BOZUNMA VE TOPRAK

(WEATHERING AND SOIL)

FİZİKSEL BOZUNMA

MECHANICAL WEATHERING

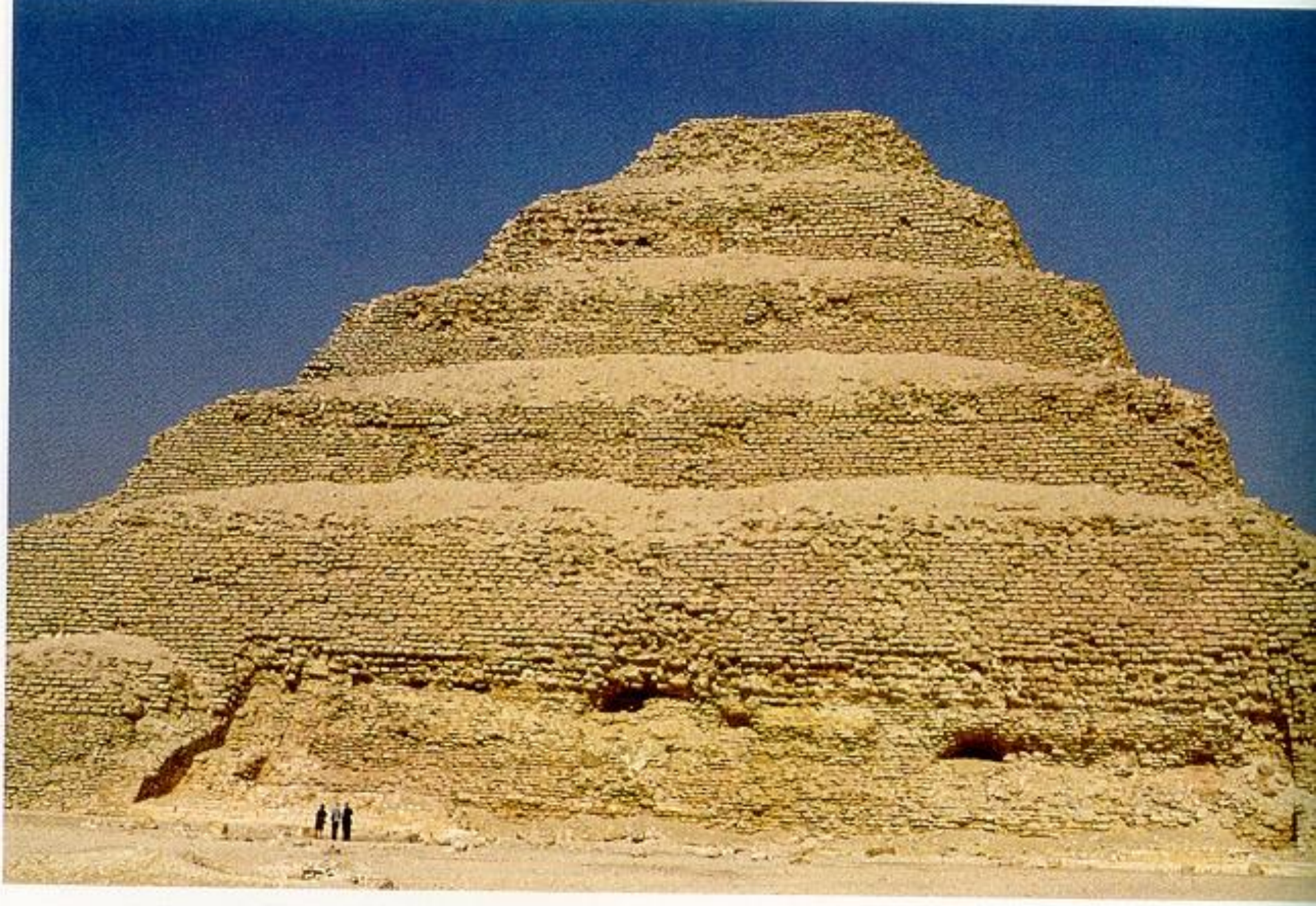


Figure 9.17
Deep weathering is apparent on the ancient stepped pyramids of Egypt. Each step is completely covered with talus, and many individual blocks are weathered to spherical form.

