Brief Explanation of Lithic Technology

The most enduring identifiable artifacts in the camps of prehistoric man are those made of stone. The earliest men can be identified as human as much by their associations with stone tools as by their anatomy. For this reason the techniques of making stone tools are of great interest in the study of human origins and dispersals. The stone tools recovered in the earliest as well as in later archaeological sites were made by detaching flakes from a block or mass of stone. These rocks or lithic materials are marked by having a concoidal fracture when a blow is struck against a surface. Such a fracture may also be obtained by exerting pressure against a surface or platform, whether prepared or naturally occuring. The striking of a blow or the exerting of leverage forms a cone which may be used to control the detachment of a flake. That is - a flake may itself be deliberately shaped by the kind of force applied by the stoneworker. At the same time, the way a flake is shaped and removed affects the character of the block of raw material from which the flake is detached. The flake is sometimes called a primary flake and may be further worked in order to make a finished tool, while the block of raw material is termed a core or nucleus.

The character of the raw material or lithic material affects the way in which a flintworker carries out his flaking. A wide range of glassy rocks was used in prehistoric times, including various chalcedony (i.E. flint or jasper), obsidian, ignimbrite, quartz, quartzite, siltstone, and glassy basalt. In each instance the core should be free of internal breaks or flakes will detach improperly and the object itself may be shattered.

At some time in the past men discovered that s me glassy rock could be changed by heat treatment so that pressure flaking was easier. Thus, heat-treated flint, jasper, or quartz can be worked far easier than the untreated material, and the changes which take place can be found in archaeological sites and duplicated by laboratory experiments. Obsidian lends itself to pressure flaking and give a sharp cutting edge while naturally occuring flint or basalt may be easier worked by percussion.

Since variations in lithic material affect the outcome of flaking, prehistoric man used different flaking tools. For striking a blow, a percussor or hammer can be made of stone,antler, bone, or wood. In each case, hardness plays an important part so that stone hammers tend to leave larger negative cones of force on the core or along the edge of a primary flake which is being shaped by percussion flaking. On the other hand, a billet or hammer of elk antler will defuse the cone so that the negative scar on the core or along the edge of the flake being worked may be shallower and less well marked. Pressure flaking tools, called pressors, compressors, or fabricators, were made of antler, bone ivory, and copper, each being suitable for a particular kind of work. The kind of work done with any one percussor or pressor may overlap with the effects of other tools, but the skilled workman can execute a wide range of flaking with a variety of implements at hand.

Recent experiments have suggested some of the possibilities for using different tools and different raw materials but the possibilities have only begun to be realized. In trying to solve a problem presented by the characteristics of some prehistoric stone tool, Don finds it necessary to use alternating methods in replicating the flakes and the flake scars distinguished on the artifact to be copied. It is important to understand that the flint-

knapper is not copying just the finished object. He is necessarily concerned with the sequence of steps which can be deduced from the succession of flake scars on the prehistoric tool or which can be reconstructed by examination of the flakes found at the archaeological site where the object was recovered. The result of experimental work is usually a reduction in the number of ways by which the prehistoric object can be replicated. Most often two or three solutions remain as suitable explanations of the techniques used by prehistoric man, and a number of other methods have been discarded all together.

In brief, flintknapping encompasses stages of manufacture from the quarrying, to the blanking, to the preforming, and to the ultimate finished tool. These are all involved processes and could not be adequately explained here, but it should be noted that a preform is made to resemble the shape of the finished tool and represents a deliberate intermediate step in constructing. As a result, it has distinctive characteristics in flaking and edge preparation which set the stage for the finishing work.

(Exerpt from "Flaking Stone with Wooden Implements" by Dr. Earl Swanson - an explanation of the manufacture of Palliaike points written by Don Crabtree to be published by "Science" magazine)