[RADIOCARBON, VOL. 19, NO. 3, 1977, P. 383-388]

ANTWERP UNIVERSITY RADIOCARBON DATES II

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The following list contains most of the measurements made during 1976, since our last list (R, 1976, v 18, p 151-160). Wood and charcoal samples were prepared as previously described (R, 1976, v 18, p 151). Peat samples were treated with cold N/10 NaOH and hot N/10 HCl, washed and dried.

With regard to trimerization of acetylene into benzene we have tested the Vanadium-activated catalyst (V-0701 T 1/8″ Harlow Chemicals) against the Chromium-activated catalyst (KC-Perlkator, Kalichemie, Hannover) which has been in use up to the present time. We found that, although trimerization with the Vanadium-activated catalyst was more rapid, higher yields were obtained with the chromium-activated catalyst. For this reason it seemed unnecessary to change our catalyst. To improve the efficiency of the trimerization, acetylene is now purified in a P_2O_5-Ascarite column.

As a result of the resolutions passed at the Ninth International Radiocarbon Conference, we no longer use AD/BC in our lists of age determinations.

ACKNOWLEDGMENTS

This work was made possible by financial support of the FKFO (Fonds voor Kollektief Fundamenteel Onderzoek) Belgium. Sample descriptions are based on information supplied by submitters and collectors.

SAMPLE DESCRIPTIONS

I. GEOLOGIC SAMPLES

A. Belgium

ANTW-154. Dobbelaere-Maldegem DOB-MA-133-13 940 ± 102

Peat from Layer L5, 110 to 120cm below surface (51° 12′ 05″ N, 3° 26′ 08″ E). Coll 1973 by I Heyse. *Comment* (CV): high percentage of *Secale*-pollen found in layer agrees with medieval age.

Paal series

The following series completes the previously pub list (R, 1976, v 18, p 158). Palynologic analysis of these sites are in preparation. (51° 03′ 23″ N, 5° 08′ 22″ E). Coll 1975 by L Beyens.

ANTW-147. Paal 2 5070 ± 190

Peat from layer 25 to 45cm below surface.

ANTW-148. Paal 3 5150 ± 115

Peat from layer 40 to 60cm below surface.

ANTW-161. Paal 1-b, Sample 1 **11,870 ± 185**

Peat from layer 100 to 105cm below surface.

ANTW-164. Paal 1-b, Sample 2 **4660 ± 114**

Wood from oak trunk embedded in peat layer 50cm below surface.

Lommel series

ANTW-155. Lommel 1-b, Sample 1 **11,760 ± 175**

Peat from layer 90 to 100cm below surface (51° 11′ 05″ N, 5° 17′ 31″ E). Coll 1975 by L Beyens.

ANTW-156. Lommel 1-b, Sample 2 **2540 ± 115**

Peat from layer 25 to 35cm below surface. Coll 1975 by L Beyens.

ANTW-160. Overpelt 3 **4520 ± 115**

Peat from layer 80 to 100cm below surface (51° 11′ 42″ N, 5° 21′ 46″ E).

Lampernisse series

ANTW-163. Lampernisse 98a point 189, Sample 1 3550 ± 36

Wood from a pine stump in upper part of peat layer 110 to 160cm below surface (51° 01′ 20″ N, 2° 49′ 50″ E). Coll 1951 by R Vanhoorne. *Comment* (RV): date compiled from age determinations of 4 samples from same stump (see Table 1).

TABLE 1
Age determination of 4 samples from the same pine stump

Activity cpm/gC samples	Date: year BP	$x-\bar{x}$	$(x-\bar{x})^2$
5.352 ± 0.042	3520 ± 110	30	900
5.357 ± 0.043	3520 ± 110	30	900
5.345 ± 0.043	3530 ± 110	20	400
5.284 ± 0.043	3630 ± 110	80	1600

$$\text{Mean value: } \bar{x} = \frac{\Sigma x}{n} = 3550 \text{ yr}$$

$$\Sigma(x-\bar{x})^2 = 3800$$

Activity cpm/gC modern standard = 8.298 ± 0.040

$$\text{one standard deviation: } s = \sqrt{\frac{\Sigma(x-\bar{x})^2}{n-1}} = 36 \text{ yr}$$

Comment (RV): pollen diagram from same coastal site (Stockmans & Vanhoorne, 1954, p 136) suggests a Sub-Atlantic age. This date seems to be 1000 yr too old.