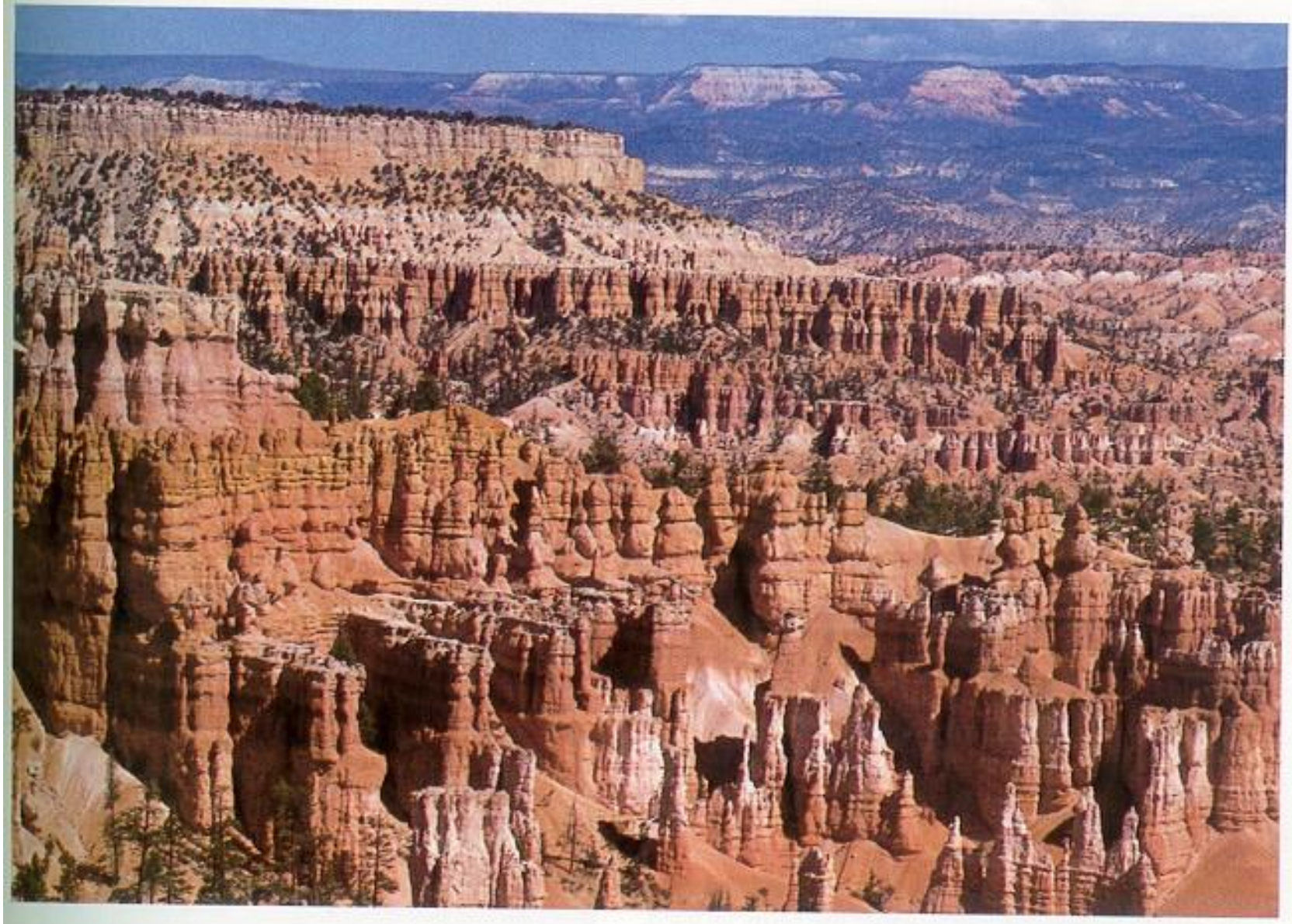
