



FIGURE 9-25 In the cross-dating method, tree-ring patterns from different woods are matched against each other to establish a ring-width chronology backward in time.

logic section. This composite section is, in effect, a relative time scale because the rocks are arranged in their correct sequential order.

Geologists also recognized that the different fossil assemblages, representing distinct time periods in the past, could be used to correlate rock units elsewhere even if the rock types were different. The names of these time periods were thus based on the areas in which the rock units were originally described. For example, the Cambrian Period is taken from the Roman word for Wales (Cambria), whereas the Ordovician and Silurian periods are named after the Silures and Ordovices, tribes that lived in Wales during the Roman conquest (Fig. 9-27).

By the beginning of the twentieth century, geologists had developed a relative geologic time scale, but did not yet have any absolute dates for the various time unit boundaries. Following the discovery of radioactivity near the end of the last century, radiometric dates were added to the relative geologic time scale (Fig. 9-2).

Because sedimentary rocks, with rare exceptions, cannot be radiometrically dated, geologists have had to

FIGURE 9-26 Each fission track (about  $16 \mu$  in length) in this apatite crystal is the result of the radioactive decay of a uranium atom. In order to make the fission tracks visible, the apatite crystal has been etched with hydrofluoric acid. This apatite crystal comes from one of the dikes of Shiprock, New Mexico, and indicates a calculated age of 27 million years. (Photo courtesy of Charles W. Naeser, U.S. Geological Survey.)

