

**T**he stream gradient increased until today it rivals rushing streams in mountain ravines in the East. The stream drops 100 feet in the Arboretum's section of Stebbins.

The tranquil stream most visitors see is not the stream responsible for building the Gulch but is its alter ego.

A voracious monster creek appears after the thunderstorms drop great quantities of rain. The stream level occasionally rises four to five feet. As the stream rampages downstream, it carries rocks and boulders, tears trees from the stream banks, rips large pieces of rock from the stream bed, and carries the entire cargo downstream.

### Erosion and the ravine effect

Various weathering processes cause the bedrock to break down. The key process is the cycle of freezing and thawing which fragments the rock.

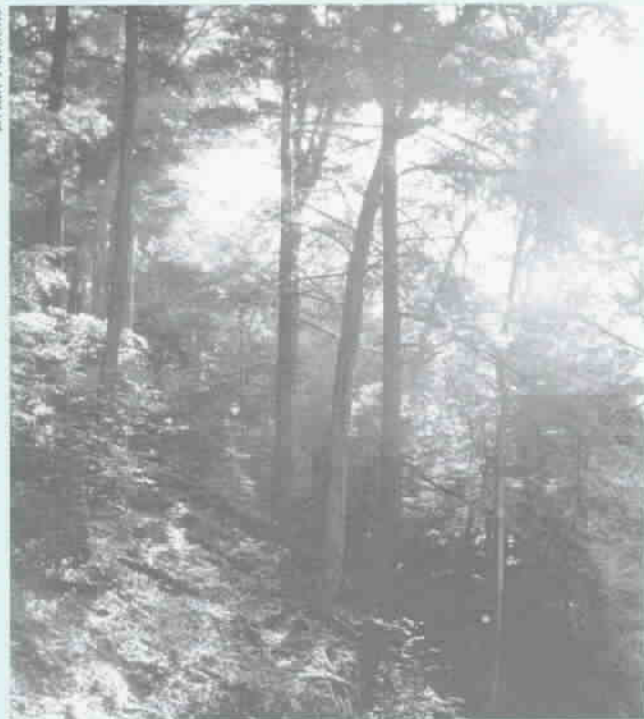
Gravity, often aided by water and ice, moves weathered rock downslope to the stream. Frequent slumps, landslides, and large rockfalls are evidence of the dynamic nature of Stebbins.



Near midpoint in Stebbins, hikers traverse steplike falls of Bedford Shale.

**The Holden Arboretum will acquire, maintain, and display collections of plants and conserve natural areas for education, scientific inquiry, and personal inspiration.**

Brian Parsons



Hemlock-hardwood forest.

Stebbins Gulch is a ravine system. The deep ravine traps cool air and reduces the mean annual temperature. Summer temperatures rarely rise above 75°F. In winter the ravine walls block the wind and moderate the temperatures.

In a profound ravine effect, the downcutting stream has intercepted the groundwater table in the cliff walls. Groundwater surfaces as springs and seeps which provide a constant supply of water. In winter, dramatic ice formations are created by surface water above ground and by ground water seeping through the rock.

Geology profoundly affects ecology in Stebbins. The plant and animal communities follow in response to three major factors: the massive bedrock formations which comprise the Gulch, the ravine system, and the interplay between stream and groundwater.