The present suggests that the southern route may have played the most significant role in the initial settlement of the New World (Childe 1959).

Facts and Comments

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NATURAL PRESERVATION OF HUMAN BRAIN,
WARM MINERAL SPRINGS, FLORIDA
WILLIAM ROYAL AND EUGENIE CLARK

Abstract

Artifacts of Archaic types, human bones, and a partly fused leg have been recovered from three layers of sediment on the floor of a shallow limestone cave now under water. The skeletal remains include a skull from Layer 1 with naturally preserved portions of brain inside. The fused leg from Layer 3 produced a radiocarbon date of 35,000 B.C. ± 200 years. The age of the preserved brain cannot be as great as that of the leg and human remains in Layer 3. The radiocarbon date is the earliest known for man in Florida and suggests that during the early Southeastern Archaic, man lived in limestone caves in Florida when the sea level was considerably lower than at present.

This report is based on finds made by Royal while diving in Warm Mineral Springs, Sarasota County, Florida. These finds suggest the possibility that during the early Southeastern Archaic, man lived in limestone caves in Florida when the sea level was considerably lower than at present. In Warm Mineral Springs, on the west side of a sloping wall leading into a limestone sink hole, are lodges and shallow caves containing stalactite, calcite, and column formations encrusted with travertine. Some of these stalactites are now under water as much as 80 feet. In a section of one cave, where the floor rises from 35 to 40 feet under water, numerous human bones of at least seven individuals (one child, six adults) were found. These included three skulls (one intact with cephalic index of 74), parts of mandibles, bones of the upper and lower extremities, testes, pelvic bones, and ribs. No pottery has been recovered. Artifacts include two bone needles, an antler shaft wrench or small weight, a bone paddle, modeled deer bones and antlers, and part of a fossil shark's tooth with a chipped edge (Fig. 1). Except for the shark's tooth these few artifacts show similarity with those found at the Eva site in Tennessee (Lewis and Kenberg 1959). Human bones were located several feet under soft sediment, on or near the solid base rock forming the floor of the cave. After numerous dives and examinations of this site we were convinced it was occupied at a time of lowered sea level when the cave was dry.

The sediment varies from about 3 to 7 feet in total thickness and is composed of three distinct layers:

1. A top layer averaging 3 to 60 inches in thickness is composed of extremely soft black sediment with numerous tiny shells of Nassula, pennantina, Pinctada, and as well as some alluvial bone. Travertine deposits occur in bone chunks and coalesce in fragments and cave walls in this and the second layer.

2. A middle layer varies from 6 to 15 inches in thickness and is more or less dark gray. It is a more compact and hard layer than the top one and is characterized by the presence of the shells of two species of fresh water snails, Helisoma duryi Whitchurch and Physa cubensis Pfeiffer, which are heavily concentrated in the upper part.
tion of this layer. No Amoeba shells have been found here or below. The layer is capped mainly of claley packed leaves of ginkgophytes. Bird, deer, and human bones have been recovered as well as pieces of wood, charcoal, and two bone rings. In places, there are clusters of ophiidiophytes leaves interspersed with terebinth, none of which have been identified as probably Gomphotherium.

2. A bottom layer 6 to 10 inches in thickness is sandy in color and also packed with leaves of ginkgophytes. Fine roots, broken nuts, acorns, wood, and chalcedy are scattered throughout as well as bones of fresh water turtles, birds, rodents, percussion, terebinth, deer, and man (including the remains of a child). The basal rock on the floor of the cave is a hard limestone with fossil remains of echinoderm, a variety of marine molluscs, and Concholepas teeth. The limestone is in places overlain with hard clay.

During diving trips with Luanna Petray and William M. Stephens, we examined a partly burned log 3 feet long uncovered from under about 5 feet of sediment. The wood has been identified as Red Mulberry, Morus rubra Lind. The position of the log was 38 feet under water and 6 feet back from the outermost saliences of the overhanging cave roof. One end of the log was imbedded in the hard clay floor and the other end slanted upward at an angle of about 20° and just reached the demarcation between Layers 2 and 3. Human bones were found within a few inches of this log in the lower part of Layer 2 and the bottom of Layer 3. The intact surrounding sediment of hard packed leaves indicates this sediment had been undisturbed and that it is unlikely for the bones to have sunk down through the sediment to a position next to the log. However, it is not definitely established that the bones are of the same age as the burned log. A sample from this log sent to Scripps Institution of Oceanography produced a radiocarbon date of 9800 B.C. (10,000 ± 200 years B.P., sample number L. J. 120, Hubbs, Bier, and Sues, in press). The data of Shepard and Sues (1956) indicating that the sea level 10,000 years ago was between 90 to 135 feet lower than present and the discussion of Curry (in press) indicating levels 100 to 150 feet lower further support the possibility that man could have lived in the limestone cavities now under water in Warm Mineral Springs. However, it has been generally suspected that man first came to Florida considerably earlier, and radiocarbon dates of 9020 ± 150 B.P. from Russell Cave, Alabama (Miller 1958) and 7150 ± 500 B.P. from the Evan site, western Tennessee (Lewis and Kneberg 1959) establish the existence of man in the Southeastern Archaic nearly 10,000 years ago. The oldest archaeological date previously reported for Florida is 6700 ± 3300 B.P. based on an Uranium-Uranium age for marine shell gouge at the Bluffton site in Volusia County (Bullen and Beckert 1958).

Twenty feet to the left of the burned log in the lower portion of sediment Layer 2, an intact human skull (Fig. 2) was removed on July 11, 1959. Some white material wasfind inside the skull and some of this was removed by putting a finger in the foramen magnum. The material was soft and had all the appearances of a brain. It was brought to our laboratory where the remaining material was viewed through the foramen magnum by a practicing physician and three trained biologists, all of whom thought it looked like fresh brain tissue. The skull and contents were then immersed in formalin. The "brain" seemed to be rapidly disintegrating. It turned from white to dark gray in the next two days and the rounded contours became thinned. This Konstantinovskiy physician, wove open the skull in his office in Saratov. The remaining parts of the "brain" which had come upon were removed and the sediment washed off.

These fragments were examined by a number of medici doctors of the Saratov Memorial Hospital staff who agreed that the soft tissue is about 4.8 cm thick.

Fig. 3 (Royl and Clark). Human skull with preserved brain from Warm Mineral Springs, Florida.
vented to have taken place in water even though initially the brain may have been in a dry or damp environment. The preservation conceivably could have occurred due to some antibiotic activity of the sediment or spring water similar to the case described by Breder (1957) where the soft parts of a fish failed to decompose in aquiferous water containing a population of Protomonas cyanobacteriig Magna.

The age of the brain may not be as great as that of the burned log and the human remains in Layer 3 on the cave floor because it was recovered from Layer 2.

Acknowledgments. We are grateful for the help and cooperation of the persons already mentioned and also the following: Al Meeks, of Warm Mineral Springs, Inc., encouraged this study and gave us permission to dive in the springs; Harold K. Brooks, professor, University of Florida, confirmed the radiocarbon formations; William J. Cline, Museum of Comparative Zoology, Harvard University identified the mollusk shells; Carl L. Hubbs and H. E. Suits, Scripps Institution of Oceanography, assured the radiocarbon dating of the burned log; B. Francis Kitchka of the U.S. Forest Service, identified the wood; Edmon Wells, botanist, University of Florida, identified the fern; Kenneth P. Oakley, British Museum (Natural History), Tuffed Edinger, Museum of Comparative Zoology, Harvard University, and Harry L. Sharron, American Museum of Natural History, gave helpful comments on this manuscript.

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March, 1950