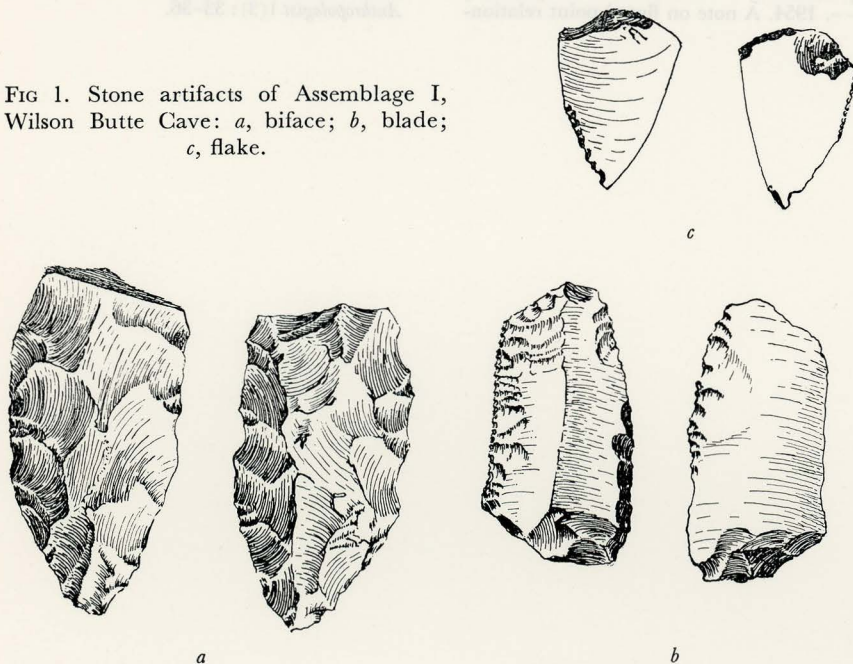


# RESEARCH REPORT

## A Technological Description of Artifacts in Assemblage I, Wilson Butte Cave, Idaho

FIG 1. Stone artifacts of Assemblage I, Wilson Butte Cave: *a*, biface; *b*, blade; *c*, flake.



by DONALD CRABTREE

Assemblage I, from the basal levels of Stratum C in Wilson Butte Cave (Gruhn 1961), has recently been radiocarbon-dated 12,550 B.C.  $\pm$  500 years (Gruhn 1965). Because of the importance of these finds under controlled excavation conditions in a stratified site, a detailed description of them and an analysis of their technological aspects will be given here.<sup>1</sup>

**Biface** (Fig. 1*a*). This is a bifacial artifact of fine-grained, dark-colored basalt (62mm. long  $\times$  35mm. wide  $\times$  15mm. thick). The source of the material is unknown; this basalt is not abundant in southern Idaho, but can occasionally be found there. The point of the artifact is broken (accidentally, not as part of the knapping process), and this makes it difficult to determine its complete form. It is biconvex in section and was possibly ellipsoidal in shape. The workmanship is typical of the preforming which is usually done at the material source to lessen the weight of the artifact and eliminate transporting surplus material to the cave. Roughing out was done on a large primary flake (blank) by direct free-hand percussion using the core technique. The

<sup>1</sup> Sites mentioned are shown in map, p. 360.

edge is slightly sinuous, indicating that the primary flake had a right-angle edge which was removed by alternately striking one side and then the other. This technique provides a platform surface for each subsequent blow and thus eliminates the work of preparing a platform for each flake removal. The bulbar scars on the lateral margins are somewhat diffused, not salient, showing that the percussion implement made wide contact on the edge of the artifact. A soft hammerstone, or an antler billet, was used with excellent control for the preforming; but no attempt was made to thin the artifact. The flakes terminate sharply, indicating the blow was delivered with considerable velocity. One side and one edge show consistent rhythm and control in detaching the flakes. Removal of flakes on this side has also left a well-defined ridge down the median line of the artifact. When completed, with the final pressure retouch applied, such a tool would have been fairly thick but would have withstood the strains of violent and vigorous use.<sup>2</sup>

<sup>2</sup> For a description of the experiments in flintknapping on which these statements are based, see Crabtree (1966; 1967*a, b*; 1968); Crabtree and Butler (1964); Crabtree and Davis (1968); and Swanson (1966).

