo by Tom Till)

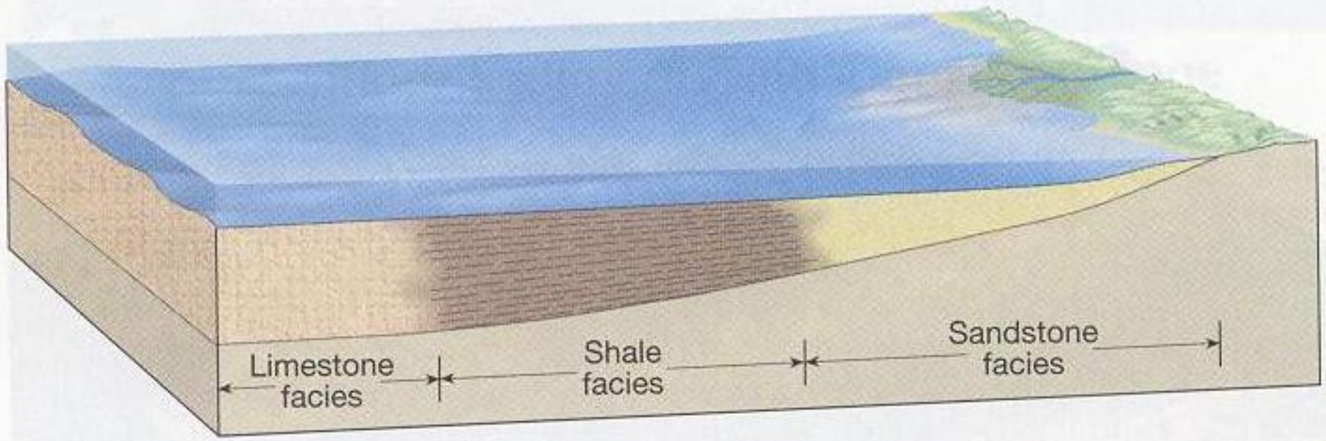
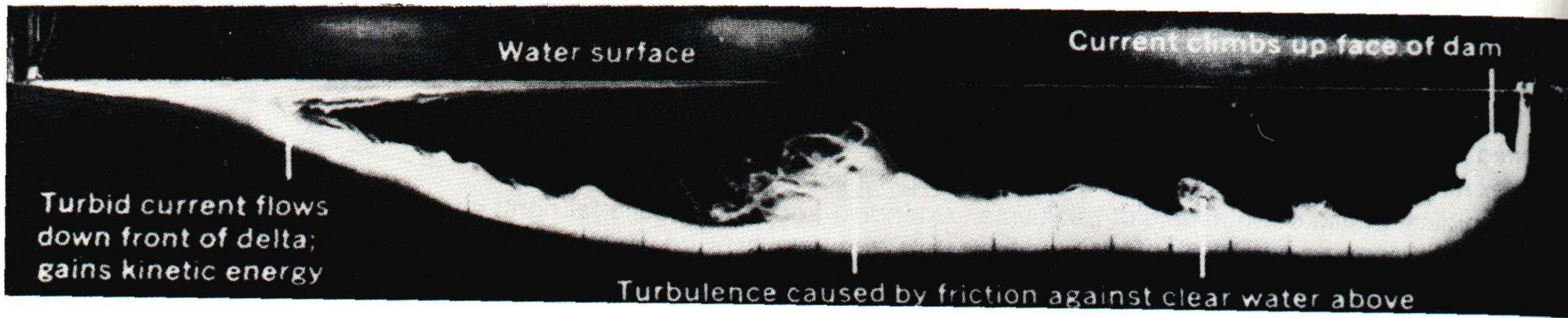


Figure 6.18 When a single sedimentary layer is traced laterally, we may find that it is made up of several different rock types. This can occur because many sedimentary environments can exist at the same time over a broad area. The term *facies* is used to describe such sets of sedimentary rocks. Each facies grades laterally into another that formed at the same time but in a different environment.



BOX 6.2 FIGURE 1. Longitudinal view of experimental silt-laden density (turbidity) current in glass-sided laboratory tank filled with clear water. At left, where the turbidity current plunges beneath the clear water, the surface of the water has been depressed. (U.S. Soil Conservation Service, California Institute of Technology.)

