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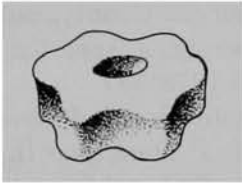
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yet to be fully discovered and described, that is comparable to that of the Berkeley facies.

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New Radiocarbon Determinations from Newberry Cave

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Efforts to understand the significance of the cultural assemblage from Newberry Cave (CA-SBr-199) have been hindered by the

absence of reliable chronological data. The purpose of this brief report is to call attention to eight radiocarbon determinations on artifacts from this site that clarify the previously confusing picture.

Newberry Cave is located southeast of Barstow in San Bernardino County, California. Excavation of the deposits in the 1950's produced a collection of several thousand cultural and natural specimens. Atlatl dart shaft fragments, projectile points of the Elko series and Gypsum type, and apparent magico-religious artifacts such as split-twig animal figurines, crystals, pigments, sinew-wrapped feathers, and sinew-wrapped sheep dung dominate the assemblage (Smith *et al.* 1957; Davis and Smith n.d.).

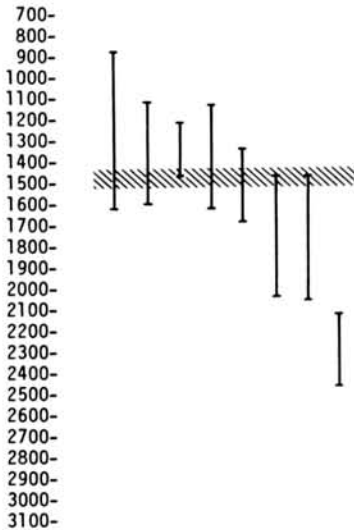
Since no visible stratigraphy was noted during the excavations, there has always been some question as to whether the artifacts noted above were in use simultaneously (representing one cultural component) or were deposited over a period of thousands of years by a variety of groups (representing several cultural components). Schwartz (1958) pointed out the lack of substantiation for the "assumption that all the material found belongs to one culture." It seemed likely that radiocarbon analysis of a series of artifact samples could resolve this problem.

To this end, five atlatl dart shaft fragments and two split-twig figurine fragments were submitted for radiocarbon analysis. The resulting determinations (Taylor n.d.), and one previously published determination on split-twig figurine fragments (Hubbs, Bien, and Suess 1965:11), give a total of eight radiocarbon ages for cultural material from Newberry Cave.¹

Results of the radiocarbon determinations on the Newberry Cave samples are listed in Fig. 1. Calendar date equivalents are provided for these values in light of the secular variation and De Vries effects as documented by bristlecone pine values (Suess 1970). Slight

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B. C.



NEWBERRY CAVE SAMPLES

Sample No.	Radiocarbon Age ¹	Calendar Date ²	¹³ C/ ¹² C ³	Material Analyzed
LJ-993	2970±250 B.P. ⁴	880-1620 B.C.	-	Split-twig figurine fragments
UCR-1093	3015±200 B.P. ⁵	1110-1600 B.C.	-24.4	Cane dart shaft fragment
UCR-1095	3015±90 B.P. ⁵	1215-1470 B.C.	-24.5	Elderberry dart shaft fragment
UCR-1092	3070±185 B.P. ⁵	1125-1615 B.C.	-24.1	Cane dart shaft fragment
UCR-1097	3205±170 B.P. ⁵	1340-1690 B.C.	-26.5	Split-twig figurine fragment
UCR-1103	3300±180 B.P. ⁵	1470-2040 B.C.	-	Cane dart shaft fragment
UCR-1096	3320±180 B.P. ⁵	1485-2060 B.C.	-25.8	Split-twig figurine fragment
UCR-1094	3765±100 B.P. ⁵	2120-2480 B.C.	-25.8	Willow dart shaft fragment

OTHER DATED SPLIT-TWIG FIGURINES

Sample No.	Radiocarbon Age ¹	Calendar Date ²	¹³ C/ ¹² C ³	Site
A-47	3100±110 B.P. ⁶	1230-1610 B.C.	-	Tse-An-Kaetan, AZ
UCLA-741B	3500±100 B.P. ⁷	1690-2100 B.C.	-	Walnut Canyon, AZ
M-563	3530±300 B.P. ⁸	1540-2515 B.C.	-	Tse-An-Kaetan, AZ
SI-86	3880±90 B.P. ⁹	2165-2500 B.C.	-	Walnut Canyon, AZ
RL-276	3750±330 B.P. ¹⁰	1735-2945 B.C.	-	Etna Cave, NV
UCLA-741A	4095±100 B.P. ⁷	2515-2950 B.C.	-	Stanton's Cave, AZ

▨ Suggested minimum time of use of Newberry Cave by makers of split-twig figurines

¹Radiocarbon years before present. Contemporary standard = 0.95 NBS oxalic acid, t_{1/2} = 5568, 0 B.P. = A.D.1950.

