

Field Stone Quarrying



The depression in front of you contains the remains of a field stone quarrying site. The early settlers of this area typically used existing field stones to build rock walls, dry laid foundations for buildings, and small mill dams. When the rocks were too large to move, or for their intended use, they were split using hand tools.

The usual splitting process used a series of wedges along the intended crack direction. The wedges were typically fashioned of steel by a blacksmith who then hardened them through quenching and tempering. Steel was expensive at the time but the typical wrought iron that a blacksmith used was much too soft to serve as a rock splitting wedge.



Top to bottom: Cape chisel, plug drill, star drill.

The wedges were of two types, those to be used in rectangular holes and those for round holes. Rectangular holes were made in the rock using a cape chisel and cylindrical holes made with a plug or a star drill.

The cape chisel was pounded with a hammer to create a rectangular hole. The plug drill (2 cutting edges) or star drill (4 cutting edges) were rotated slightly between each hammer blow to break up a new surface at the bottom of the hole. During the process, the drill was pulled out and the hole was cleared of rock dust, typically by blowing through a small tube inserted in the hole.



Feathers and wedges

In the case of the round hole, the wedge was inserted between two semi-cylindrical tapered inverted wedges ("feathers") in a hole drilled by hand in the rock. The combination of the feathers and wedges assured that even pressure would be exerted on the sides of the hole as the wedge was driven in place with a hammer.

Several holes, typically 4 to 6 inches apart, were drilled in the rock along the intended split line. The feathers and wedges were inserted, and the wedges hammered in sequence along the series of holes. As the wedges were hammered their ringing increased in pitch until the crack was initiated and the

ringing suddenly disappeared, replaced by a dull “thud”. Depending on the type of stone the crack slowly propagated on its own or had to be separated by further hammering the wedges or inserting larger flat spreading wedges into the crack, typically the case with gneiss or schist.



Feathers & wedges with spreading wedge in cracked schist boulder.



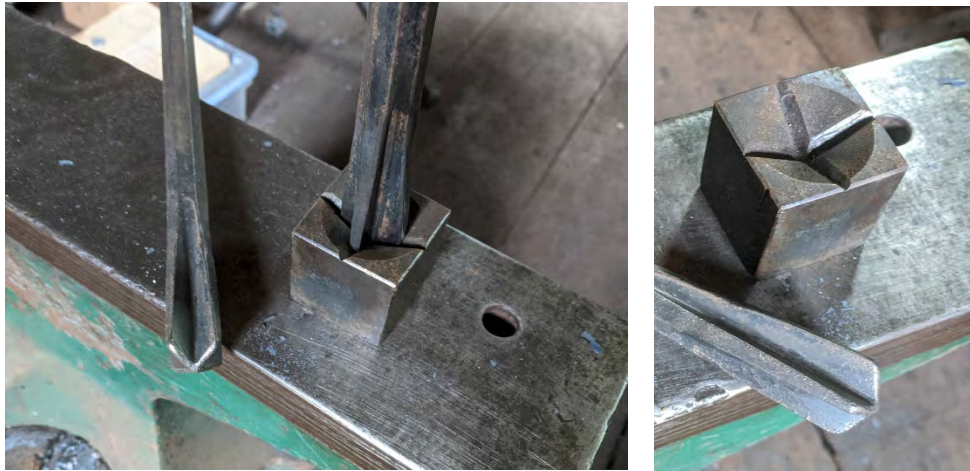
Face of rock above after splitting.

The process was essentially the same for flat wedges and feathers inserted in rectangular holes. However, the holes were made with cape chisels and hammers.

Unfortunately, most of the rock in Bolton is gneiss or mica schist, neither of which split in a predictable manner, often breaking along weathered cracks rather than along the intended direction. Consequently, the native rock was not generally used for finished masonry. The best rock to split accurately and predicably is granite which is found only in large glacially deposited boulders. An example of a very large glacial deposit of granite is in the depression directly in front of you. You can see the sides of the round drill holes for splitting in the remaining rock. The granite is a very close match and was probably used in Moses Wilder’s home (c. 1793) and blacksmith shop (c. 1803) at 185 Main

Street adjacent to the Trail Head 1. (The original blacksmith shop is now at Old Sturbridge Village but has since been reconstructed in its original location.)

The plug and star drills used for rock splitting were made of steel which were heat treated and harder than the typical wrought iron used for most implements at the time. However, it still became dull quite quickly and had to be “sharpened” or dressed by a blacksmith. Dressing wasn’t done by filing or grinding but by re-forging the drills and again heat treating in order to avoid wasting the valuable steel. The plug drills and cape chisels were relatively easily forged on the anvil, but star drills had to be re-formed with a special anvil tool (bottom swage) which was probably one of the jobs that Moses Wilder and his son, Abraham, performed in their blacksmith shop.



Star drill with the bottom swage used by blacksmiths to dress the cutting edges.

The chisels that were inserted in the rock to fully split gneiss and schist were typically made of wrought iron and could be forged to sharpen without further heat treatment.



Spreading wedges

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