

## EDITORIAL STATEMENT

**RADIOCARBON, a new title.** Though published by the AMERICAN JOURNAL OF SCIENCE, the RADIOCARBON SUPPLEMENT is a separate journal, edited and subscribed to independently of its parent. Because of confusion on this point, and in the belief that the word *Supplement* has contributed to the confusion, a new title, RADIOCARBON, has been agreed on by the editors of both journals, and becomes effective with Volume 3, 1961. We regret the inconvenience that may be caused to bibliographers and librarians, but doubt that there will be any for subscribers.

**Half-life of  $C^{14}$ .** Any change in the half-life will necessitate recalculation of all previously published radiocarbon dates. A recent announcement by the U. S. National Bureau of Standards indicates that the long-accepted value of  $5568 \pm 30$  yr is probably incorrect. The correction will probably be small, but may exceed the quoted error of the original date. As it can be made by simple addition or subtraction, without authorization by any laboratory, there is danger that any recalculation will be inadvertently reduplicated as dates pass through the hands of several authors. To minimize confusion, as several other laboratories are known to be engaged in measurements of the half-life, we urge that producers and users of radiocarbon dates await international agreement on any new value. When such agreement is reached, probably when Volume 4 of RADIOCARBON is published, we will announce the magnitude of the correction, and will recommend a typographic convention to be followed when quoting recalculated dates and "new" dates together in lists and discussions. *All dates published in this volume (1961) are based on the half-life value of 5568 yr.*

**Standards and modes of expression.** As shown by Craig (RADIOCARBON, this volume), different laboratories may introduce different amounts of isotopic fractionation in preparing their reference gas samples from the National Bureau of Standards oxalic acid; slight discrepancies may result, in dates as well as in modern assays, if such "standard" samples are not identical in  $C^{14}$  activity. Mass-spectrometric measurement of the  $C^{13}$  in the  $C^{14}$ -counting gas gives the only reliable basis of uniformity between laboratories. By informal agreement among several laboratories, which we here indorse, the  $C^{13}$  content of the counting gas is assumed to correspond to the  $-19\%$  deviation, observed as the (rounded) mean of several determinations by Craig, and rigorous accuracy requires that any departures from this value be taken into account when  $C^{14}$  assays are calculated. Thus,

$$0.95A_{\text{ox}} = 0.95A'_{\text{ox}} \left( 1 - \frac{2(19 + \delta C^{13'}_{\text{ox}})}{1000} \right)$$

where  $A'_{\text{ox}}$  and  $\delta C^{13'}_{\text{ox}}$  are based on the actual counts and mass-spectrometric

measurements made on a gas prepared from the oxalic-acid standard. The computed value  $0.95A_{ox}$  then becomes the universal  $C^{14}$  standard activity from which  $\delta C^{14}$  values (below), and all dates, are calculated.

We also call attention to the mode of expression adopted by the Lamont laboratory (Lamont VIII, RADIOCARBON, this volume) when  $C^{14}$  assays are corrected (normalized) for isotopic fractionation by  $C^{13}$  measurement. In this notation, which we also indorse, a quantity  $\Delta$  is substituted for  $\Delta C^{14}$ , the definition of which (Lamont VI, RADIOCARBON SUPPLEMENT, v. 1, p. 114) has been found to contain a logical inconsistency. Thus,

$$\Delta = \delta C^{14} - (2\delta C^{13} + 50) \left( 1 + \frac{\delta C^{14}}{1000} \right)$$

where  $\Delta$  is the per-mil deviation from the modern  $C^{14}$  standard (i.e. from  $0.95A_{ox}$  as defined above), and  $\delta C^{14}$  and  $\delta C^{13}$  are the observed per-mil deviations from  $C^{14}$  and  $C^{13}$  standards. The matter is more important for modern  $C^{14}$  assays made for geochemical reasons than for routine dating. In this volume, the papers Lamont VIII and Yale VI follow the new notation, whereas Cambridge IV uses the older  $\Delta C^{14}$ . Conversion can be made by the expression

$$\Delta = \Delta C^{14} - \frac{\delta C^{14}}{20}$$

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### ERRATUM

In RADIOCARBON SUPPLEMENT, v. 2, 1960, in the reference to Kenya (W-749) on p. 175, the following words should be deleted from the reference: 'bore hole drilled' and also '(the Limuru trachytes)'.