THE PUMP DRILL

One of the early uses of tools in North America was for the drilling of holes. Objects containing man-made, drilled holes have been discovered in Native American burial sites that date as far back as 10,000 years. In New Mexico, pre-historic Indians mined turquoise over a thousand years ago. They used turquoise for self-adornment and in spiritual ceremonies. They obtained the turquoise from mines in the Corillos and Burro Mountains. Larger pieces of turquoise were worked with rough stone tools. Turquoise beads were ground from these larger pieces and holes drilled in the beads so that they could be strung together. Green and blue turquoise beads have been found in ancient graves of the pre-historic Pueblo people indicating both the spiritual nature and value associated with this mineral. However, without the ability to drill holes in the turquoise, beads would not have become a favored adornment nor a valued trade item. The drilling of holes allowed the beads to be used in necklaces, bracelets, earrings, ceremonial costumes and religious images.

Probably the first tools used for drilling were stone awls. They consisted of a wooden or bone handle fitted with a sharp-pointed stone or piece of bone. The awl was held in the hand and, with pressure from the arm and shoulder, turned rapidly back and forth against a single point. This eventually created a hole, however, the process is long and hard. Over time the inventiveness of the artists evolved several tools to increase the speed and improve the accuracy of drilling holes. One of these was the invention of the pump drill.

Archeologists believe that Native Americans may have first used the pump drill to make fires. The pump drill produces heat from friction as it spins against a piece of wood. If one attaches a sharpened stone or metal point to the end of the vertical shaft, the pump drill will bore a hole through wood or rock in a very short time.

A pump drill consists of a vertical shaft which passes through a disc of stone and a horizontal crosspiece. A leather string or thong that passes through the top of the vertical shaft is attached at both ends of the crosspiece. There is sufficient slack in the string to allow the crosspiece to reach close to the disc. The disc is turned to wind the string around the vertical shaft, thus raising the crosspiece. By pressing down on the crosspiece several times, the vertical shaft is made to turn. The purpose of the disc is to make the shaft rewind the string. This method allows one hand to be free to hold the drill upright or to hold the object being drilled.