



BOLTON CONSERVATION TRUST

**Philo Clapp Pump Log Mill and Shop  
History & Tools**

You're looking down at the remains of the dam and the foundation for a "pump log" mill built and operated by Philo Clapp and his son, Philo Clapp Jr., during the 2<sup>nd</sup> half of the 19<sup>th</sup> Century and early 20<sup>th</sup> Century. A pump log was a wooden pipe, typically 10 ft. long, which had been bored through the center to carry water. A male and a female conical end were fashioned on either end of each log and the logs connected into a piping system by hammering them together to make a reasonably watertight joint and then typically buried in the ground. The name "pump log" came from their use as the vertical pipes for wells. The pump logs were made of a number of durable woods, but in most places, black locust (*Robinia pseudoacacia*), a species native to eastern North America, was preferred due to its hardness and very high resistance to rot.

The pump shop (mill) is described in Bolton's history (Whitcomb, Esther Kimmens, *About Bolton*, Heritage Books, 1988):

*"A pump shop on the Great Brook in the "east part" was a busy place from Civil War times until about 1875 (date extended – see paragraph below). Pumps were made entirely of wood, the pipe being also wooden, with a hole bored through it. Philo Clapp was the pump-maker, and in his spare time he drove about the countryside with loads of pumps, selling to those who needed them."*



*A 10' 6" manual pump log auger: a yard stick is shown for comparison.*

Francis G. Mentzer (1890-1978) recalled in a conversation with Bob Roemer in 1976 that he had worked at the "freshet pump log mill" in the spring as a young school-aged child, presumably shortly after 1900; he didn't mention who owned the mill at that time, but presumably it was Philo Clapp Jr. (b. 1848), the son of Philo Clapp (1806-1886) and Flora Wetherbee, who is recorded as selling pumps to schools in Lexington in 1887-8. Francis lived with his parents directly south of the mill on the north side of Great Road (now Main Street). The house had been served earlier by water from a spring on Long Hill which was delivered through wooden water pipes presumably bored in the pump log mill. The wooden water pipes were clearly evident in the mid 1970's.

Little is known about how the mill operated. Its foundation is clearly evident to the east of the footbridge on the north side of Great Brook and several beams from the floor still protrude into Great Brook and can be seen in periods of low water. The abutments on either end of the footbridge were originally part of the small dam that operated the mill. The power for the mill has been conjectured to have been a small horizontal shaft breast shot or under shot water wheel due to the relatively shallow depth of the reservoir behind by the dam. The method of transmitting the power to the boring equipment is unknown at this time but may be revealed with an archeological dig.

With exception of the power to automate the process, pump logs were bored throughout New England in essentially the same way. A log was set up and fastened to the tops of 2 sawhorses and two more sawhorse with vertical guides or marks provided alignment as the very long auger was driven into the end. The auger typically had a "pod" end which helped to keep it in the center of the log. The process was very laborious as the auger had to be pulled out regularly to clear the chips. When the first hole, typically 1 1/2" diameter, was bored it could be followed by additional reamers to expand the hole to a desired diameter. The ends were then prepared by reaming out one end with a conical reamer and forming a cone at the other end with a "Turks's head" or similar tool.

Eventually pump logs were no longer bored from logs but made from two halves which were planed out with a special molding plane to form a pipe when connected. Shortly thereafter, concrete replaced wooden pipe.



*Upper – pod end of a 10' 6" hand auger    Middle - replaceable bit for a hand auger  
Lower – replaceable reamer for a hand auger*



*Two tools for cutting the male end of a pump log.  
"Turk's Head" to the left.*



*Reamer for cutting the female end of a pump log*



*Pump log plane which cut two halves of a pipe.*