



Isotope Measurements Laboratory

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9th January 1989

Mr. John S. Dent,
Humberside Archaeological Unit,
County Hall,
Beverley,
HU17 9BA

Dear Mr. Dent,

This booklet contains the official measurement certificate for the sample listed below which you submitted for radiocarbon dating. We hope you will find the result satisfactory.

The certificate enclosed is presented in a new format which incorporates recommendations from the 12th and 13th Radiocarbon Conferences and also includes calibrations. For a full explanation of the format please read the notes enclosed in the booklet.

It is the practice of this laboratory to publish lists of results in the journal Radiocarbon. If you would like your results included in a forthcoming list, please complete and return the Sample Information form attached.

With compliments,

A. J. Walker

Certificates enclosed for: HAR 9244

RADIOCARBON DATING CERTIFICATE

Sample sent for analysis by:

John S. Dent,
 Humberside Archaeology Unit,
 County Hall,
 Beverley,
 HU17 9BA

Code: 199 HBMC

Laboratory Results:

1	2	3	4	5	6
HARWELL REF.	SENDERS REF.	TYPE	DC13 (o/oo)	AGE BP (YRS)	Cal RANGES (IML program, data of Stuiver & Reimer, 1986)
Har-9244	WY8AK	Charcoal	-26.7	3690 ± 80	68% 2210 BC to 1980 BC and 95% 2450 BC to 1830 BC

Report:

Charcoal, AML 881271, from Beaker period grave, the central burial of a ring-ditched-enclosure. The sample is a layer of charcoal, presumed to be the collapsed lid, which covered both bodies at Wetwang Slack, Wetwang Parish, Yorkshire Wolds (NGR: SE 939 599). Coll December 1987 by J Dent. Subm June 1988 by J Dent. Comment: result dates the monument closely and the decorated beaker, in relation to others in the same extended cemetery (HAR-1227, 1236, 1282, 2491, 2492, 2493, 1878, 4426, 4427).

This certifies that the sample given above has been analysed for CARBON-14 at this laboratory. The results, expressed as DC13, AGE BP and Cal RANGES, are given in accordance with the method outlined in the accompanying Notes Sheet, NS/2/88.



R.L. Otlet.

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(9/ 1/89)

Revised notes on the method of reporting radiocarbon results in
the Radiocarbon Dating Certificate

Following recommendations at the 12th Radiocarbon Conference (1985, Trondheim) reaffirmed at the 13th Radiocarbon Conference in Dubrovnik (1988) concerning the procedure by which laboratories should report results, it has been decided that the format of the certificates issued by this laboratory should be changed accordingly. In altering the certificate format to accommodate this change the opportunity has been taken to revise the layout and ancillary information it provides. The essential difference concerns dropping the use of lower case "ad", "bc" and "bp" which are no longer acceptable for publications.

Calibrations, expressed as 68% and 95% confidence ranges have been added and replace the earlier "bp-1950" which should no longer be used in results specifications. Calibrated results should be expressed as "cal AD" or "cal BC" as appropriate.

A further modification concerns the presentation, in Radiocarbon publication style, of the notes originally provided with the submission of the samples. If this report is acceptable to the submitter it can be presented for publication (and entry on the Harwell data base) as it stands. Alternatively, corrections and/or alterations can still be included but in this case please return the form "Information for Radiocarbon Publication and Database Entry", which is arranged in numbered sections to facilitate computer entry, with the required amendments marked in.

Explanation of the results presentation in the box section "Laboratory Results on the Certificate" is detailed below:

1. Age BP (Column 5): is the conventional Radiocarbon Age calculated using the following Standards and parameters.

1.1 Half-life: The old (W. F. Libby) value 5570 years is used. This is in accordance with the decision of the Fifth Radiocarbon Dating Conference, Cambridge, 1962 and reaffirmed at similar meetings since. It is also a requirement of the publishers of 'Radiocarbon', that this half-life value is used in dates reported therein.

1.2 Modern Standard: The oxalic acid standard issued by the National Bureau of standards (NBS), Washington is used. Following the recommended practice, 'Modern' is taken as 0.95 times the activity of the standard after correction for fractionation during its preparation. Reference standards are routinely checked against freshly prepared samples of the NBS oxalic acid.

- 1.3 Background Standards: Background values are obtained from samples Marble, Coke or Fuel Oil routinely made using the full sample preparation process.
- 1.4 Stable Isotope Correction: This is expressed as $\delta^{13}\text{C}$ (Column 4) and represents $\delta^{13}\text{C}$, the deviation per mil, of the ratio of the stable isotopes $^{13}\text{C}/^{12}\text{C}$ of the sample from that of an adopted standard (PDB). The 'Age BP' value quoted (Column 5) is already corrected for the ^{13}C value given in Column 4. If there is no measurement of ^{13}C , a value is assumed which causes zero correction to be applied in the 'Age BP' calculation, ie, -25.0 ‰ .

2. Accuracy in the measurement of 'Age BP' (Column 5), is expressed in the associated error term as ± 1 (standard deviation) inherent to the measurement process relative to the declared value of the modern standard, detailed above (1.2). It includes the laboratory's estimate of the full process reproducibility, which is based on counting statistics and other quantifiable parameters combined with the observed reproducibility in replicated background and modern samples (Otlet, 1979), ie, 68% of all identical replicate samples are expected to give results within the limits of ± 1 ; 95% are expected to give results within ± 2 . It is, however, not an error which can in any way allow for the integrity of the sample or any judgement based on geologic or archaeological grounds, nor should it be applied unmodified to a calibrated result.

3. Cal Ranges: (Column 6) These ranges are computed during the results calculation procedure using a local IML program with the data files ATM20.C14 provided by Washington University, USA (Stuiver and Reimer, 1986) compiled by them from the recommended calibration data of Stuiver and Pearson, (1986) Pearson and Stuiver (1986) and Pearson et al (1986). The values are intended as an approximate guide to possible calibration solutions and are given with every individual result. Attention is drawn to the fact, however, that where a group of samples representing the same event is concerned, individual calibrations are inappropriate and the uncalibrated results should be amalgamated before making a single new calibration on the grouped mean. There are now numerous software packages on which more detailed probability results and graphical solutions can be obtained. These were reviewed by Aitchison et al at the 13th Radiocarbon Conference in Dubrovnik, 1988, where small, but in most cases not too significant, differences were seen between the various results and presentation formats but no definitive recommendation as to which should be adopted was forthcoming.

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References

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