ANTW-191. Lampernisse 98a point 189, Sample 2 2340 ± 54

Wood in upper part of peat layer 110 to 160cm below surface (51° 01′ 20″ N, 2° 49′ 50″ E). Coll 1951 by R Vanhoorne. *Comment* (RV):

date agrees with Sub-Atlantic age, suggested by pollen diagram (Stockmans & Vanhoorne, 1954, p 136), characterized by high percentages of *Fagus* (3.9% at 160cm to 27.5% at 110cm depth) and *Carpinus* (4.6% at 150cm to 11.2% at 140cm depth).

ANTW-188. Rijkevorsel R_2 **660 ± 58**

Charcoal from base of a plaggen epipedon 70cm below surface (51° 20′ 39″ N, 4° 45′ 34″ E). Coll May 1976 by C Verbruggen and J Maes. *Comment* (CV & JM): ref age determination for pollen analysis: trees 10%, herbs 90% (Gramineae nat 49%; Gramineae cult 20%; Ericaceae 4%; *Spergula* 5%; *Fagopyrum* 2.7%). This pollen spectrum shows a landscape after the great medieval land declamation and validates date.

B. Scotland

Cairngorm Estate series

Wood samples from Cairngorm Estate. All specimens originate from a belt 3.7km long. Sites represent some of highest spots in Cairngorm Estate at which pine stumps are still found. It was assumed that age determinations would fall within a fairly limited period of time, establishing a date for the maximum vertical extension of pine within the area. However, the picture is more complicated than originally assumed. The older dates (Sites 6-9, 20) are from more exposed slopes in W of area, while stands were present in more sheltered areas (Sites 5, 15) well into Sub-Boreal.

ANTW-171. Site 15, Sample 3 **3410 ± 80**

Pine wood recovered from eroded blanket bog between Creagan Dubh and Allt Clais a' Mhèirlich; alt, + 710m (57° 08′ 28″ N, 3° 38′ 28″ W). Coll 1975 by L Beyens and D K Ferguson. *Comment* (DKF): Sample represents only piece of wood found at this alt in this valley. A systematic search for wood at higher levels in the same valley proved negative.

ANTW-176. Site 7, Sample 4 **6400 ± 98**

Wood from pine root recovered from eroded blanket bog 120cm thick, close to lowermost ski tow; alt, + 640m (57° 07′ 58″ N, 3° 40′ 17″ W). Coll 1974 by D K Ferguson and M De Keersmaecker. *Comment* (DKF): pine stumps are common at this alt (see R, 1976, v 18, p 158).

ANTW-177. Site 7, Sample 5 **4470 ± 105**

Wood from pine root recovered from eroded blanket bog 120cm thick, close to the lowermost ski tow; alt, + 640m (57° 07′ 58″ N, 3° 40′ 17″ W). Coll 1974 by D K Ferguson and M De Keersmaecker.

ANTW-192. Site 5-1, Sample 6 **3780 ± 60**

Wood from pine stump recovered from eroded blanket bog between Creagan Dubh and Allt Clais a' Mhèirlich; alt, + 705m (57° 08′ 30″ N, 3° 38′ 22″ W). Coll 1975 by D K Ferguson, J and P D'hondt. *Comment* (DKF): pine stumps are still relatively common at this alt.

ANTW-193. Site 5-2, Sample 7 **3320 ± 55**

Wood from pine stump recovered from eroded blanket bog between Creagan Dubh and Allt Clais a' Mhèirlich; alt, + 705m (57° 08′ 30″ N, 3° 38′ 22″ W). Coll 1975 by D K Ferguson, J and P D'hondt. *Comment* (DKF): sample shows 40 growth rings. Of these, only 16 central rings were used in dating.

ANTW-194. Site 5-3, Sample 8 **4090 ± 62**

Wood from pine stump recovered from eroded blanket bog between Creagan Dubh and Allt Clais a' Mhèirlich; alt, + 705m (57° 08′ 30″ N, 3° 38′ 22″ W). Coll 1975 by D K Ferguson, J and P D'hondt.

ANTW-199. Site 6, Sample 9 **5140 ± 69**

Pine wood in blanket bog 70 to 80cm thick close to Allt Coire an t-Sneachda; alt, + 710m (57° 07′ 24″ N, 3° 40′ 33″ W). Coll 1975 by L Beyens & D K Ferguson. *Comment* (DKF): sample was discovered by chance while sounding the area. Thus, it is not certain whether pine trees were common at this site.

ANTW-200. Site 5-4, Sample 10 **4410 ± 54**

Wood from pine trunk recovered from eroded blanket bog between Creagan Dubh and Allt Clais a' Mhèirlich; alt, + 705m (57° 08′ 30″ N, 3° 38′ 22″ W). Coll 1975 by D K Ferguson, J and P D'hondt. *Comment* (DKF): fragment used in dating had 60 growth rings. Judging from fragment, trunk must have been at least 10cm in diam with growth rings averaging no more than 0.65mm wide.