Even though it was broken, this tool appears to have been used, possibly as a punch or wedge for splitting wood. Abrasion of the broken end may be the result of striking with a material other than stone. The opposite end (pointed, unbroken) is not bruised, but does show small flakes which were definitely removed by force originating at the tip and directed toward the base (the broken end).

**Blade** (Fig. 1*b*). (52mm.  $\times$  29  $\times$  9). A knife or dual-edged cutting implement of a mottled grey, semi-translucent variety of chalcedony that commonly occurs in pre-Tertiary vesicular volcanic rocks, weathering out in the form of nodules or geodes. Such volcanic formations occur 40 miles north of Wilson Butte Cave. The material is of a vitreous, lustrous nature which may indicate artificial alteration by the thermal treatment; no final conclusions may be reached, however, because all of the original surface, which would allow a comparison of texture change, has been removed.

The proximal end, which contains the bulbar portion and platform, has been removed, and, therefore, we have no clue to either the technique or core type. A few flakes have been removed at the proximal and distal ends to straighten the blade. Possibly, the worker was preparing to fabricate an artifact and then lost the piece; it seems unlikely that he deliberately abandoned it, for the material is of excellent quality and of adequate size to be still workable. The dorsal side of the blade bears the scars left by the previous removal of two other blades and shows that this one was removed by striking a well-aimed blow directly in line with the longitudinal ridge (crest) left by the removal of the two others. The blade is triangular in section with a single ridge, rather than trapezoidal with two ridges.

The parallel sides of the blade show functional scars that suggest the working of wood as with a pocket knife. The blade appears to have been held at an angle and used diagonally in one direction, then, as the edge became dulled, turned over and used on the other side. This type of motion causes use-flakes to be detached unilaterally. In contrast, the use of such blades for skinning animals (as I discovered by experiment at the Grasshopper site in Arizona in July, 1966) produces use-flakes that are bifacial and all but undetectable by eye.

**Flake** (Fig. 1*c*). (28mm.  $\times$  24  $\times$  5). Originally described as a "utilized flake," this is made of good-quality black ignimbrite. The platform part of the flake still retains a portion of the exterior of the pebble, or cobble, from which the flake was derived. The bruising and abrading of this surface is characteristic of the isotropic materials which are derived from a

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deposit of alluvium. There are gravel pits on the south side of the Snake River, some distance from the cave, which contain similar ignimbrite material. There may also be other occurrences of which I am not aware.

The flake has a distinctive platform, similar to the "Chapeau Gendarme" (a type of platform named for its resemblance to the old French policeman's hat); such a platform is produced by removing a surplus flake from the core—which leaves a bulbar scar on the face of the core—and then removing another flake at the same place by striking inward from the leading edge of the core. In this case, the use of a soft percussion implement, possibly a wooden baton or billet, is indicated. The edge of the flake penetrated the percussor and was pulled from the core, leaving the distinctive lip and the diffused bulb characteristic of the wooden-baton technique.

Originally larger, the flake was severed longitudinally—one lateral edge of the original platform bearing the cortex being used to seat the tool for this purpose—in a way typical of the manufacture of burins. The burin break is the result of a distinctive technique and should not be confused with a snapped flake, for the burin break has two right-angle edges whereas a snapped flake has a curved or rounded edge on one side. Also, the apex of the force lines determines the direction of applied force. This break produced a very sharp triangular tip on the distal end

of the flake. When the tip became dulled by use, it was repointed by removing several micro-flakes, leaving a slight spur on the tip. The sharp edge of the flake shows very small use-flakes, removed bifacially from one surface from the middle of the flake to the attenuated tip; the same type of use-flakes, but removed from the opposite side, appear toward the other end of the flake on the other side, indicating that the flake was at some point used in reversed position.