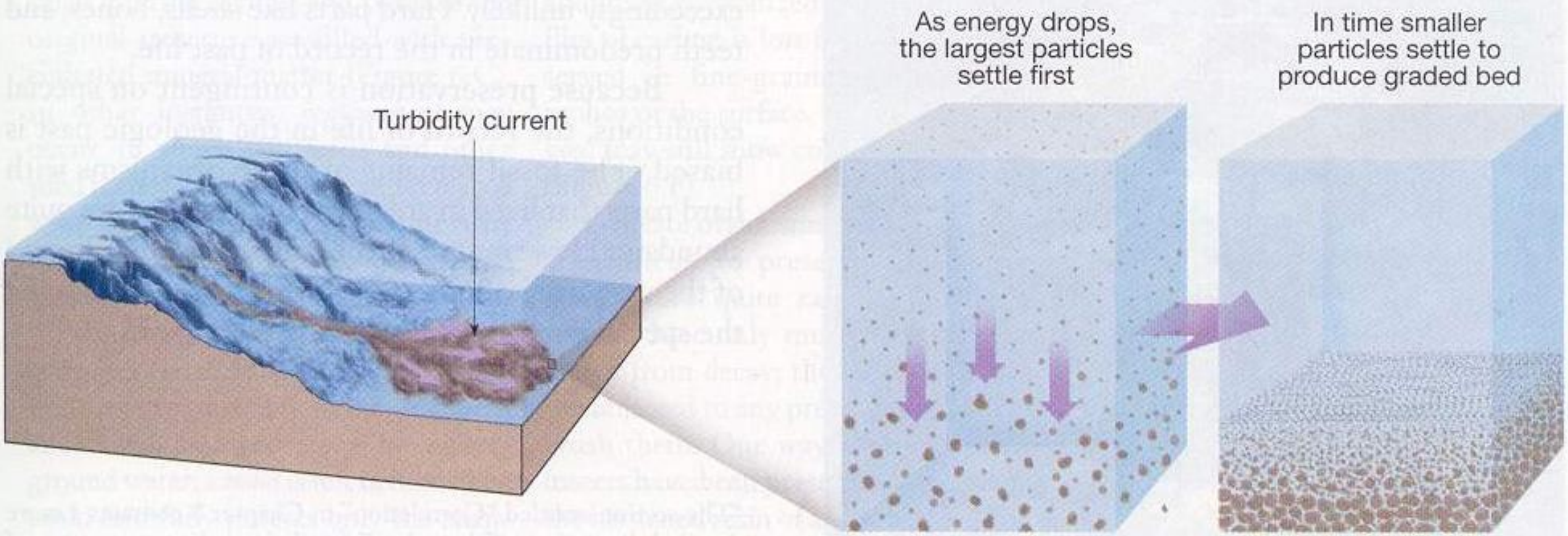
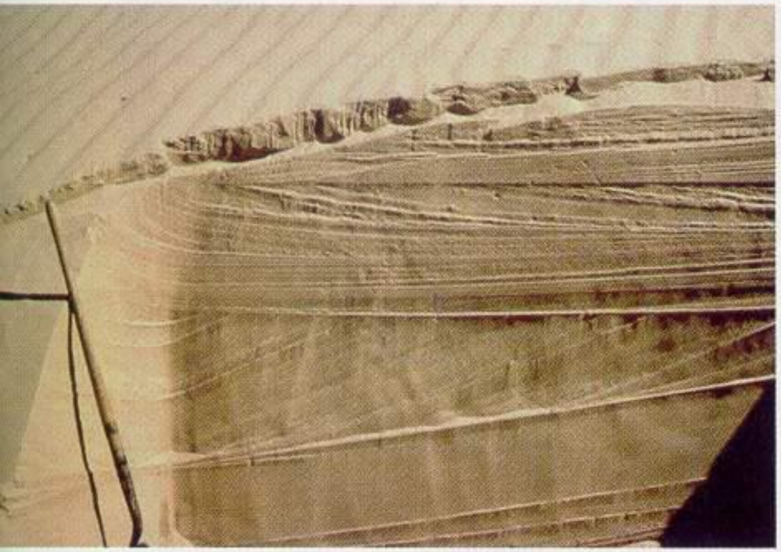
