

Radiocarbon

1968

BRITISH MUSEUM NATURAL RADIOCARBON MEASUREMENTS V

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INTRODUCTION

The dates detailed below are based on measurements made from September 1962 to August 1964. Work was often seriously interrupted due to difficulties with electronic equipment and also, from the late summer of 1963, high levels of tritium in the local water supplies used in the synthesis of acetylene (from nuclear weapons tests) made it difficult to obtain accurate measurements with acetylene as a filling gas for the proportional counter. The gas preparation equipment was therefore modified for the preparation of high purity CO₂, and from Sample BM-165 onwards, the proportional counter was operated with CO₂ as the filling gas at a pressure of 210 cm Hg at 22°C. instead of 140 cm Hg pressure of acetylene at 22°C. as reported previously (British Museum I). Background and net modern count rates under these conditions are 3.59 c.p.m. and 8.35 c.p.m., respectively. (In practice these values are taken as the rolling mean of the past 20 weeks' measurements and are very constant.) The calculations of age are based on the half-life of 5570 yr and error terms are widened to include contributions of ± 80 yr for possible isotopic fractionation effects and ± 100 yr for de Vries-effects. Safeguards against inaccuracies are as described previously (British Museum I).

SAMPLE DESCRIPTIONS

ARCHAEOLOGIC SAMPLES

A. Egypt and Sudan

BM-139. Buhen

**4400 \pm 150
2450 B.C.**

Charcoal from the fortress of Buhen situated on the west bank of the Nile opposite Wadi Halfa, N Sudan (21° 54' N Lat, 31° 17' E Long). Sample was found in Building Block 1 in association with sealings bearing the names of Kings of 4th and 5th Dynasties (ca. 2600-2350 B.C.). Coll. 1962 and subm. by Prof. W. B. Emery, Egypt Exploration Society. *Comment:* sample agrees with expected age and UCLA-248, 4420 \pm 80 (UCLA II).

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BM-156. Egyptian pot and figure **Modern**

Twigs from Egyptian pot also containing ceramic human figure supposed by W. R. Dawson to have represented ". . . a mummy in course of immersion in the salt bath" (Dawson, 1927). Subm. by J. R. Harris, Christ Church College, Oxford Univ. *Comment:* result tends to undermine association between pot and figure and authenticity of figure, since pot shows evidence that the twigs may have been packed into it when the clay was "leather hard."

*B. Great Britain***BM-134. Fussell's Lodge****5180 ± 150****3230 B.C.**

Charcoal found with burnt stone and cracked flints covering primary burials in Fussell's Lodge Long Barrow, Wiltshire, England (51° 5' 26" N Lat, 1° 43' 32" W Long). Coll. 1957 and subm. by P. Ashbee, Inspectorate of Ancient Monuments, Ministry of Public Buildings and Works. *Comment:* date compares satisfactorily with BM-49, Nutbane, 4680 ± 150 (British Museum II) and BM-73, Windmill Hill, 4910 ± 150 (British Museum III) (P. Ashbee, 1958, 1964).

Hembury series

Two charcoal samples from Neolithic occupation at Hembury, Honiton, Devon, England (50° 49' 13" N Lat, 3° 15' 38" W Long). Excavated in 1931 by the late Dorothy Liddell; now in the reserve collection of the Royal Albert Mus., Exeter (Liddell, 1931). Subm. by Lady Aileen Fox, Exeter Univ. *Comment:* *c.f.* BM-73, Windmill Hill, 4910 ± 150 (British Museum III) and BM-130, Hembury, 5100 ± 150 (British Museum IV).

BM-136. Cutting XI A**5190 ± 150****3240 B.C.**

From Neolithic occupation at S end of fort.

BM-138. Cutting X A**5280 ± 150****3330 B.C.**

Layers 4-6, burnt layer with Neolithic pottery in ditch.

Hazard Hill series

Two samples of charcoal from a Windmill Hill-type Neolithic camp at Hazard Hill, Totnes, Devon, England (50° 20' N Lat, 3° 40' W Long) (Houlder, 1953). Coll. 1953 by C. H. Houlder and subm. by G. de G. Sieveking, Sub. Dept. of Prehistory and Roman Britain, British Mus. Dates should be compared with Hembury series.

BM-149. Hazard Hill (ref CHB4)**4920 ± 150****2970 B.C.**

Charcoal from a pit, 1 to 2 ft below surface of ploughed field.

BM-150. Hazard Hill (ref B112)**4700 ± 150****2970 B.C.**

Charcoal from occupation level 8 in. to 1 ft below present surface.

