

BOOK REVIEW

Harry E Gove. *From Hiroshima to the Iceman: The Development and Applications of Accelerator Mass Spectrometry*. Philadelphia, Institute of Physics Publishing, 1999: 226 p. ISBN 0-7503-0558-4. List price \$27 US (paperback) and \$99 US (hardback).

Reviewed by: Walter Kutschera, Vienna Environmental Research Accelerator, Institut für Radiumforschung und Kernphysik, University of Vienna, Vienna, Austria

Harry E Gove, Professor Emeritus of Physics at the University of Rochester, is one of the pioneers of accelerator mass spectrometry (AMS). He was personally involved in many “firsts” in this field, which was pioneered in 1977. Ever since, Gove has followed the field closely, and from the early beginnings he was one of the most outspoken advocates of AMS: For example, he clearly was responsible for the excitement about the ^{14}C dating of the Shroud of Turin, which has triggered countless discussions about the problems of dating this religious relic. A separate account of this issue is given in a previous book by the same author: *Relic, Icon or Hoax? Carbon Dating the Turin Shroud* (IOP Publishing 1996. Reviewed by R E Taylor in *RADIOCARBON* Vol 39, Nr 1, 1997).

Gove calls his book “a semi autobiographical account of the historical development of accelerator mass spectrometry”. It is a fascinating book because in every sentence one feels the passionate involvement of the author. In this sense it is a very personal account of the history of AMS, so one should not expect a strictly objective and rational view of the method and its applications.

In a way, the book reminded the reviewer of *The Double Helix* by James Watson (1968), “a personal account of the DNA discovery and the roles of the people involved in it, which aroused some controversy” (quote from *Encyclopaedia Britannica*). It was said that those who were involved in the race to decipher the structure of DNA did not like the book, unlike those who were not directly involved.

Gove describes AMS in a similar fashion. His book is full of his personal experiences, including details about what people said, and did, or did not do. He does not try to be objective. There is nothing wrong with such an approach, but the prospective reader should be aware that this is not a textbook on AMS. What one learns is something else, perhaps equally—if not more—important than a cool description of AMS from a purely scientific book: it is a beautiful but necessarily biased view of how the development of AMS happened with real people. Along the way, one learns about the basics of the technological development of AMS, and about some of the more interesting—if not to say recondite—applications. This includes ^{14}C dating in connection with the Shroud of Turin, the Iceman “Ötzi”, the Dead Sea Scrolls, the initial peopling of the Americas, and the arrival of the Vikings in Newfoundland. The applications of heavier radionuclides such as ^{36}Cl are discussed in connection with the atomic bombing of Hiroshima and Nagasaki (re-establishing the neutron fluence). Both ^{36}Cl and ^{129}I are also applied to nuclear-waste monitoring in the hydrosphere. A brief mention of ice-core measurements in connection with the ^{36}Cl “bomb-peak” is also included. The final chapter of the book presents an interesting outlook on the future of AMS.

AMS is one of the most successful spin-offs of nuclear accelerator technology. It became an analytic tool of truly global dimensions. Gove’s book is capable of instilling into the reader the fascination of analyzing our world atom by atom, aiming for a deeper understanding of the underlying physical and chemical processes. Together with the more analytical monograph of AMS, *Accelerator Mass Spectrometry: Ultrasensitive Analysis for Global Science* by C Tuniz, J R Bird, D Fink, and G F Herzog

(CRC Press, Boca Raton, 1998), there are now two books on AMS on the market, which complement one another well. (For an extensive review of the latter see *RADIOCARBON* Vol 41, Nr 1, 1999.)

Anyone interested in learning about AMS is well advised to read Gove's book and the other mentioned above, and, in addition, the excellent but little-known review article "AMS in the Earth Sciences: Techniques and Applications" by R C Finkel and M Suter in *Advances in Analytical Geochemistry*, Volume 1 (JAI Press Inc. 1993, p 1–114). This review article and the book by Tuniz et al. provide the necessary ingredients to fully appreciate Gove's more colloquial book. However, the latter is certainly the more entertaining one. It is simply fun to read. Overall, I believe, it conveys well the passion of scientific involvement.