

## RECENT PUBLICATIONS

**R. E. Taylor, A. Long, R. S. Kra (eds.), *Radiocarbon after Four Decades. An Interdisciplinary Perspective*, Springer-Verlag, New York & Berlin, c., 1992, 596 pp.**

One useful paper, by R.E. Taylor on the radiocarbon dating of bone, is intriguing for its discussion of the serious discrepancies that have been found in the carbon dating of bone. These were apparently predicted by Willard Libby, carbon dating's inventor, who described bone as 'a very poor prospect' for carbon dating because of its relatively low, largely inorganic carbon content, its very porous structure, and the 'potential for alteration' (Taylor, p.376). Carbon datings of a group of skeletons from the Haverty site in west Las Angeles produced readings varying from 10,500 years old, to 7900 years old, to 4050 years old, despite the archaeological indications that they dated within a hundred years of each other. Frustratingly, the volume includes no equivalent discussion paper on the radiocarbon dating of textiles - would linen's porosity have been remarked upon, perhaps?

However the Shroud is certainly not forgotten in this work, since one of the contributors is none other than Prof. Harry Gove, the pioneer of the accelerator mass spectrometry method of carbon dating, who was present when the Arizona laboratory's carbon dating of the Shroud was carried out. Prof. Gove writes:

'Although of little scientific significance - certainly not compared with the discovery of North America by the Vikings or the first advent of humans to the New World - the age of the Turin shroud has been of considerable interest to the general public for many years. The shroud, which bears a mysterious image - frontal and dorsal - of a crucified man, is widely believed to be the burial cloth of Christ, Its historical record, however, goes back in time only to ca. AD 1353.

The actual age of the shroud's linen cloth could only be established by  $^{14}\text{C}$  dating. Apparently, Libby offered to date the shroud after his decay counting method had been perfected, but his offer was declined because it would have required a handkerchief-size sample. The author and others renewed this offer in 1978, using AMS [accelerator mass spectrometry), which would reduced the sample size to that of a postage stamp.

Complex, if not Byzantine negotiations followed involving the Vatican, its Pontifical Academy of Sciences, the Archdiocese of Turin, five AMS laboratories located at the University of Arizona, USA, GFR Gif-sur-Yvette, France, ETH Zurich, Switzerland, Oxford University, UK and the University of Rochester USA, two laboratories using small proportional counters located at AERE Harwell, UK and Brookhaven National Laboratory, USA and, as coordinating institution, the British Museum, London, UK. ...

Ten years later at 9:50 AM, 6 May 1988, the first AMS  $^{14}\text{C}$  measurement on the Turin shroud was carried out at the University of Arizona, using one quarter of the total  $2\text{ cm}^2$  they had received - a  $\frac{1}{2}\text{ cm}^2$  piece of the shroud cloth. In ten minutes the answer was known - the shroud was only about 650 years old! Subsequent measurements carried out at Zurich and Oxford confirmed the Arizona result. The flax from which the Turin

shroud's linen was formed was harvested in AD 1325 with an uncertainty of plus or minus 33 years. Its age was consistent with the shroud's historic date - arguably, the least captivating result ... The result was a public triumph for AMS, but a disappointment for those who hoped or believed it was the burial cloth of Christ.'

[So the carbon-dating took only ten minutes ...! - Ed]