The use of the burin technique for backing a flake or blade knife has also been reported from the Shoup and Birch Creek sites in Idaho (Swanson and Sneed 1966, Swanson, Butler and Bonnichsen 1964), from the Vernon site (Paul Martin, personal communication) and the Grasshopper site (William Longacre, personal communication) in Arizona, and from the Anangula site in Alaska (Laughlin and Aigner 1966). When waste flakes are more closely examined, other occurrences will no doubt be found. The technique of backing by removal of a burin spall, either by percussion or by pressure, results in a single type of burin core which is not difficult to identify; the spall itself, of functional value for shaping, forming, and incising, is so small that it can be easily lost through the mesh of most screens. There appear to be six or seven separate techniques for backing flakes and blades to be used as knives (see

Tixier [1963] for an excellent survey of burins-on-blades).

*Modified bone fragment.* This is a fragment of limb bone, originally identified tentatively as a "flaking tool." The type of break indicates that it was broken by man, a fresh upper limb bone being split lengthwise, so that the edges of the bone are at right angles to the surface. One of the edges has been grooved by a burin-type implement.

The study of bone-breaking on which this identification depends has included the breaking of bones in the laboratory and comparison of the results with the breaks in bones fed to zoo animals, as well as examination of the faunal remains from the Pleistocene cave sites excavated by the University of California (Berkeley) near Auburn and at Tracy, California. The cannon bone of a horse, for example, broken by the jaws of some large carnivore, showed breaks of a bipolar nature, with scars that were semi-conchoidal and directly opposite one another. A bone cracked on an anvil by man for the purpose of removing the marrow usually shows a spiral break, while a bone to be split is first crushed at the ends to remove the spongy part and then supported at one end while the other end is levered apart with a cleaver. Many different techniques for preparing bones for use must exist. More intensive study of the modification of bones can be expected to provide important new insights into the life of early man.

## References Cited

CRABTREE, DON E. 1966. A stoneworker's approach to analyzing and replicating the Lindenmeier Folsom. *Tebiwa* (Journal of the Idaho State University Museum) 9(1).  
 ---. 1967a. The flintknapper's raw material. *Tebiwa* 10(1).  
 ---. 1967b. Tools used in making flaked stone artifacts. *Tebiwa* 10(1).  
 ---. 1968. Mesoamerican polyhedral cores and prismatic blades. *American Antiquity* 33: 446-78.  
 CRABTREE, DON E., and B. ROBERT BUTLER. 1964. Heat treatment of silica minerals. *Tebiwa* 7(1).  
 CRABTREE, DON E., and E. L. DAVIS. 1968.

Experimental manufacture of wooden implements with tools of flaked stone. *Science* 159: 426-28.  
 GRUHN, RUTH. 1961. *The archaeology of Wilson Butte Cave, south-central Idaho*. Occasional Papers of the Idaho State College Museum, no. 6.  
 ---. 1965. Two early radiocarbon dates from the lower levels of Wilson Butte Cave, south-central Idaho. *Tebiwa* 8(2): 57.  
 LAUGHLIN, W. S. and JEAN S. AIGNER. Preliminary analysis of the Anangula Unifacial Core and Blade Industry. *Arctic Anthropology* 3(2): 41-56.  
 SWANSON, EARL. 1966. An introduction to Crabtree's experiments in flintknapping. *Tebiwa* 9(1).

SWANSON, EARL H., JR., B. ROBERT BUTLER, and ROBSON BONNICHSEN. 1964. *Birch Creek Papers No. 2. Natural and cultural stratigraphy in the Birch Creek Valley of Eastern Idaho*. Occasional Papers of the Idaho State University Museum, no. 14.  
 SWANSON, EARL H., JR., and PAUL SNEED. 1966. *Birch Creek Papers No. 3. The archaeology of the Shoup Rockshelters in Eastern Central Idaho*. Occasional Papers of the Idaho State University Museum, no. 17.  
 TIXIER, JACQUES. 1963. *Typologie de l'Épipaléolithique du Maghreb*. Mémoires du Centre de Recherches Anthropologiques Préhistoriques et Ethnographiques, 2. Algiers.

