

What is the History of Granite Quarrying in New England?

New Englanders have been quarrying granite since the colonial era. In the early Massachusetts colony, much of the rock used to build towns and cities came from the distant countryside—specifically Tyngsborough and Westford. Quincy Market in Boston, for example, was constructed using Westford stone. Stone quarried in the city of Quincy was used to construct the Bunker Hill Monument, causing this local industry to expand rapidly. A local example of granite construction is the Davis Monument in Acton Center. This monument was built with stone from a small quarry on the Putnam farm off Newtown Road.

Gun powder, feather and wedging, and ice splitting were all widely used methods to split the rough rock during the colonial period. In more modern times, explosives and specialized saws became available, but for small jobs people often use older techniques.

Why Quarry an Erratic?

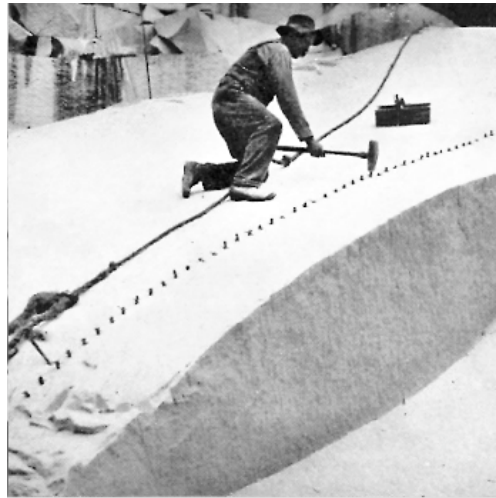
Granite erratics, boulders left by glaciers, were commonly quarried for granite because they were deposited on the surface and did not require mining. These large boulders also hindered farming and were often too heavy to simply drag away. Farmers often quarried such erratics just to clear farmland. Breaking up an erratic additionally provided granite pieces to be used as construction material or to be sold for a little extra money.

How Was the Rock Quarried?

The Big Rock was cut using a technique known as feather and wedging. Adopted in the early 1800's, this technique's basic concept still remains in use today. Feather and wedging slowly cracks a rock, splitting it into pieces by applying massive stress to a small area.

Holes were cut 2–4 inches apart and 5–8 inches deep using a metal hand drill or a hammer and chisel. Two feathers, pieces of curved metal, were inserted into the sides of each hole and a metal or wooden wedge was placed between them. Each wedge was hammered a few times before moving on to another wedge, thus applying an even force to split the rock. The rock eventually split under the pressure of the wedges.

The characteristic marks of feather and wedging can be seen on the pieces of granite lying at the site.



Picture of Feather and Wedging from www.rockofages.com.

What Was Granite Used For?

Granite was often used for construction: harbor structures, street paving in cities, foundations, wells, fireplaces, and cellars. Granite was chosen over wood because it cannot rot or burn and chosen over other rocks because of its durability and its ability to be cut. Granite has also been widely used to create monuments since the 1880's.

As well as large precisely cut stone, known as “dimension stone”, smaller granite pieces were used in local construction. These smaller stones were used to create the now famous New England rustic stone walls. These walls, often found today in woodlands, were originally boundary markers of farmland or fences for livestock. Boulders that were too large to be directly incorporated into the walls were cut into pieces.



Characteristic marking of feather and wedging on a piece of granite at the site.

Why Are There Pieces of the Rock Lying Around at the Site?

When a granite slab is cut using imprecise techniques such as feather and wedging, it does not always break into the desired shape. A lot of cut granite is not useful and is discarded. This scrap is known as grout. Many of the pieces lying at the site have been identified as grout.

What Is a Glacial Erratic?

When glaciers move they can pick up rocks and boulders from the underlying bedrock. These boulders can be carried for tens to hundreds of miles and then, when the glacier starts receding, are deposited, often in an area with a different type of bedrock. These boulders are called glacial erratics. New England has numerous glacial erratics, of which the Big Rock is one example.

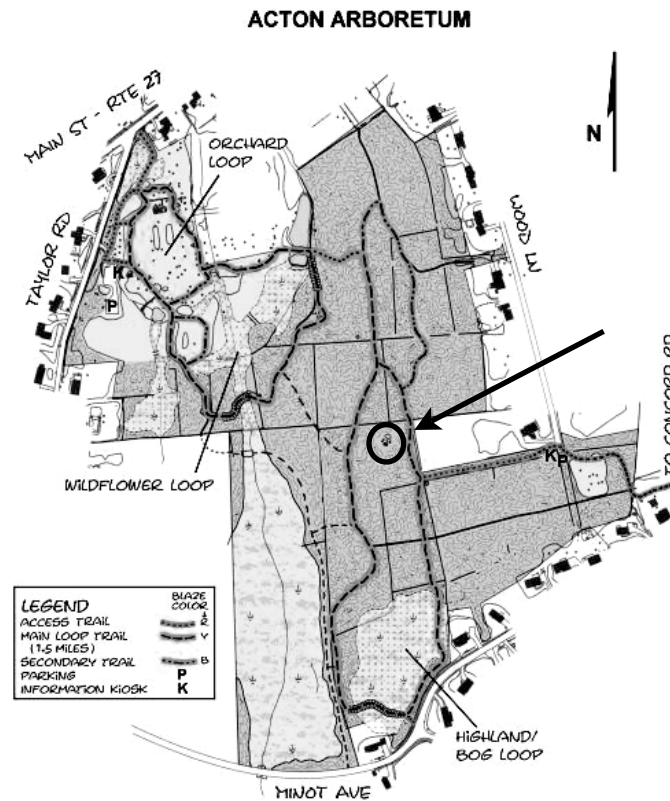
What Happened in the Ice Ages?

In the most recent Ice Age there were four major ice sheets. One of these sheets, the Laurentide Ice Sheet, covered New England. This titanic glacier was up to a mile deep and covered a large part of Canada and the northern US. The Acton Arboretum was covered by ice as recently as 15,000 years ago.

How Have Glaciers Affected New England?

The relentless movement of this glacier formed the features of the New England landscape. It dropped glacial erratics, massive chunks of ice, and other debris as it receded. The ice chunks left behind melted to form kettle ponds such as Grassy Pond, the Arboretum's bog, and Wills Hole in Acton. Other debris formed eskers (long elevated ridges) such as the one in the Acton Arboretum, and drumlins (small hills) such as Great Hill. The glaciers also pushed debris in front of their paths, forming geographic features known as moraines. The glacial melt waters formed features known as outwash plains. Cape Cod, Martha's Vineyard, and Nantucket, glacial moraines, were all formed in this manner.

How to get there...



Map From: <http://actontrails.org/MapArboretum.htm>

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The Big Rock

Acton Arboretum



Arboretum Self Guided Tour Site # 19

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