

DUBLIN RADIOCARBON DATES II

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INTRODUCTION

The Dublin radiocarbon dating laboratory was operational in 1958 to 1960 and the scintillation counter system used at that time has previously been described (Delaney and McAulay, 1959). The system is now operational again and has been modified to date samples after conversion to benzene. The electronic equipment differs from that previously used only insofar as more compact and drift-free transistorized units are now employed. With these modifications, considerable improvements in sensitivity and accuracy are obtained. 5ml benzene, diluted with a commercial toluene based scintillant is used in a 12.5ml silica cell for the detection of ^{14}C disintegrations. The background count-rate varies inversely with the barometric pressure (ca $2.6\% \text{ cm}^{-1}\text{Hg}$). The background is ca 3.4cpm, and the detection efficiency is ca 60% and excludes the tritium spectrum.

Acetylene is synthesized using the lithium method (Barker, 1953), and is trimerized on a commercial vanadium catalyst (Noakes *et al*, 1965). Peat is pretreated by degassing the sample (acidified with 5% HCl), followed by washing in de-ionized water.

Dates are reported in conventional radiocarbon years (using the 5570 half-life), with 1950 as the reference year. The modern reference standard is 95% of the measured activity of the NBS oxalic acid standard. Age limits quoted are derived from 1σ counting statistics of background, modern, and sample counts. $\delta^{13}\text{C}$ measurements are made on CO_2 produced in sample combustion, and results are given relative to the PDB standard.

All samples are from Ireland.

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SAMPLE DESCRIPTIONS

I. CHECK SAMPLES

D-131. 1850 to 1860 wood

103 ± 62

AD 1848

Oak wood. Rings grown 1850 to 1860 of tree felled 1970 at Townley Hall, Co Louth ($53^\circ 43' \text{ N}$, $6^\circ 27' \text{ W}$, alt 30m, Irish Grid Ref O 035765) 5.5km W of Drogheda. Coll 1971 by J Hood. *Comment*: no pretreatment. Result is mean of 2 determinations (163 ± 76 and 44 ± 72).

D-123. Cushendun check sample**7270 ± 135****5320 BC** $\delta^{13}C = -29.9\text{‰}$

Wood. Check sample dated by Belfast Lab (G W Pearson, written commun) as UB-689; 7395 ± 65. Further details to be pub by Belfast Lab. Sample pretreated and charred in Belfast Lab.

D-124. Fallahogy Bog Pine**5545 ± 95****3595 BC** $\delta^{13}C = -25.4\text{‰}$

Bog Pine from S side of Bog in Fallahogy Townland, Co Derry (54° 54' N, 6° 35' W, Irish Grid Ref C 933073). Sample dated by Belfast Lab (R, 1973, v 15, p 610) UB-722; 5565 ± 50. Sample pretreated and charred in Belfast Lab.

II. PALAEOECOLOGIC SAMPLES

Coolteen series II, Co Wexford

Samples are from a marsh in Coolteen Townland, Co Wexford (52° 21' N, 6° 35' W, alt 40m, Irish Grid Ref S 9523) 9.5km W of Wexford. Samples from several cores obtained using a modified 5cm Livingstone corer. Coll 1971 by W A Watts, A Berti, and A J Craig. Subm 1971 by AJC.

D-107. Coolteen 12, 140 to 150cm, Core 1971A**9055 ± 95****7105 BC**

Fen- and wood-peat. *Comment* (AJC): dates appearance of *Corylus* pollen in significant amounts in early postglacial.

D-108. Coolteen 13, 180 to 190cm, Core 1971A**10,210 ± 110****8260 BC** $\delta^{13}C = -23.7\text{‰}$

Gyttja. *Comment* (AJC): dates peak of *Juniperus* pollen at late Weichselian/postglacial transition.

D-109. Coolteen 14, 725 to 735cm, Core 1971E**12,470 ± 155****10,520 BC** $\delta^{13}C = -28.2\text{‰}$

Detritus-gyttja. *Comment* (AJC): dates initiation of highly organic sedimentation, of type not found at other late-Weichselian sites.

Belle lake series, Co Waterford

Samples from a lake underlain by late-Weichselian and Flandrian sediments, at Belle lake, Co Waterford (52° 11' N, 7° 2' W, alt 40m, Irish Grid Ref S 6604) 5km NW of Dunmore East. Samples from adjacent cores. Coll 1969 by W A Watts, G F Mitchell, and A J Craig. Subm by AJC.

D-110. Belle 1, 564 to 574cm**12,235 ± 260****10,285 BC**

Black gyttja. *Comment* (AJC): dates basal organic sedimentation in which a peak of *Rumex* pollen is followed by a *Juniperus* peak.

- D-111. Belle 2, 514 to 524cm** **10,590 ± 185**
8640 BC
Black gyttja. *Comment* (AJC): dates top of organic layer between 2 clay layers. Probably end of Zone II.
- D-112. Belle 3, 396 to 406cm** **9600 ± 135**
7650 BC
Brown gyttja. *Comment* (AJC): dates succession of peak in *Juniperus* pollen by a *Betula* peak, immediately before appearance of significant amounts of *Corylus* pollen.
- D-113. Belle 4, 380 to 390cm** **9100 ± 130**
7150 BC
 $\delta^{13}C = -28.2\text{‰}$
Brown detritus-gyttja. *Comment* (AJC): dates appearance of *Quercus* and *Ulmus* pollen in significant amounts shortly after appearance of *Corylus* pollen.
- D-114. Belle 5, 290 to 300cm** **7375 ± 105**
5425 BC
 $\delta^{13}C = -27.3\text{‰}$
Brown detritus-gyttja. *Comment* (AJC): immediately pre-dates diatomite horizon and marks end of abundant *Quercus*, *Corylus*, *Pinus*, and *Ulmus* pollen.
- D-115. Belle 6, 265 to 275cm** **6315 ± 110**
4365 BC
Peaty gyttja. *Comment* (AJC): immediately post-dates diatomite horizon and dates sharp rise in *Alnus* pollen.
- D-116. Belle 7, 220 to 230cm** **5720 ± 90**
3770 BC
 $\delta^{13}C = -27.9\text{‰}$
Peaty gyttja. *Comment* (AJC): dates top of sediments indicating limnic conditions.
- D-117. Belle 8, 180 to 190cm** **5490 ± 95**
3540 BC
 $\delta^{13}C = -28.4\text{‰}$
Wood peat.

III. GEOLOGIC SAMPLE

- D-122. Castlepook 1** **33,500 ± 1200**
31,550 BC
 $\delta^{13}C = -22.5\text{‰}$
Head of femur of *Elephas primigenius* from sediments in Castlepook cave, Castlepook South Townland, Co Cork (52° 14' N, 8° 34' W, alt 100m, Irish Grid Ref R 1262) 13km N of Mallow. Sample from

disturbed sediments containing bones of at least 18 other spp, probably contemporary with sample (Scharff *et al*, 1918). Coll 1905 by R J Ussher and R F Scharff. Subm 1972 by G F Mitchell. *Comment*: only collagen dated; this oxidized to CO₂ using potassium permanganate.

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