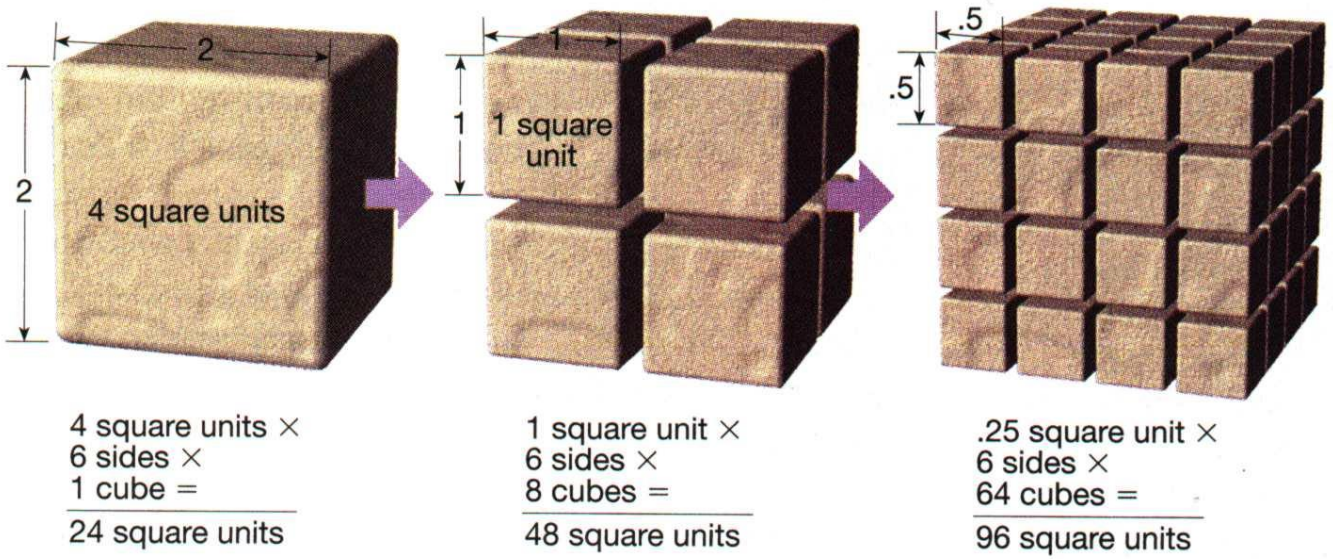


