

INFORMATION FOR RADIOCARBON PUBLICATION AND DATABASE ENTRY

1. Harwell results:

Laboratory number			Har-9246
Conventional Radiocarbon Age	BP	3850 ±	100
Stable isotope ratio DELC13			-27.4 o/oo

2. Senders sample title and reference:

Wetwang Slack series  
WY9AL  
AML 881272

3. Type of material:

Charcoal

4. Stratigraphic and environmental details:

From the folling of a secondary grave cut through the circular  
enclosing ditch of a funerary monument

5. Name and location of site:

Wetwang, Yorkshire Wolds, (NGR: SE 939 599)

lat long (or Nat Grid Ref.)

6. Relevant publications (if applicable-in full PLEASE):

Author, date of publication, title of article:  
(name of volume, vol no (section no), page nos.)

Dent J S, 1985, A Summary of the Excavation ... in Garton and Wetwang  
Slacks, East Riding Archaeology 7, 1-12, esp Appendix 'A'

7. Collectors name and date collected:

December 1987 by J Dent

8. Senders name and submission date:

June 1988 by J Dent

(Rcd. Harwell 15/ 6/88)

9. Harwell comments on the measurement:

10. Senders comment:

11. Period and Sitetype:

RADIOCARBON DATING CERTIFICATE

Sample sent for analysis by:

J S Dent  
45 Grosvenor Terrace  
York  
Y03 7AG

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-9246	WY9AL	Charcoal	-27.4	3850 $\pm$ 100	68% 2490 BC to 2190 BC and 95% 2650 BC to 1990 BC

Report:

Wetwang Slack series

Charcoal, AML 881272, from the folling of a secondary grave cut through the circular enclosing ditch of a funerary monument at Wetwang, Yorkshire Wolds, (NGR: SE 939 599). Coll December 1987 by J Dent. Subm June 1988 by J Dent.

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.

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*R. L. Otlet*  
for R.L.Otlet.  
( 1/ 1/80)

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  $^{13}\text{C}$ , 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  $^{13}\text{C}$  value given in Column 4. If there is no measurement of  $^{13}\text{C}$ , a value is assumed which causes zero correction to be applied in the 'Age BP' calculation, ie,  $-25.0 \text{ ‰}$ .
2. Accuracy in the measurement of 'Age BP' (Column 5), is expressed in the associated error term as  $\pm 1$  (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  $\pm 1$ ; 95% are expected to give results within  $\pm 2$ . 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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Harwell Laboratory.

December 1988

## References

Aitchison, T C, Leese, M, Michczynska, D J, Mook, W, Otlet, R L, Ottaway, B S, Pazdur, M F, van der Plicht, J, Reimer, P J, Robinson, S W, Scott, E M, Stuiver, M and Weninger, B, in press, A Comparison of Methods Used for the Calibration of Radiocarbon Dates, paper presented at 13th Internatl Radiocarbon Conf, Dubrovnik, 1988, to be published in Radiocarbon, probably 1989.

Otlet, R L, 1979, An Assessment of Errors in Liquid Scintillation Counting, in Berger, R and Suess, H E, eds, Radiocarbon Dating, Internatl  $^{14}\text{C}$  Conf, 9th, Proc: Berkeley, Univ California Press, p 256-267.

Pearson, Gordon W and Stuiver, Minze, 1986, High-Precision Calibration of the Radiocarbon Time Scale, 500-2500 BC, Radiocarbon, 28, No. 2B, p 839-862.

Pearson, G W, Pilcher, J R, Baillie, M G L, Corbett, D M and Qua, F, 1986, High-Precision  $^{14}\text{C}$  Measurement of Irish Oaks to show the natural  $^{14}\text{C}$  Variations from AD 1840-5210 BC, Radiocarbon, 28, NO. 2B, p 911-934

Stuiver, Minze and Pearson, Gordon W, 1986, High-Precision Calibration of the Radiocarbon Time Scale, AD 1950-500 BC, Radiocarbon, 28, No. 2B, p 805-838.

Stuiver, Minze and Reimer, P J, 1986, A Computer Program for Radiocarbon Age Calibration, Radiocarbon, 28, No. 2B, p 1022-1029