# A NEW ROLE FOR ANTHROPOLOGY IN THE NATURAL HISTORY MUSEUM

by *Stephan F. de Borhegyi*

RECENTLY, in the course of some comments on a paper on anthropological education in this journal (CA 9:255), I pointed out that the natural history museum can play an important part in the anthropological education of the general public. I suggested that the full potential of the museum in this respect has yet to be realized, largely because museum anthropologists persist in designing displays that are object-oriented rather than concept- or problem-oriented. At the same time, I referred to some recent work that indicates a gradual change in the approach to exhibit design (see Parr 1944, 1950, 1959, 1963, 1964; Hatt 1946, 1958; Collier and Tschopik 1954; Ewers 1955; Griffin 1958; Guthe 1958; Sturtevant 1958, 1966; Shapiro 1958, 1959; Fenton 1960; Frese 1960; Ariss 1958; Mason 1960; Collier 1962; Parsons 1965; de Borhegyi 1961, 1963*a, b, c*, 1964, 1965*a, b, c*; de Borhegyi and Hanson 1968) and expressed the hope that through this new approach museums would be able to make a more significant and lasting impression on the thought and behavior of their community. Here, I should like to expand on these views and to illustrate them with an example of what is being done in this direction at the Milwaukee Public Museum.

The museum anthropologist, like his university counterpart, is primarily an educator and communicator. Unlike his university colleague, however, he must convey his message visually, through exhibits. While the university teacher faces a homogeneous audience seated behind closed doors with an attention span of approximately 45 minutes, the museum anthropologist must capture and hold the interest of a heterogeneous, freely moving audience with a proved attention span of 30 seconds per exhibit case. It is, therefore, clearly the curator's job to motivate the visitor, and in doing so he must try to increase the time span and interaction between the visitor and the display.

Hence, in planning a concept- or problem-oriented exhibit, the museum

anthropologist, like a lecturer, must think through the message he wishes to convey, edit out irrelevancies, condense theories, emphasize important concepts, and reserve a "punch line" for the very end. While working hand in hand with museum artists, he also must use self-control and leave the choice of color and design layout to the designer, who is better equipped to know how to attract the eye and how to please the esthetic senses of the museum visitor. But even with this careful co-operative preparation, how can the museum anthropologist and artist be sure that the message will get across?

Here, the museum anthropologist and artist might be well advised to take their cue from modern industrial management, which studies the saleability and effectiveness of each new concept or product before putting it on the mass market. Many museums have already begun to evaluate visitor reaction to their exhibits. The Milwaukee Public Museum, by employing the personal interview technique, has conducted several controlled surveys of visitors' response to a series of

test exhibits, illustrating variations on such anthropological themes as concepts vs. objects, extensive vs. minimal labeling, many objects (organized clutter) vs. a few selected pieces, color vs. monochrome presentation, etc. (see de Borhegyi 1963*a, c*, 1965*a, c, d*; de Borhegyi and Hanson 1968; Parsons 1965). Analyses have also been made of how best to influence the information retention and recall of the visitor by the use of "IQ machines," multiple-choice answer cards, or audio playback units and by introducing the concepts of peer-group (dyadic) learning and earned reward (see Screven 1968). These and similar studies made by other museums could become the backbone of future anthropology exhibit planning and programming.

With such studies now available, the museum anthropologist should be able, and should consider it his obligation, not just to display a cluster of tribal objects or a collection of curious facts about remote cultures, but to convey current anthropological ideas and concepts. Such exhibits should be primarily of topical interest, to be used by museum visitors in much the same way as encyclopedias are used. To be sure, anthropology will continue to deal with particulars, but they should always be expressed in the framework of universals. Pots and pans and baskets should be so exhibited that they have meaning to modern life and universal problems. With Vietnam so much in the headlines, special exhibits showing the geography of the country, its native population, its history and ethnology are certainly in order. Similarly, in connection with the social unrest in our country, good exhibits emphasizing the historical and cultural background of our Negro citizens are sorely needed. Certainly, African ethnographic objects can be arranged around esthetic and



FIG. 1. "The Diversity of Culture," part of concept-oriented exhibit entitled "Culture Makes Man Unique" at the Milwaukee Public Museum. [Photo Milwaukee Public Museum.]