Figure 9.7
Differential weathering has produced the spectacular landforms in Bryce Canyon, Utah. Two zones of weakness occur within the rock body: (1) horizontal layers of different material, and (2) a system of intersecting joints that divide the rocks into a series of rectangular columns. Rapid weathering along the joints produces a series of columns and differential weathering of the sedimentary layers produces an irregular form to the column.



4 square units ×
6 sides ×
1 cube =
24 square units

1 square unit ×
6 sides ×
8 cubes =
48 square units

.25 square unit ×
6 sides ×
64 cubes =
96 square units

Figure 5.2 Chemical weathering can occur only to those portions of a rock that are exposed to the elements. Mechanical weathering breaks rock into smaller and smaller pieces, thereby increasing the surface area available for chemical attack.

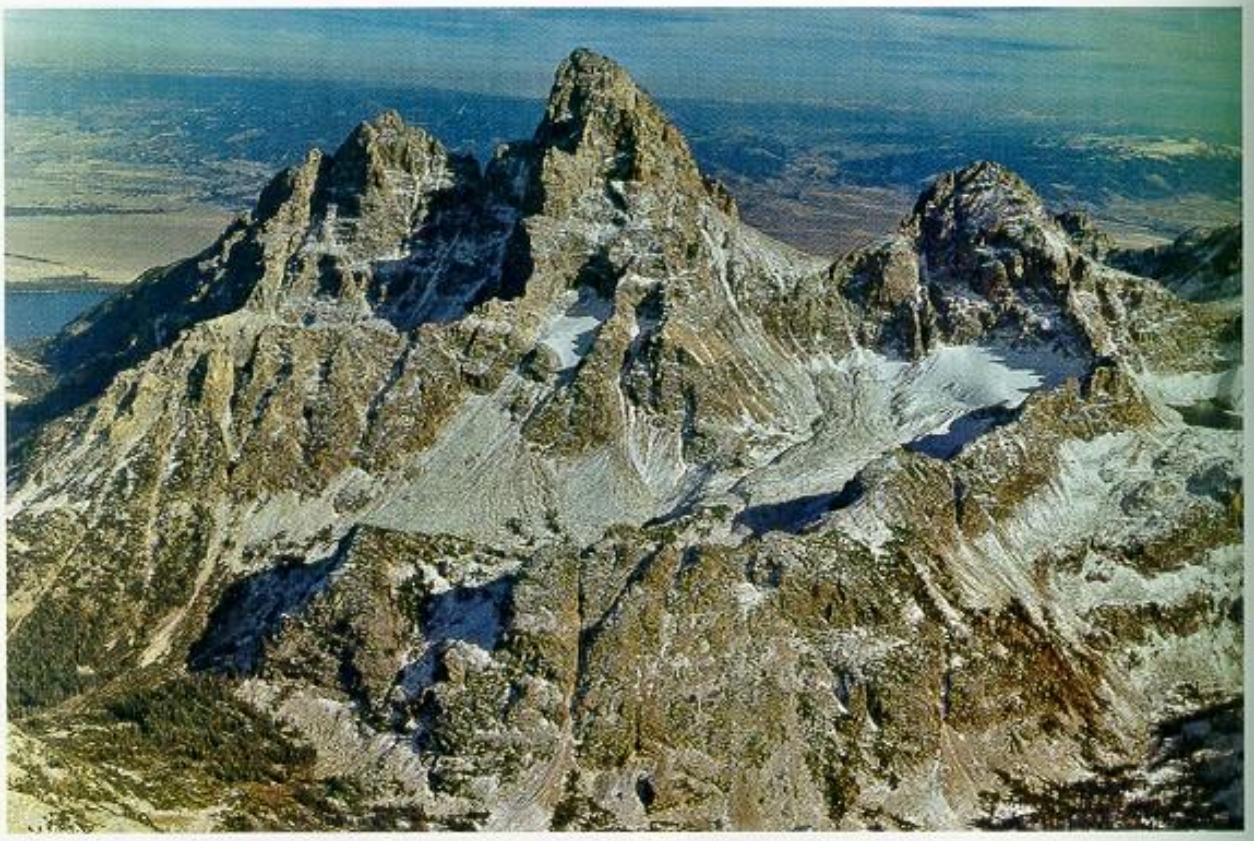


Figure 9.2(A)
The effects of ice wedging in the Grand Teton Mountains, of Wyoming, are seen in both the rugged surface of the mountain peaks and the accumulation of fragmented debris at the base of the cliff. The rock which forms the mountain range is a massive granite cut by numerous fractures. Ice wedging, controlled in part by the fractures, produces the sharp, angular texture of the mountain peaks. The debris derived from ice wedging has accumulated conical-shaped slopes near the base of the cliff.