²Calibrated with respect to bristlecone pine values (Suess 1970).

³Per mil with respect to PDB standard.

⁴Hubbs, Bien, and Suess 1965:11

⁵Taylor n.d.

⁶Wise and Shutler 1958:73

⁷Berger, Ferguson, and Libby 1965:340-341

⁸Crane and Griffin 1958:1101

⁹Long 1965:250

¹⁰Tucek 1977:250

Fig. 1. Radiocarbon ages and calendar date equivalents on cultural material from Newberry Cave and on all radiocarbon dated split-twig figurines from elsewhere.

changes in more recently published calibration data (e.g. Suess 1979) may slightly affect the values, but not by more than a century. Stable carbon isotope measurements were conducted on six of the UCR samples to insure that the values did not significantly deviate from -25.0 per mil (with respect to PDB), the mean value for terrestrial wood (Stuiver and Polach 1977).

The radiocarbon ages of the eight cultural samples from Newberry Cave all cluster within an 800-year period. The age of sample UCR-1094, an atlatl dart shaft fragment, is somewhat greater than the rest of the age determinations. If, for the sake of discussion, we exclude this age determination as possibly in error, the remaining seven nearly overlap at about 1500 B.C., suggesting a very short interval of deposition for the cultural materials. This interval could conceivably have been as little as 100 years, but in any event probably would not have exceeded 500 years.²

The results of this radiocarbon analysis permit the conclusion that split-twig figurines and atlatl darts were in use essentially contemporaneously at Newberry Cave. The numerous Elko series and Gypsum type projectile points in the collection were undoubtedly used with the atlatl dart shafts. It seems probable that the apparent magico-religious artifacts and unique zoomorphic pictographs present on the walls of the cave also date from this period of use. It is suggested that this magico-religious and hunting assemblage comprises a single cultural component, and resulted from the activities of a prehistoric hunters' society, who attempted to aid their pursuit of bighorn sheep through the use of magic.

As very little day-to-day occupational debris was recovered from Newberry Cave, the assemblage was probably left by hunters living at nearby sites who made repeated, short visits to the cave for the performance of

magico-religious activities. These activities could have included the representation of bighorn sheep in pictographs, the manufacture of split-twig animal figurines, the ritual use of bighorn sheep parts such as sinew-wrapped dung, and the manipulation of other apparent magico-religious artifacts like crystals and sinew-wrapped feathers. Atlatl darts and other hunting equipment could have been fashioned in the cave, stored there, or brought along during visits for consecrating activities aimed at increasing the power of these implements. The artifactual evidence from Newberry Cave is consistent with the remains that would have been left by a hunters' society.

Split-twig animal figurines, which appear to be a diagnostic trait of this hunters' society, have also been found at 15 other sites in Arizona, Nevada, and Utah (Schroedl 1977:256). Six split-twig figurines from these other sites have been subjected to radiocarbon analysis (Wise and Shutler 1958:73; Crane and Griffin 1958:1101; Long 1965:250; Berger, Fergusson, and Libby 1965:340-341; Tucek 1977:250), and have been dated slightly prior to, and contemporary with, the magico-religious and hunting assemblage from Newberry Cave (see Fig. 1). As split-twig figurines are typically found with little or no associated cultural material, the Newberry Cave collection provides a unique and comparatively clear picture of the cultural activities responsible for these enigmatic artifacts. It is thus suggested that hunters' societies similar to that we postulate for Newberry Cave were active at other sites where split-twig figurines have been found. If these notions are reasonable, based on radiocarbon determinations it appears that hunters' societies making split-twig figurines originated in the Grand Canyon area as early as the first half of the third millennium B.C., and were active at Newberry Cave by the middle of the second millennium B.C.³

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NOTES

1. Two radiocarbon ages for noncultural material from Newberry Cave are also available. An age of 7400 ± 100 radiocarbon years B.P. (UCLA-759) was determined for a sample of woodrat (*Neotoma* sp.) midden (Berger, Fergusson, and Libby 1965:367-368). An age of $11,600 \pm 500$ radiocarbon years B.P. (UCR-1143) was determined for a sample of ground sloth (*Nothrotheriops shastense*) rib fragments (Taylor n.d.).

2. Several artifacts, such as a single Eastgate series projectile point, three cartridge cases, and fragments of machine-woven fabric, obviously date from later, sporadic use of Newberry Cave by aboriginal and nonaboriginal visitors.

3. A detailed report of the reanalysis of the extensive collection from Newberry Cave (Davis and Smith n.d.) is now in press.

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