

INVESTIGATING ORIGINS

By Stephen Caesar
Associates for Biblical Research

“Revising Radiocarbon Dating”

Radiocarbon dating methods are frequently used in determining the ages of ancient artifacts and fossils. These methods invariably give a great age for the ancient item in question. Radiocarbon dating is based on the fact that carbon-14 (an isotope of the extremely common element carbon) decays into another carbon isotope, carbon-12, at an exact rate. By measuring the ratio of carbon-14 to carbon-12, experts can determine the age of something that dates from ancient times.

However, according to the journal *Science News*, “The older an artifact is, the less certain scientists can be about its age” (Barry 2007: 344). Chris Turney of the University of Exeter in England similarly noted: “With radiocarbon, it’s not possible to obtain absolute dates—there’s always a bit of an unknown” (Ibid).

One of the biggest factors in throwing off carbon dates is the fact that nuclear testing, which began around 1950, “blasted out radiation [into the atmosphere] that scientists see clearly as a spike in the radiocarbon record” (Ibid.). Most problematic in absorbing this spike in radiation has been charcoal, which scientists use frequently in their dating of ancient finds. To rectify this, Michael Bird of the University of St. Andrews in Scotland created ABOX, a specialized cleaning protocol that rids archaeological samples of nearly all modern nuclear contamination.

According to Richard Gillespie of the Australian National University (the institution at which Prof. Bird first created his technique), “ABOX showed some dates are seriously wrong” (Ibid.). Referring to the fact that many Australian fossils were re-dated under the ABOX technique, Gillespie commented, “Something like a hundred dates were wrong and we ended up chucking them all out. Some of the dates were 10,000 years out” (Ibid.).

Jeff Pigati of the U.S. Geological Survey has improved on the ABOX method. His system is, in his own words, “especially important for very old samples. Even very small amounts of modern contamination can be fatal for old samples” (Ibid., 345).

There is another problem with carbon dating, one that goes beyond adjusting for the increased presence of radiation post-1950. This fact was suspected by no less than Willard Libby, the Nobel Prize-winning inventor of carbon dating, as *Science News* reported: “Even in the early days, Libby suspected that the carbon-12 to carbon-14 ratio had not remained constant through time. Work on solar cycles and the Earth’s magnetic field proved him right. Both phenomena are known to influence radiocarbon amounts by altering the level of cosmic radiation entering the atmosphere” (Ibid.).

The uncertainties surrounding science’s most popular dating method underscores how cautious scientists must be before setting in stone any date for an artifact or fossil. In the words of Prof. Gillespie, “Although 26,000 [years ago, according to modern dating assumptions] is pretty well nailed down now, there’s a sort of best guess for what comes after that” (Ibid.). Until an infallible dating method is discovered, the dates of ancient discoveries will remain dubitable and controversial.

Reference:

Barry, C. 2007. “Rolling Back the Years.” *Science News* 172, no. 22.

Stephen Caesar holds his master’s degree in anthropology/archaeology from Harvard. He is a staff member at Associates for Biblical Research.