Maine Geologic Facts and Localities
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*Basalt Dikes at Schoodic Point, Acadia National Park*

44° 19′ 58.26″ N, 68° 3′ 39.40″ W

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Introduction

Among the several far-flung treasures of Acadia National Park is Schoodic Point, a remote, quiet bedrock headland across the bay east of Mount Desert Island (click here for a location map).

Figure 1. A serene autumn evening at Schoodic Point, looking west toward Cadillac Mountain on Mt. Desert Island.
The most striking bedrock feature at Schoodic Point is the array of black, basalt dikes which cut through the pale pink granite. Basalt is a smooth, dark colored rock that forms from rapid cooling of molten rock. In places where the molten rock erupts on the earth's surface, as in Hawaii or Iceland, basalt is a volcanic rock (lava).

Figure 2. Basalt dikes in granite, east side of Schoodic Point.
Basalt Dikes

At Schoodic Point, however, the basalt solidified in vertical cracks that were below the surface, perhaps as feeders to volcanos. The vertical sheets of basalt are called dikes.

Figure 3. Nearly (but not quite) parallel basalt dikes.
Basalt Dikes

The rocks at Schoodic Point formed at depth; the overlying rock having been gradually removed by erosion and uplift. The dikes break up somewhat more easily than the granite, so the modern wave activity emphasizes the dikes.

Figure 4. Two views of the same, wide dike. The dike is more fractured than the granite, allowing wave action to preferentially erode it. The white spots are sea bird droppings.
Figure 5. Basalt dike in granite, east side of Schoodic Point. Dikes follow fractures in the granite.
Flow of Molten Rock

Subtle features in the dikes demonstrate that the basalt was once molten and flowed into place. In some places there are streaks in the basalt parallel to the edge of the dike that formed as it was flowing, analogous to streaks in a marble cake. These are called flow lines.

**Figure 6.** Gently curved flow lines in basalt at the edge of a dike.
Flow of Molten Rock

**Figure 7.** Close-up of flow lines in basalt at the edge of a dike.
Flow of Molten Rock

Fragments of granite enclosed by basalt also indicate that the basalt was once molten, so it could engulf pieces of granite.

Figure 8. Fragment of granite engulfed in basalt within a dike.
Opening of Fractures

In order for the molten basalt to flow into the granite, the granite had to pull apart along fractures. Comparing the opposite sides of a dike, it is easy to see that they originally fit together and are now separated by the dike filling. Look at Figure 9-10 to see where the granite broke along cracks as the basalt flowed upward.

Figure 9. Granite that has opened along fractures to allow molten basalt to flow in. In both images the opposite walls fit like puzzle pieces.
Opening of Fractures

Notice that some fractures which cut through the granite, the fragment, and into the dike must be younger than the fractures that bound the fragment.

Figure 10. Granite fragment that was only slightly detached from the wall as the dike opened.