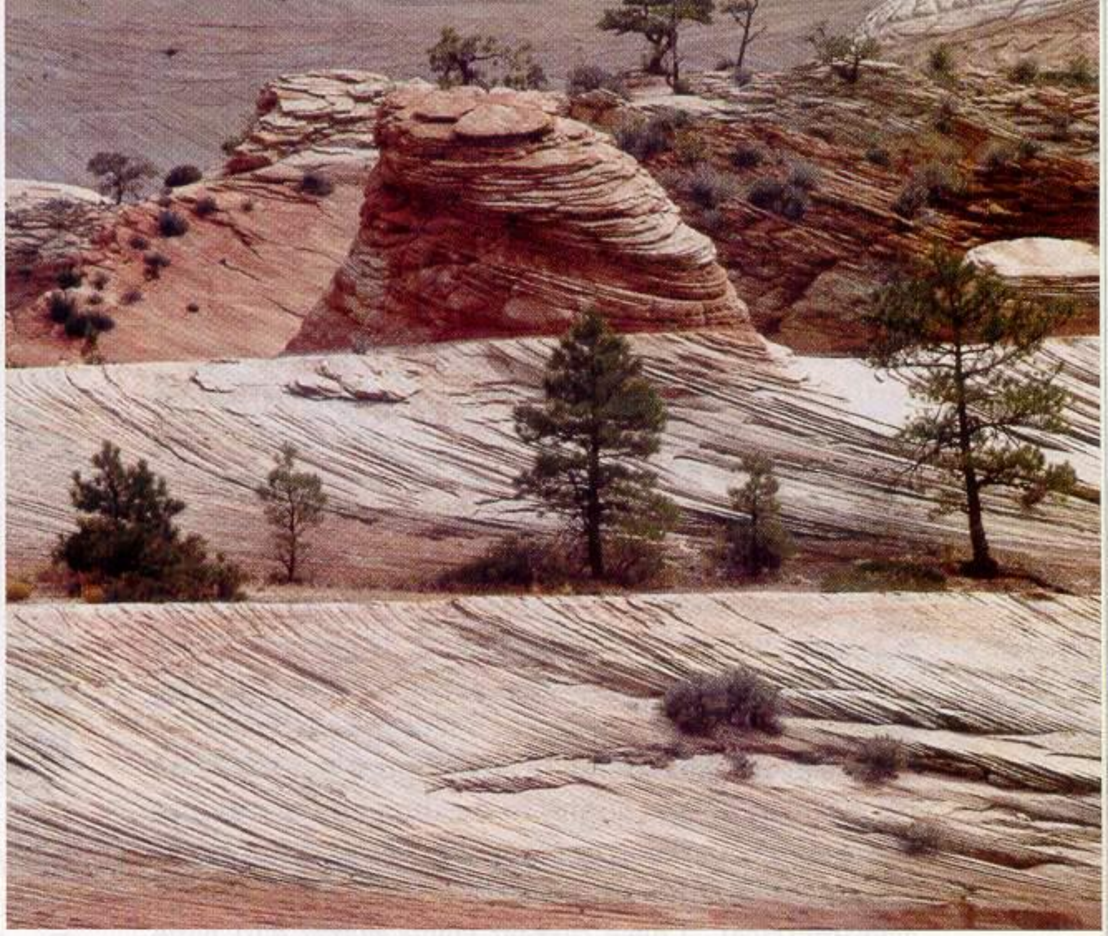