ANTW-202. Site 20-1, Sample 11 **6620 ± 68**

Pine wood recovered from eroded blanket bog between Allt Creag an Leth-choin and Allt Coire an t-Sneachda; alt, + 730m (57° 07′ 16″ N, 3° 41′ 11″ W). Coll 1975 by L Beyens and D K Ferguson. *Comment* (DKF): while blanket bog is relatively well-eroded, wood remains seem rare at this alt. A fairly thorough search yielded no more than 2 samples (ANTW-202, -203).

ANTW-203. Site 20-2, Sample 12 **7060 ± 97**

Pine wood recovered from eroded blanket bog between Allt Creag an Leth-choin and Allt Coire an t-Sneachda; alt, + 730m (57° 07′ 16″ N, 3° 41′ 11″ W). Coll 1975 by L Beyens and D K Ferguson.

ANTW-218. Site 8, Sample 13 **5790 ± 80**

Trunk from pine stump in eroded blanket bog close to Allt a' Choire Chais; alt, + 620m (57° 08′ 01″ N, 3° 40′ 26″ W). Coll 1975 by L Beyens and D K Ferguson. *Comment* (DKF): 14 stumps were found in quadrat 10m × 10m. Since only ca ½ area included in quadrat was exposed by erosion, growth was probably dense. More dates are needed. Trees did not appear to have attained large dimensions (trunks vary between 6.5 and 22cm in diam at ground level) and growth rings in present

sample indicate that growth in 1st 40 yr was very slow (mean width of growth rings 0.3mm). In the next 10 yr ring width averaged 1.25mm, a 4-fold increase over previous yr. The tree with trunk 6.5cm in diam, excluding the bark, seemed to have lived some 60 yr. Poor preservation of periphery prevents a more accurate estimation. Age determination is based on cross-section covering complete time span.

ANTW-219. Site 9, Sample 14 **5990 ± 63**

Trunk from pine stump in eroded blanket bog close to Allt a' Choire Chais; alt, + 590m (57° 08′ 06″ N, 3° 40′ 38″ W). Coll 1975 by L Beyens and D K Ferguson. *Comment* (DKF): sample is similar to ANTW-218 not only in age, but also in its slow rate of development. Trunk, 10cm in diam excluding bark, has 105 growth rings. In 1st 37 yr, growth was slow, averaging 0.5mm/yr, some indication of its difficulty in becoming established. In next 10 yr, growth more than doubled to 1.2mm/yr, followed by a sharp decrease to 0.5mm/yr in final 60 odd yr. Date is based on material from 1st 50 yr.

C. The Netherlands

ANTW-162. Aardenburg **26,510 ± 680**

Sample from loamy detrital peat 200 to 230cm below surface near top of Weichselian cover sands and underlying Sub-Atlantic marine clay (51° 15′ 25″ N, 3° 27′ 10″ E). Coll 1974 by M T Demuynck and C Verbruggen. *Comment* (CV): pollen analysis indicates a treeless full-glacial landscape. Date agrees with GrN-6116: 25,680 ± 175 BP.

II. ARCHEOLOGIC SAMPLES

A. Israel

ANTW-223. Tell Fara, Site K 1 and 2 **24,780 ± 573**

Charcoal samples found 900cm below surface (31° N, 34° E). Coll 1976 by J Prior. *Comment* (K L Alvin): Site K assigned to Upper Paleolithic. Sample combusted without pretreatment. Dilution: 80% sample. Date agrees with expected age.

B. Belgium

ANTW-195. Ranst R28 **1480 ± 49**

Burned wood at 80cm below surface (51° 11′ 7″ N, 4° 34′ 13″ E). Coll 1976 by F Lauwers.

ANTW-180. Edegem Ed 75/1 WP **750 ± 41**

Birch from bottom of a well 550 to 600cm below surface (51° 09′ 15″ N, 4° 27′ 30″ E). Coll Oct 1975 by F Brenders.

ANTW-182. Wichelen Lansschoen 9909 No. 49 **2380 ± 57**

Ash wood from lance shaft from bed of Schelde R near Wichelen (51° 00′ 50″ N, 3° 58′ 15″ E). Coll 1910 by J Maertens de Noordhout. *Comment* (CV): by adding the maximum correction for secular ^{14}C varia-

tions, a date of 2770 can be obtained. Date corresponds with youngest one proposed by archeologists, *ie*, ± 9th century BC.

ANTW-185. Ekeren E75 W1 h13 **2320 ± 64**

Sample from wooden shaft of a well 144 to 185cm below surface (51° 17′ 14″ N, 4° 25′ 01″ E). Coll April 1975 by W Ibens. *Comment* (WI): construction method suggests early Roman or Iron age well.

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