

II. RADIOCARBON AGE OF THE GYPSUM CAVE CULTURE

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In February, 1950, one of us (RFH) while serving as a member of the subcommittee on radiocarbon, wrote to Dr. M. R. Harrington, Curator of the Southwest Museum, suggesting that the latter might wish to submit to W. F. Libby's radiocarbon laboratory at the University of Chicago some organic samples (charcoal or wooden artifacts) from Gypsum Cave, Nevada in order to secure a cultural date to check the paleontological date of the dung of the ground sloth (*Nothrotherium Shastense*) which had recently been determined to be $10,455 \pm 340$ years B.P. (C-221, from a depth of 6'4" and C-222, 8427 ± 250 years B.P. from a depth of 2'6"). While Dr. Harrington sounded interested, this was never done.

Just sixteen years later, in February 1966, one of us (RFH) wrote to Mr. Bruce Bryan of the Southwest Museum suggesting that it would be desirable to check the radiocarbon age of the sloth dung with samples of organic material whose presence in the cave was undoubtedly ascribable to human agency. Since 1950 an additional sample of the Gypsum Cave sloth dung had been dated: LJ-452 gave an age of $11,690 \pm 250$ B.P. No reasonable doubt could exist, therefore, that the ground sloth was living in the cave between eight and eleven millenia ago. But, since it was a little difficult to imagine man and the sloth occupying the cave at the same time the question could be asked whether the use of the cave was an alternating one where men and sloths took turns, or whether man had in fact utilized the cave after the disappearance of the sloth. In the latter case, the further question would be, how much later?

Mr. Bryan consulted with Dr. Carl Dentzel, Director of the Southwest Museum, and with Dr. Harrington, the original collector. Everyone agreed that it would be desirable to submit samples of artifacts which appeared to be contemporaneous with the sloth dung. We selected for testing some of the burned sticks whose occurrence is shown by Harrington (1933:Fig. 43). The published account of their occurrence seemed to indicate these as belonging clearly to the sloth period, and therefore of the Gypsum culture. Harrington (1933:73-74) described the occurrence as follows:

"After the trenching in the passage [between Rooms 4 and 5] was completed, the remaining area was very carefully worked over, resulting in a number of additional finds. At the northeast end of a large fallen block of crystal was made one of the most important, suggesting association of man and the sloth. The evidence consisted of twelve small sticks, each burned at one end, and one unburned stick lying in the bottom of a hole or pocket, 10 1/2 inches deep, excavated in the lower dung layer and filled with loose sloth dung. This hole was capped over with an unbroken stratum of solid, well-preserved sloth dung 17 1/2 inches deep, giving a total depth from the

surface to the sticks of 28 inches, not including some large pieces of fallen crystals lying on the top of the upper dung layer. The situation is shown in the section (fig. 43), and in a photograph showing two of the sticks in place as shown in fig.44.

The hole may have been a small pit dug by ancient people in the days of the sloth, or it may have been a sloth-period rat's nest--the latter suggested by the fact that a few rat droppings were found among the loose dung that filled the hole, although none of the sticks showed chewing by rats.

Whether the hole was made by rat or man, it seemed to belong to the period before the last sloth layer was laid down, for the heavy dung layer was unbroken above, and no holes or passages running under it could be found. The top of the lower dung layer had evidently been the floor of the cave when the hole was dug.

The exact diameter of the pit is not know, because Mr. Thurston who made the find, dug into it from the northwest and broke through the edge of the pit before encountering the burnt sticks; but he indicated a point about 21 inches from the southeast edge as the approximate position of the opposite edge of the pit. It would be exceedingly difficult to explain the presence of the sticks on any other ground than that they had been deposited by man after the lower layer of sloth dung had been laid down, but before the upper one had come into being."

Six of the twelve small Sarcobatus sticks from this feature were received in Berkeley. They weighed in aggregate 26.2 gr. They were photographed and three weighing a total of 16.65 gr., were sent to UCLA where one of us (RB) processed the decontaminated specimens and determined that their age was 2400 \pm 60 years B.P. (UCLA-1069). The marked disparity between this age and that of the sloth dung made it desirable to make at least one more age determination, preferably of an undoubted artifact.

Mr. Bryan then made available for this purpose the distal end of a decorated atlatl shaft (No. 6F592) which Dr. Harrington (1933:24, 109, fig. 15; specimen shown in Frontispiece, fig. i) recovered at a depth of 8.5 feet below the surface in Room 2 (Ibid, fig. 15). He classifies this as a Type I dart shaft and is unequivocal about his belief that it is "contemporary with the sloth." (Ibid, p.114). The specimen weighed 10.0 gr. and was identified by Professor R. Cockrell, Dept. of Forestry, University of California, Berkeley, as Sambucus (elder). The atlatl dart fragment was determined to have an age of 2900 \pm 80 years B.P., (UCLA-1223). These dates were first published in Southwest Museum Masterkey, Vol. 41, p.66, 1967 and subsequently in Radiocarbon, Vol. 9, pp. 479-480, 1967.

