

The Holly Oak Shell

In his article "Mammoth fraud exposed" (Research News, 2 Dec., p. 1246), Roger Lewin makes several factual errors and inaccurately describes the history of the controversy surrounding the Holly Oak shell.

1) Lewin attributes a 1976 article (1) to John C. Kraft and Jay F. Custer. The article in question was written by Kraft and Ronald A. Thomas.

2) Lewin notes that Kraft and Custer "vigorously defended the pendant's authenticity in a subsequent exchange of correspondence with Meltzer and Sturtevant" (2, 3). At no time have we ever defended the authenticity of the artifact, but authenticity is one of the multiple hypotheses required by normal scientific analyses. In addition, we note that the web of innuendo and circumstantial evidence previously published by Meltzer and Sturtevant (4) has not proved that the pendant is not authentic. We invite interested readers to review the published correspondence (2, 3) to evaluate the degree to which the shell's authenticity has been defended. One of us (J.F.C.) has maintained since 1980 that the shell is a fraud and is publishing that opinion in a forthcoming book (5).

3) Lewin notes, "Meltzer told *Science* that during the past decade only one request was made to the Smithsonian Institution for permission to date the pendant, and that was using amino acid racemization, a notoriously unreliable technique." In 1976, and again in 1981, we proposed to conduct amino acid racemization (AAR) analyses on small samples cut from the Holly Oak pendant in order to determine whether the shell material was late Pleistocene, or Holocene, in age, these being the two most likely age options given the reported geologic setting for the artifact. When the proposal to conduct the AAR study was made, this chemical method of estimating sample ages was one of the few that could possibly be used on the small fragments that might be taken from the pendant. Our proposal to conduct the analyses was based on an objective plan to compare the Holly Oak shell enantiomeric ratios (D/L values) with those obtained on Pleistocene, Holocene, and modern shells of the same genus (*Busycon*) from the region. This is a standard and widely accepted approach to the use of amino acids in chronostratigraphy. Analyses of these control samples were performed before the request for the sample was made to demonstrate the age resolution of the method, which proved to

be more than adequate for the purpose. We pointed out, however, that the D/L data might be difficult to interpret because of the preservation characteristics of the shell in the region where it would be sampled and because of the unknown effects of the chemicals used to "preserve" the shell. Our request was rejected by the Smithsonian both times, for reasons that remain unclear, although contamination of the shell through application of preservatives was cited as a potential problem in the rejection of the 1981 request. We can also note that our written request in 1981 received no timely formal reply until we telephoned the Smithsonian Institution on several occasions.

4) Although Griffin *et al.* (6) address the issue of recent contamination of the shell by preservatives, they do not address the well-known problems with radiocarbon dates on shell in the Middle Atlantic region (7). Until they do so, by providing some kind of control studies, their date is not conclusive, merely comforting. The possibility remains that the shell enclosed a living *Busycon* in the 19th century, as Sturtevant and Meltzer said: "radiocarbon dating of the shell is generally unreliable and would be particularly so in this case" (2, p. 244).

5) Lewin perpetuates the insensitive innuendo that because Hilborne T. Cresson committed suicide in a disturbed mental state, he was therefore capable of lying and perpetuating frauds. Such opinions should not be part of a scientific argument. Nor should they be uncritically presented by a deputy news editor employed by the American Association for the Advancement of Science.

In conclusion, although we applaud the fact that the Smithsonian Institution has finally allowed the kind of studies that we originally requested more than a decade ago, we deplore the way the results of the study have been reported.

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REFERENCES

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2. W. C. Sturtevant and D. J. Meltzer, *ibid.* **227**, 242 (1985).
3. J. C. Kraft and J. F. Custer, *ibid.*, p. 244.
4. D. J. Meltzer and W. C. Sturtevant, *Mus. Anthropol. Univ. Mich. Anthropol. Pap.* **72**, 325 (1983).
5. J. F. Custer, *Prehistoric Cultures of the Delmarva Peninsula* (Univ. of Delaware Press, Newark, DE, in press).
6. J. B. Griffin *et al.*, *Am. Antiq.* **53**, 578 (1988).
7. J. F. Custer, *Archaeol. East. North Am.* **16**, 121 (1988).

Response: Although the tone of the Custer *et al.* letter is difficult to respond to, the specific issues raised are not. I will take them point by point, as in the original letter, bearing in mind that the central question here is the authenticity of the pendant.

1) The minor correction of the reference citation is welcome.

2) My statement that Kraft and Custer "vigorously defended the pendant's authenticity" was based on a reading of the 1976 article and the 1985 letter. For instance, in the 1976 article the pendant is described as "an interesting discovery pertaining to early man in the New World." The same article cites the opinion that most experts who have examined the pendant "indicated that they think this object is legitimate, and do not see any possibility of even suggesting the remote conception that it is a fake." The bulk of the long article concerned establishing the age of the pendant—10,000 years or 40,000 years—in the context of early man in the New World. Only one sentence mentions the possibility that it might not be an authentic early artifact.

The 1985 letter by Kraft and Custer was a response to the suggestion by William Sturtevant and David Meltzer that the pendant was not authentic. Kraft and Custer's letter begins by stating that "We find nothing new or persuasive in their arguments" and goes on for a full page in an apparent attempt to demolish each of Sturtevant and Meltzer's arguments that the pendant is a fraud. Whether this defense of the pendant's authenticity can be described as "vigorous" is perhaps a matter of judgment, but readers are invited to examine the literature. Readers might also wish to consult a further reference [*Ann. N.Y. Acad. Sci.* **228**, 35 (1977)], in which Kraft states that the pendant should be considered as "definite evidence of association of early American man with the woolly mammoth."

3) I am puzzled as to why the statement "Meltzer told *Science* that during the past decade only one request was made to the Smithsonian Institution for permission to date the pendant" is described by Custer *et al.* as a "factual error." Documentation at the Department of Anthropology at the Smithsonian Institution shows that the only formal request made during this period was in 1981, by Custer and his colleagues. And, contrary to Custer *et al.*, the same documentation shows that the reason for the refusal was clearly stated. There was no mention of potential problems of contamination.

4) This does not refer to my Research News item, but Custer *et al.* must be aware of the different constraints of conventional as against accelerator mass spectrometry carbon dating, as well as the recent calibration