3800 ± 150

BM-152. Chippenham

1850 B.C.

Charcoal found in association with a Beaker assemblage in Barrow 5, Hearth VIII, Chippenham, near Mildenhall, Cambridgeshire, England (52° 18' N Lat, 0° 26' W Long). Coll. 1955 by C. S. Leaf and subm. by Mus. of Archaeol. and Anthropol. Univ. of Cambridge. *Comment* (I. H. Longworth, British Mus.): date is satisfactory for the associated Beaker assemblage and can be compared with BM-133, 3800 ± 150 (British Museum IV) and BM-172, 3750 ± 150, below.

4100 ± 180

BM-168. Halling skeleton

2150 B.C.

Portion of femur from deposits at Halling, Kent, England (51° 21' N Lat, 0° 27' E Long), Halling skeleton, ref. EM-47, British Mus. (Nat. Hist.) Coll. 1914 by W. H. Cook (Cook, 1914) and subm. by Dr. K. P. Oakley, British Mus. (Nat. Hist.) The skeleton was assumed to be Early Mesolithic on the basis of associated artifacts, stratigraphic evidence, and relative dating by the fluorine and uranium methods (Oakley, 1963). The date is thus much younger than expected. Sample was carefully hand picked and treated for removal of organic preservatives (glue and cellulose nitrate) by repeated washing with acetone and hot distilled water.

3750 ± 150

BM-172. Lion Point

1800 B.C.

Charcoal (ref. site 114, area 2) from Lion Point, Clacton, Essex, England (51° 46' N Lat, 1° 06' E Long). Coll. 1936 by S. Hazzledine Warren (Warren *et al.*, 1936; Smith, 1955) and subm. by Sub. Dept. of Prehistory and Roman Britain, British Mus. *Comment* (I. H. Longworth, British Mus.): date is satisfactory for associated Beaker assemblage and can be compared with BM-133, 3800 ± 150 (British Mus. IV) and with BM-152, 3800 ± 150 (above).

C. India

2010 ± 150

BM-155. Bedsa

60 B.C.

Wood from ornamental roof beams of the Chaitya cave at Bedsa, NW Deccan, India (18° 46' N Lat, 73° 28' E Long). Coll. 1960 and subm. by the late D. D. Kosambi, Tata Inst. of Fundamental Research, Bombay. Date is archaeologically acceptable. Ref. BM-92, 2240 ± 150 (British Mus. III) for a date on ceiling beams from nearby Chaitya cave at Karle.

D. Iran

5050 ± 150

BM-171. Tell-i-Nokodi

3100 B.C.

Charcoal (ref. Trench B, Level 4C) from prehistoric settlement beneath Achaemenid capital of Pasargadae (30° 20' N Lat, 53° 10' E Long). Coll. 1961 by D. B. Stronach, British Inst. of Persian Studies, and subm. by M. E. L. Mallowan, All Souls College, Oxford. Archaeological associ-

ation is Late Chalcolithic, corresponding to Late Ubaid or Early Uruk of Mesopotamia. *Comment* (M.E.L.M.): date is later than expected age of ca. 3500 B.C.

E. Ireland

BM-135. Kilgreany Man

**4580 ± 150
2630 B.C.**

Post-cranial material (ribs and humerus) from Kilgreany 'A' skeleton. From a cave situated in Kilgreany T.L. 5 mi. WNW of Dungarvan, Co. Waterford (52° 5' 5" N Lat, 7° 44' 30" W Long). Bones were excavated from cave deposits of travertine or stalagmite of possible Late Pleistocene or Post-Glacial age. Coll. 1928 by a joint committee of 3 members of the Royal Irish Acad. and 2 members of the Univ. of Bristol Speleological Soc. under the leadership of E. K. Tratman. Subm. by the Dir. of the Nat. Mus. of Ireland (Tratman, *et al.* 1929, Movius, 1935). *Comment*: date is older than that suggested by Movius but younger than that argued by Tratman. Sample was given standard acid pre-treatment.

BM-170. Townley Hall II

**4680 ± 150
2730 B.C.**

Charcoal from Neolithic occupation site sealed beneath barrow of megalithic tomb of passage grave type at Townley Hall, Co. Louth (53° 43' N Lat, 6° 27' W Long). Coll. 1962 and subm. by Mr. G. Eogan, Dept. of Archaeol., Trinity College, Dublin (Eogan, 1963). Associated archaeological material included passage grave-ware not previously found on a habitation site. Townley Hall may be contemporaneous with nearby Brugh-na-Boinne group of megaliths which includes site of New Grange.

F. Israel

BM-140. Nahal Mishmar

**5390 ± 150
3440 B.C.**

Reed mat from the Chalcolithic level in Cave No. 1 at Nahal Mishmar, Judean desert (31° 20' N Lat, 35° 20' E Long). Found in association with hoard of copper objects (Bar-Adon, 1962). Coll. 1961 and subm. by P. Bar-Adon, Dept. of Antiquities, Jerusalem. *Comment*: date agrees with archaeological evidence: pottery and other objects dating to end of Chalcolithic period.