It thus appears that the ground sloth lived in Gypsum Cave long before it was occupied by man, and that since 2400 to 2900 years ago a

considerable amount of disturbance of the loose, surficial cave deposits has occurred. In this apparent process of disturbance and redeposition a number of artifacts, among them the fireplace sticks and the atlatl dart, found a resting place where they were covered by sloth dung which was taken by the excavator to be lying in its original position. Clearly we are faced with a classic case where an apparently obvious archaeological association was not true yet seemed quite bona fide. This instance amplifies the need for the direct dating of materials whenever it is possible.

Essentially the age determinations of UCLA-1069 and UCLA-1223 show two things. First, the oldest reported evidence of human occupation of Gypsum Cave was much more recent than the utilization of the cave by the ground sloth. Second, there has apparently been a considerable amount of disturbance of the cave deposits and this translocation of portions of the cave fill was such that the original excavator was unaware of the fact.

There are other hints that the Gypsum Cave culture is relatively recent. The distinctive form of chipped projectile point called the Gypsum type was abundant in the cave. At the Corn Creek Spring site, examined in 1962 as part of the Tule Springs Expedition, no Gypsum Cave type points were recovered (Williams and Orlins 1963). Since the Corn Creek Spring site is only about 20 miles north of Gypsum Cave one might expect the Gypsum type point to be present if both sites were occupied at the same time. Radio-carbon dates for the Corn Creek Spring site range from 4070-5200 years B.P. The Gypsum Cave type point is, therefore, either too early or too young to have occurred at Corn Creek Spring. We would be inclined to guess that the Gypsum point is younger than the Corn Creek Spring occupation, and this is supported by the suggestions of Lanning (1963:295) and Rogers (1939:47). Williams and Orlins (op.cit:35) believe, on the other hand, that Gypsum Cave culture is older than that present at Corn Creek Dunes.

The Nothrotherium-human artifact association proposed by Harrington in 1933 has been accepted by many, viewed with doubt by others. Heizer (1951:23-24) and Sellards (1952:78) earlier pointed out that we could be certain of this association only if wooden artifacts said to occur with sloth remains were dated and both kinds of material shown to be of equal age. Antevs (1952:26) found it difficult to accept the great age of the Gypsum Cave sloth dung, but fuller information on altitudinal shifts of vegetation zones secured recently help to resolve this problem (Wells and Jorgensen 1964). C. B. Hunt (1956:38) saw a problem in accepting the sloth in Gypsum Cave when this was compared with the C14 age of sheep dung in Danger Cave, Utah. Hunt said, "If we were to believe these dates, the Recent in northern Utah is older than the Pleistocene in Southern Nevada." H. Aschmann (1958:34-35) suggested that the sloth dung dates were too recent, probably because of sample contamination and would prefer to have it be "some thousands of years older". E. Lanning (1963:293, 295) was of the

opinion that "Every other datable occurrence [than that in Gypsum Cave itself] in our area [of Gypsum Cave type projectile points] suggests a much more recent time, probably this side of 2000 B.C." Lanning cites several instances of association of Gypsum type points with what are clearly later forms and concludes that "they are clearly associated with Elko points in a late Pinto and post-Pinto context throughout the southern part of the western Great Basin... yet they seem associated with Pleistocene sloths in southeastern Nevada. It is possible that the seeming association at Gypsum Cave is fortuitous. The sloth remains may have got on top of the projectile points and other artifacts as a result of people's digging holes for one purpose or another during post-sloth times in the cave."

It is still possible that there is evidence of man in Gypsum Cave older than 2900 years B.P., but only additional excavation could test this proposition. What would be desirable would be a second investigation of the cave and a restudy of the materials collected by Dr. Harrington in 1929-1931 and now maintained at the Southwest Museum.

A recent article in Desert Magazine (Lawlor 1970) unfortunately repeats the earlier interpretation of man living in Gypsum Cave with the ground sloth about 10,000 years ago. This is worth mentioning only to remind readers of scientific articles that the news travels slowly to the public.

Radiocarbon dates from Gypsum Cave

<u>Material</u>	<u>Sample No.</u>	<u>Age</u>	<u>Reported in</u>
Sloth dung	C-221	(10,902 ± 440 BP)	Libby 1955:117
		(10,075 ± 55 BP)	
		Av. 10,455 ± 340 BP	
Sloth dung	C-222	(8,692 ± 500 BP)	Libby 1955:118
		(8,051 ± 450 BP)	
		(8,838 ± 430 BP)	
		Av. 8,527 ± 250 BP	
Sloth dung	LJ-452	11,690 ± 250 BP	Hubbs, Bien and Suess 1963:259
Greasewood sticks from fireplace	UCLA-1069	2,400 ± 60 BP	Berger and Libby 1967: 479-480
Atlatl dart shaft	UCLA-1223	2,900 ± 80 BP	Berger and Libby 1967: 479-480

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