Figure 6.21 Graded beds. Each layer grades from coarse at its base to fine at the top.

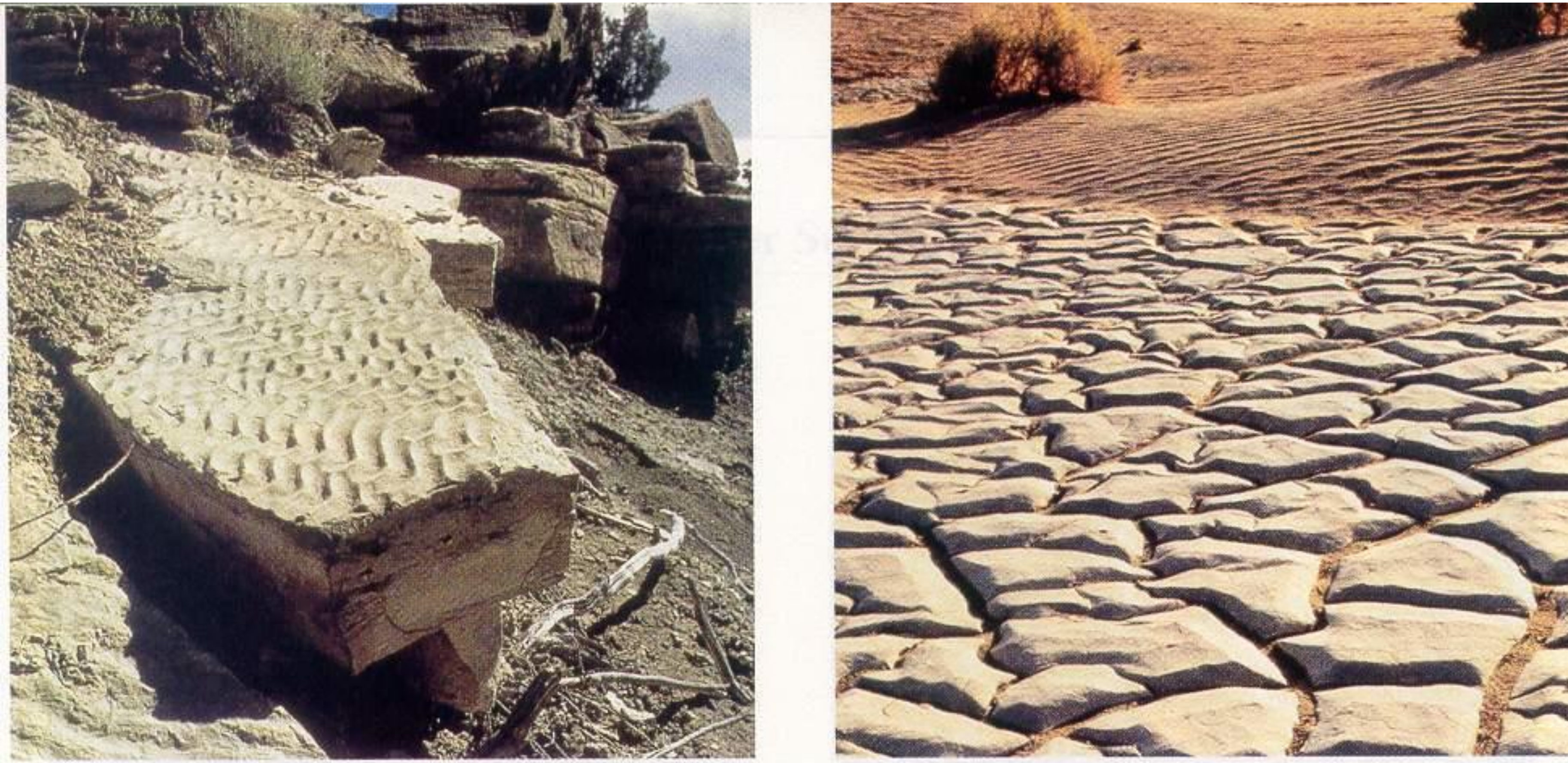


A.



B.