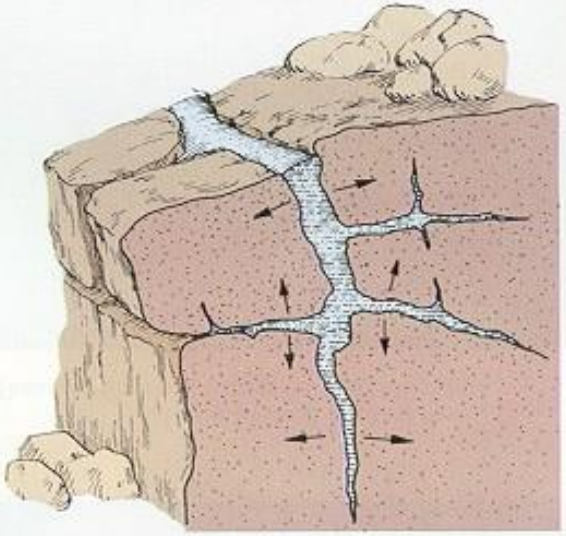


Figure 9.2(B)
Ice wedging occurs when water seeps into fractures and expands as it freezes. The expanding wedge forces the rock apart and produces loose, angular fragments that move downslope by gravity and accumulate at the base of the cliff as talus cones.

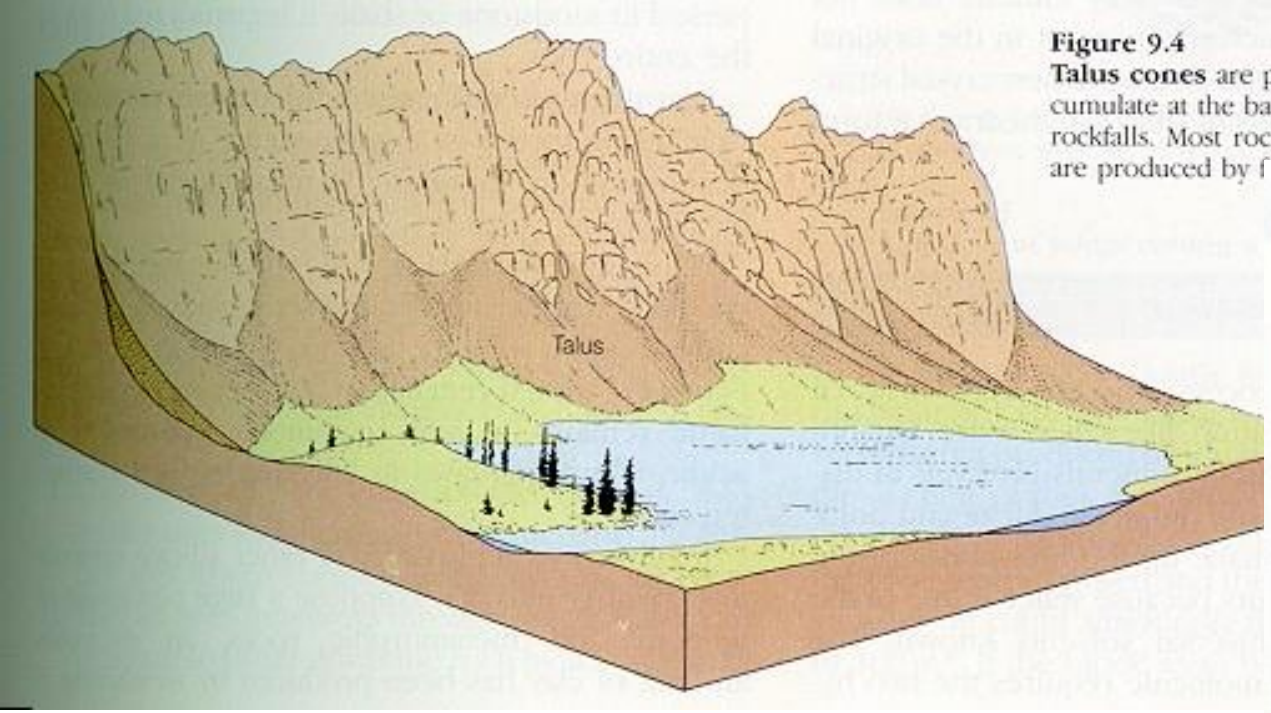


Figure 9.4
Talus cones are piles of rock debris that accumulate at the base of a cliff as the result of rockfalls. Most rock fragments in talus cones are produced by f

