EDITOR'S CORNER

Approximately 50 years ago, in March 1949 and in December 1949, two short articles were published in *Science* (109:227-228 and 110:678-680). The first article, "Age Determination by Radiocarbon Content: World-Wide Assay of Natural Radiocarbon," was authored by W.F. Libby, E.C. Anderson, and J. R. Arnold; the second article, "Age Determinations by Radiocarbon Content: Checks with Samples of Known Age," was authored by J.R. Arnold and W.F. Libby. The specifics of the occurrence of radiocarbon in living matter had been reported previously by members of this group, as had the long half-life of radiocarbon, but these 1949 articles officially presented data indicating that the technique could be used for age determination of ancient archaeological samples. The archaeological samples described in the article were taken from sites in Egypt, Syria, and the U.S. Southwest. The short, straightforward reports represent the beginning of the process that has allowed archaeologists all over the world to get a specific (and somewhat consistent) answer to the question of "when?"

Although the full impact of Libby's and his colleagues' work was not really felt in archaeology until a decade or so later, I do not think there is an archaeologist in the world who would deny that radiocarbon dating was an incredibly significant development. Look at any archaeology textbook, and no matter what the theoretical or methodological perspective, each author notes that radiocarbon dating is one of the most important techniques available to the discipline, and many indicate that it represents a "revolutionary" development (e.g., Eddy 1991:98; Sharer and Ashmore 1993:327; Stiebing Jr. 1993:262).

To note and celebrate what might be termed the 50th anniversary of radiocarbon dating, this issue of *American Antiquity* features a lead article which, although somewhat unusual in form and topic for the journal, is totally appropriate and important for the discipline. Greg Marlowe, with impressive access to original records and notes, documents the early history of the development of radiocarbon dating (January 1947 to January 1948) and how and where archaeology played a role. As Marlowe notes (1999:10), his analysis examines: "the structure and operation of communication networks, the role and function of disciplinary elites, the process of professionalization within specialties, and the effects of unequal status among academics engaged in cooperative endeavors." Although I find the article fascinating, I admit that on my first reading I thought that archaeologists came off a bit like dunces or rubes, with some political infighting and power plays thrown in. Although I bristled and even thought about asking Marlowe to tone down his discussion, I ultimately decided that his perspective, and that of the physical chemists, needed to be presented as he saw it. I was later glad that I had not suggested changes in tone. I had no problem with Marlowe describing the political machinations, and I had to admit that archaeologists in the late 1940s were not terribly sophisticated about scientific techniques. The application of physical and chemical sciences to archaeological problems represented a very new, postwar development. The incident that drove this point home was a discussion I had recently with Robert L. Hall. After telling Hall about Marlowe's article, Hall related a story from a 1948 conference where the basics of radiocarbon dating were outlined for the first time to a general meeting of archaeologists. In the paper presented, a sample from a basket had been used for dating. After listening carefully to the author, people in the audience were quite excited, but one confused archaeologist finally raised his hand and said, "This is a very interesting development, but could you explain how you reattach the sample and get the basket back the way it was?" Perhaps scientific sophistication was lacking in those early years. Marlowe's profile is not always flattering to archaeologists, in terms of

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scientific knowledge, openness to new ideas, political machinations, or collaboration. Perhaps we can read the article carefully and reflectively and learn from our more recent past.

On a somewhat lighter, more informal note, I want to use this space to feature some additional background information on those early years of radiocarbon dating development. One of the important sources of information for Marlowe's article was Ernest C. Anderson, Libby's laboratory assistant. Dr. Anderson has been extremely generous in assisting Marlowe to prepare his article for publication, and Anderson shared with me his remarks from a 1993 symposium held in honor of Jim Arnold (Anderson 1993). Anderson outlines the critical importance of Arnold's contributions, and particularly the fact that because Arnold's father was an amateur archaeologist, Arnold understood something about archaeology, and his father was able to assist in acquiring an Egyptian sample of known age to test. Anderson also recalls Arnold and Libby's frustrations when dealing with some in the broader archaeological community; several of these specific problems are discussed and outlined in detail in Marlowe's article. A professional archaeologist might question whether an amateur archaeologist was the appropriate way to go to arrange for samples of known age to date, but the fact is that, regardless of the problems, this avenue was critical in moving the application forward. Arnold obtained the first archaeological sample long before the group had even proved the existence of natural radiocarbon, and he was also was the first person to discover that the dating method actually worked.

Marlowe's article provides us with a vivid sense of how radiocarbon dating developed, the politics involved, and how collaboration did or did not take place. However, although it is well documented that Libby was a serious and focused individual, readers should not get the impression that the physical chemists were devoid of humor. Anderson (1993:4) notes that Arnold and Anderson had more interesting lab decor than the data graphs favored by Libby. For example, the massive shielding around the counters were decorated with reproductions of Cezanne and Renoir, as well as something called "Apostrophe to His Background" which read: "Bright star, would I were steadfast as thou art" (with apologies to Keats) (Anderson 1993:4), and Anderson (1993:4) also notes that "the four cylinders on which samples were mounted were christened Matthew, Mark, Luke, and John as testimony to the gospel truth of the results. Peter and Paul were later in the apostolic succession." Arnold's contribution to the decor was "an authentic Egyptian amulet, a small ceramic disk bearing the Seeing Eye of Ra, designed to ward off all evil. We debated whether it should be mounted to observe the apparatus or the operator and decided the latter was in greater need of supervision" (Anderson 1993:4).

The 50th anniversary of the development of radiocarbon dating is certainly something which we all can celebrate, whether the appropriate date is 1947, 1948, or 1949. The development of radiocarbon dating is a story which outlines both scientific method and the process and problems of cross-disciplinary collaboration. Whether or not Marlowe's analysis and reconceptualization make us uncomfortable about our roles in and responses to major changes in the discipline, I hope we can continue to learn from the past and use this knowledge as archaeology moves in new directions in the future.

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