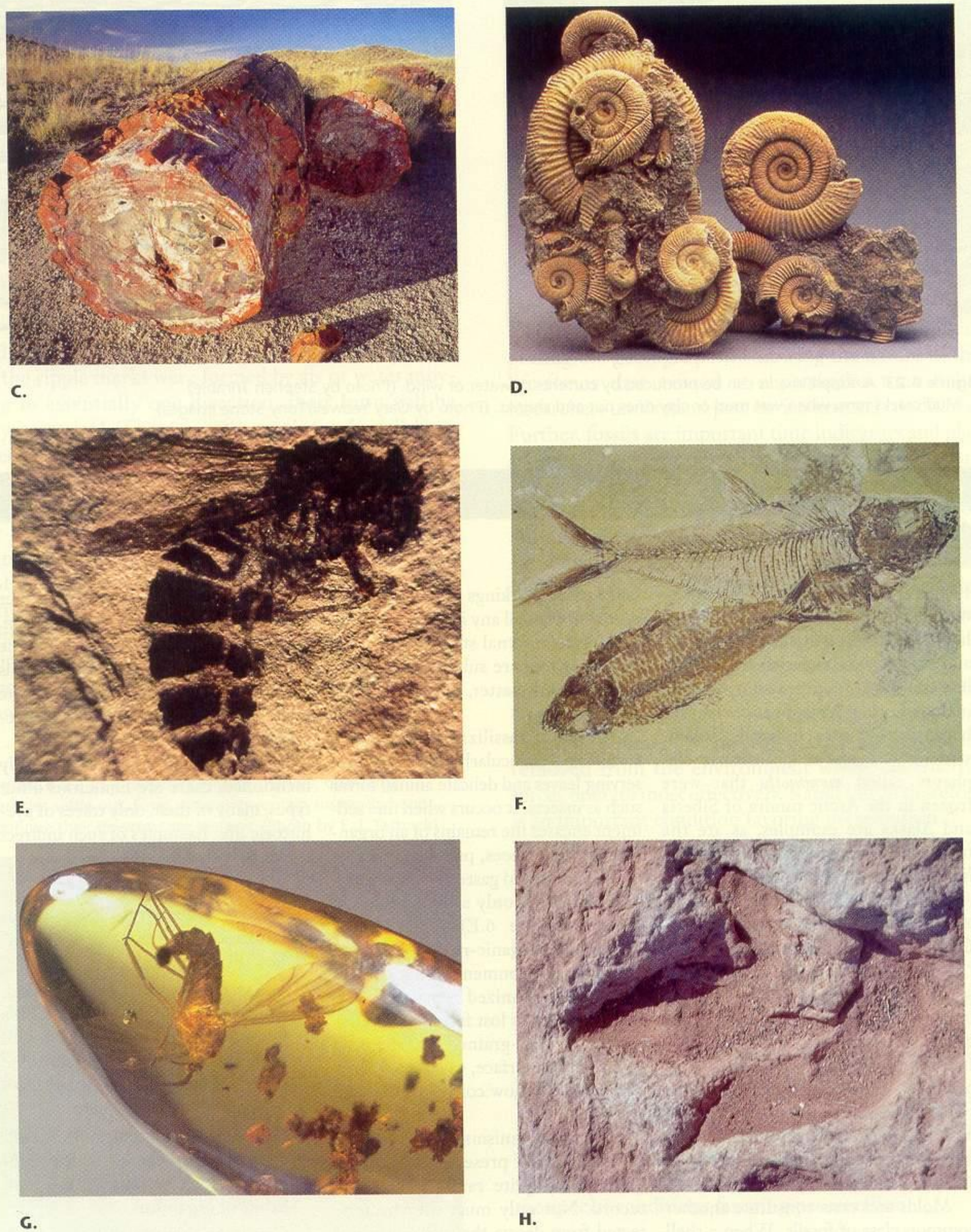
Figure 6.20 **A.** The cut-away section of this sand dune shows cross-bedding. (Photo by John S. Shelton) **B.** The cross-bedding of this sandstone indicates it was once a sand dune. (Photo by David Muench)



A. B.

Figure 6.23 A. Ripple marks can be produced by currents of water or wind. (Photo by Stephen Trimble)
B. Mud cracks form when wet mud or clay dries out and shrinks. (Photo by Gary Yeowell/Tony Stone Images)

FIGURE 4.21 Tracks of a three-toed dinosaur are exposed on the surface of a sandstone bed in the Painted Desert near Cameron, Arizona. All the tracks in the picture belong to a single species.



Figures 6.C—6.H There are many types of fossilization. Six examples are shown here. **C.** Petrified wood in Petrified Forest National Park, Arizona. **D.** Natural casts of shelled invertebrates. **E.** A fossil bee preserved as a thin carbon film. **F.** Impressions are common fossils and often show considerable detail. **G.** Insect in amber. **H.** Dinosaur footprint in fine-grained limestone near Tuba City, Arizona. (Photo C by David Muench; Photos D,F, and H by E. J. Tarbuck; Photo E courtesy of the National Park Service; Photo G by Breck P. Kent)