Figure 9.6 Talus is a slope built of angular rock fragments. Mechanical weathering, especially frost wedging, loosens the pieces of bedrock, which then fall to the base of the cliff. With time, a series of steep, cone-shaped accumulations build up at the base of the vertical slope. (Photo by Wolfgang Kaehler)

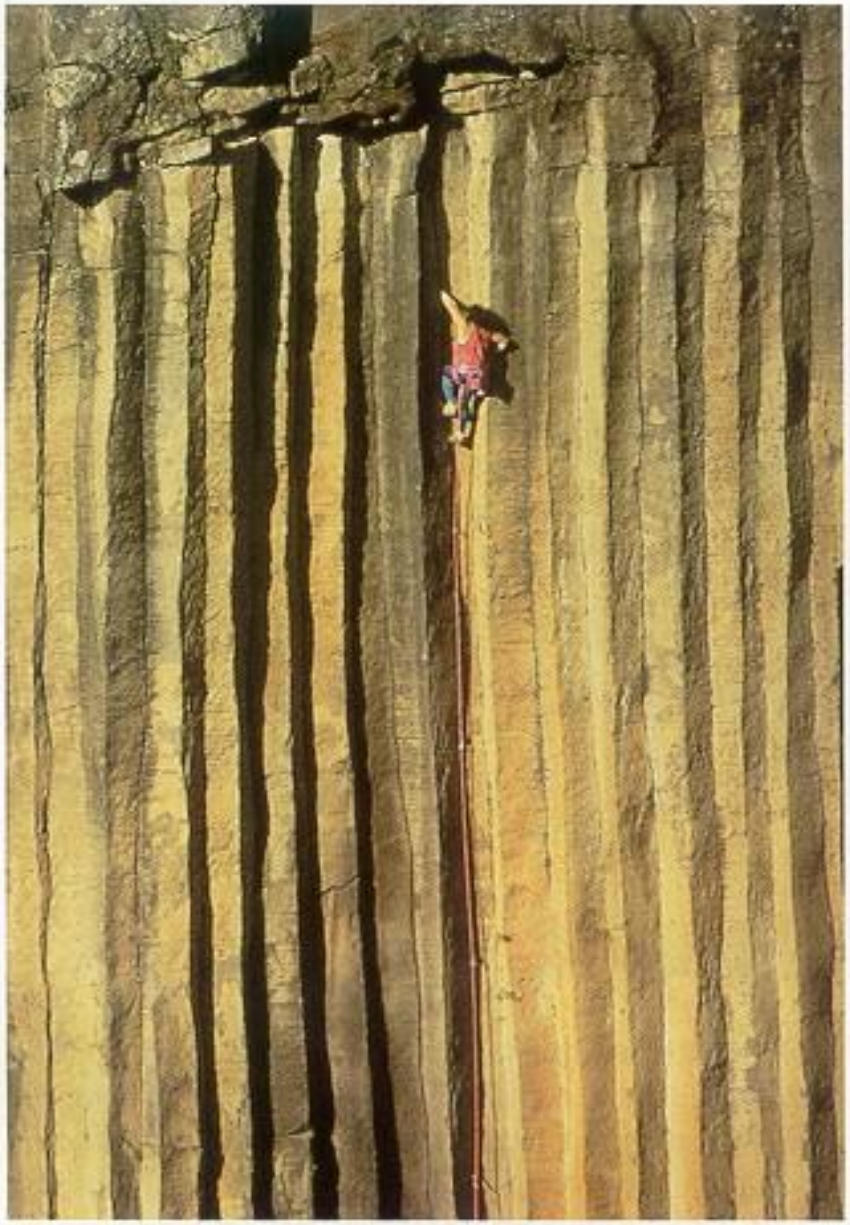


FIGURE 7.4 Columnar jointing in igneous rock near San Miguel Regla, Mexico, offers a challenge to a rock climber jambing his way up a crack between two adjacent columns.