G. Jordan

BM-111. Beidha

**8790 ± 200
6840 B.C.**

Charcoal (ref. E2 P24) from burnt beam in debris on floor of building of 4th main period from uppermost level at Beidha, approx. 4 mi. N of Petra, Jordan (30° 03' N Lat, 35° 25' E Long). This building and others of Level IV, partly destroyed by fire, differ architecturally from those of 3 later main periods (Kirkbride, 1960-1963). Coll. 1959 by D. V. W. Kirkbride, and subm. by Kathleen Kenyon, British School of Archaeol., Jerusalem. *Comment*: From archaeological evidence Level IV at

Beidha may be compared with early pre-pottery Neolithic B levels at Jericho (P-380, 8610 ± 75 ; P-381, 8658 ± 101 , Pennsylvania VI) and with the aceramic level V at Hacilar (BM-127, 8700 ± 180 , British Mus. IV).

H. Malta

BM-141. Tarxien **3880 \pm 150**
1930 B.C.

Carbonized seeds (*Vicia faba*), ref. Sample 10, from jar accompanying cremation burials in Early Bronze age level of Tarxien cemetery overlying temple ruins. Site is 2 mi. S of Valletta ($35^{\circ} 52' N$ Lat, $14^{\circ} 30' 30'' E$ Long). Coll. 1915 by Sir Temi Zammit and subm. by D. H. Trump, Nat. Mus., Valletta. *Comment*: sample intended as check on BM-101, 4485 ± 150 (British Mus. IV) which gave unexpectedly high result. The date of 3880 ± 150 , although consistent with MB-143 below, is still higher than expected age of ca. 1500 B.C.

Skorba series

Charcoal samples from temple site of Li Skorba, NW Malta ($35^{\circ} 55' N$ Lat, $14^{\circ} 22' 30'' E$ Long). Coll. 1961, 1962 and subm. by D. H. Trump, to provide chronological basis for Maltese sequence (Trump, 1961-1963).

BM-142. Skorba, Sample 7 **5240 \pm 150**
3290 B.C.

Sample from burnt floor of outbuilding to temple. Associated archaeological material Ggantija (Phase 6). *Comment* (D.H.T.): stratigraphically later than BM-145 and BM-147; probably old wood from roof timbers. Expected age was ca. 2400-2000 B.C.

BM-143. Skorba, Sample 9 **4380 \pm 150**
2430 B.C.

Associated archaeological material, pure Tarxien (Phase 8). *Comment*: consistent with BM-141 above. See also BM-101 (British Mus. IV, 4485 ± 150). Expected age was ca. 1750-1550 B.C. (Evans, 1960, Brea, 1960).

BM-145. Skorba, Sample 4 **5140 \pm 150**
3190 B.C.

Sample from stratified deposit behind temple. Associated archaeological material Zebbug (Phase 4). *Comment*: agrees closely with BM-147 though less with BM-100, 4660 ± 150 (British Mus. IV) (Trump, 1961c). This phase is very close to Copper age Sicily, San Cono-Piano Notaro, and the expected age was ca. 2700 B.C.

BM-147. Skorba, Sample 3 **5000 \pm 150**
3050 B.C.

Samples from stratified deposit behind temple. Associated archaeological material Zebbug (Phase 4) see BM-145 above. *Comment*: agrees closely with BM-145. Expected age was ca. 2700 B.C.

BM-148. Skorba, Samples 1 and 12 **5175 ± 150**
3225 B.C.

Samples from a stratified deposit behind temple. Associated archaeological material Red Skorba-ware (Phase 3), local variant of Late Neo Diana culture of E Sicily and S Italy. *Comment:* stratigraphically, sample is dated immediately prior to Zebbug level (BM-145, BM-147) with which date agrees, securely bracketing Neolithic/Copper age division. Expected age was 3000-2800 B.C.

I. Turkey

Can Hasan

Two samples of charcoal from Chalcolithic mound of Can Hasan, Anatolia (37° 30' N Lat, 33° 30' E Long). Coll. 1961 and subm. by D. French, British Inst. of Archaeol., Ankara. Samples are from Level IIB, a major destruction level which clearly marks end of transitional phase between Early and Middle Chalcolithic. The expected age based on comparison with Hacilar was 4750 B.C.

BM-151. Can Hasan ref. R23B(1) **6880 ± 150**
4930 B.C.

BM-153. Can Hasan ref. R23B(2) **7190 ± 150**
5240 B.C.

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