Figure 9.3
Sheeting in granite of the Sierra Nevada occurs as erosion removes the overlying rock cover and reduces the confining pressure. The bedrock expands and large fractures develop parallel to the surface. The fractures may subsequently be enlarged by frost action.

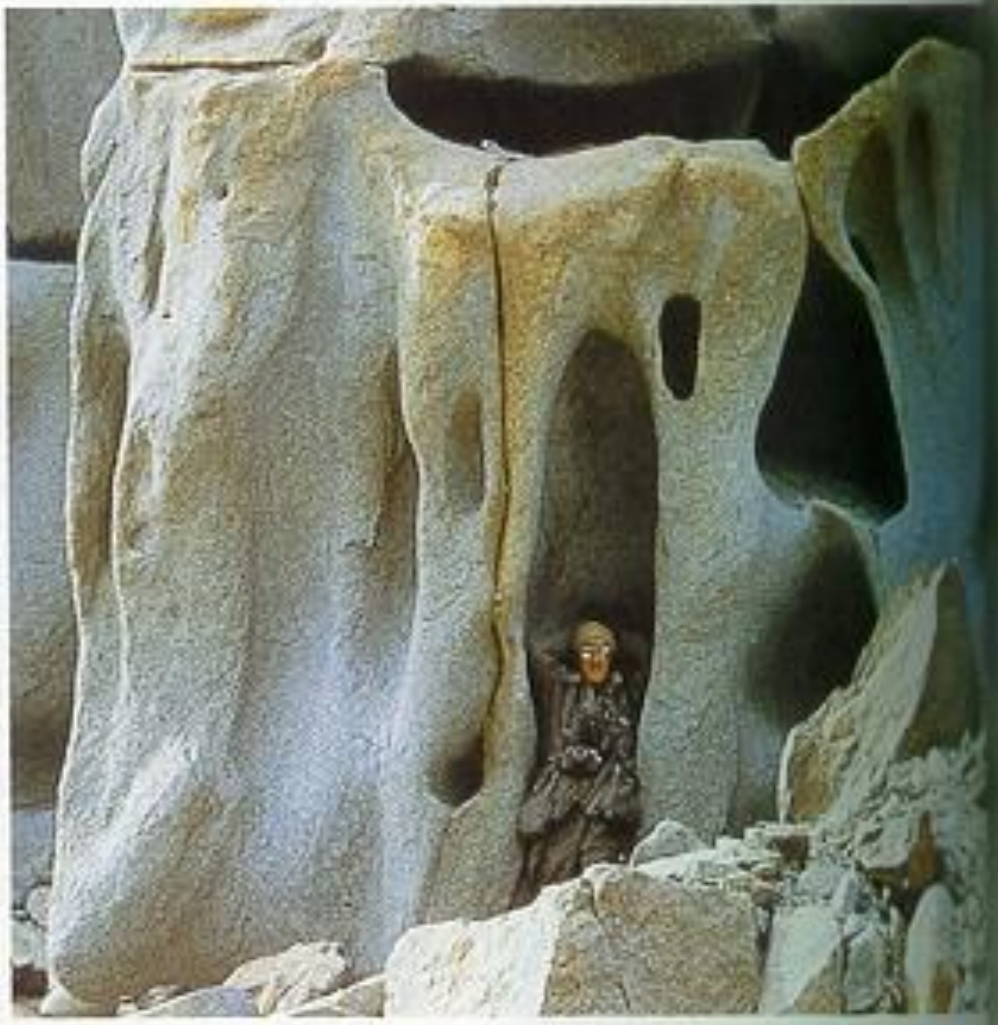


FIGURE 7.5 Granitic bedrock on the flank of Goodal Ridge in Antarctica has been so strongly weathered that i resembles Swiss cheese. Such cavernous weathering results from granular disintegration as salts crystallize i small cavities and along grain boundaries.

FIGURE 7.2 Sheet jointing in massive granite forms a steplike surface in Yosemite National Park, California.

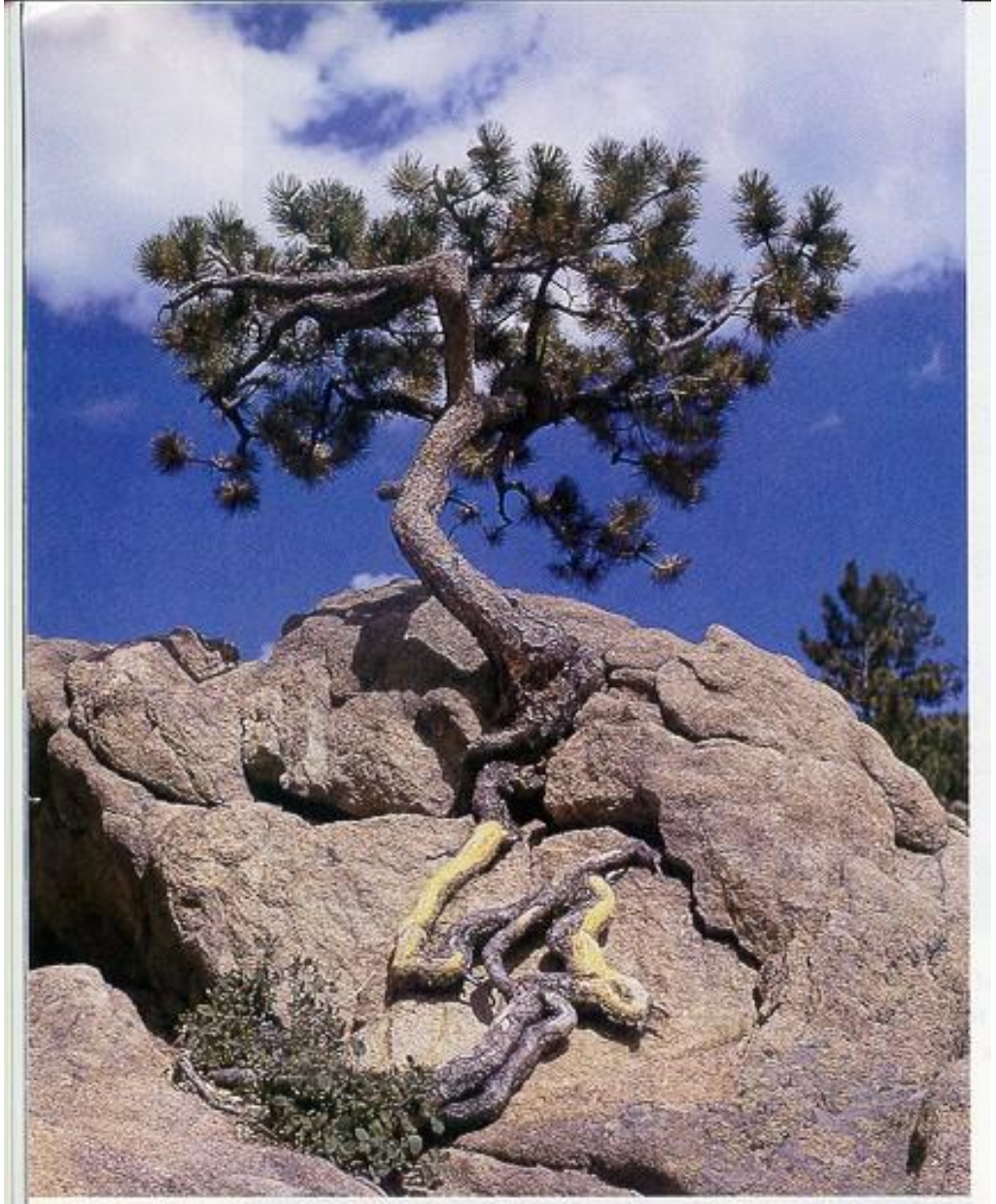


FIGURE 7.8 A Ponderosa pine tree that began growing in a crack on this bedrock outcrop has caused a large flake of rock to break away, thereby exposing the tree's expanding root system.