

## LOUVAIN NATURAL RADIOCARBON MEASUREMENTS X

E. GILOT

Department of Nuclear Chemistry,  
University of Louvain, Louvain, Belgium

The following list comprises measurements made during 1969-70. The method is essentially the same as previously described, using a 0.6 L proportional gas-counter at 3 atm CH<sub>4</sub> pressure. Ages are calculated with a half-life of 5570 yr and quoted with 1 $\sigma$  experimental error. Descriptions and comments are based on information supplied by the submitters.

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### SAMPLE DESCRIPTIONS

#### I. GEOLOGIC SAMPLES

##### Holsbeek series

Samples from Holsbeek, Marrant (50° 55' 52" N Lat, 4° 45' 30" E Long), Prov. of Brabant, Belgium, alt 15 m. A continuous layer, 1 to 2 m thick, of silty clay Sub-Atlantic alluvium, at bottom of which is a peaty clay horizon with scattered charcoal and potsherds, overlies several peaty or silty horizons, one of which contains Mesolithic industry (Vermeersch, 1971). These horizons are locally overturned by uprooted trees. Coll. 1967 and subm. by P. Vermeersch, Univ. of Louvain.

##### Lv-376. Holsbeek, charcoal

**4820  $\pm$  230**  
**2870 B.C.**

Charcoal from the thin charcoal horizon at 1 m depth. At same level, potsherds of Neolithic appearance and a few Wommerson sandstone-quartzite and flint splinters. *Comment*: very small sample measured at only 1000 mm Hg pressure. Date is probably too old because of contamination by wood pieces from underlying Atlantic peat.

##### Lv-472. Holsbeek I

**5850  $\pm$  120**  
**3900 B.C.**

Peat from Trench 3, N Wall, Sq. 1 G, from top of Layer 3, 212.5 to 215 cm below ground surface. Pollen analysis, by W. Mullenders, indicates a Middle Atlantic phase before 3rd maximum of *Corylus* (C.X), generally dated ca. 3000 B.C.

##### Lv-472 H. Holsbeek I

**5550  $\pm$  80**  
**3600 B.C.**

NaOH-soluble humic matter from above sample. Date shows no contamination originating from upper layers.

- 8200 ± 160**  
**6250 B.C.**
- Lv-473. Holsbeek I**  
Humified peat from bottom of Layer 3, Trench 3, N Wall, Sq. 1G, 241 to 245 cm depth. Pollen curve shows beginning of Boreal period at this level with 1st maximum of *Corylus* (C1a). Mesolithic artifacts were found 10 cm below sample, at level palynologically dated as Pictino oscillation. *Comment*: C<sup>14</sup> date with soluble humic matter. Date closely agrees with palynology.
- 11,330 ± 180**  
**9380 B.C.**
- Lv-474. Holsbeek I**  
Humified peat from bottom of Layer 7, Trench 3, N Wall, Sq. 1G, 280 to 285 cm depth. Pollen curve shows Alleröd period with 1st phase characterized by *Betula* preponderance. *Comment*: humic matter used for dating. Result as expected.
- 4296 ± 90**  
**2340 B.C.**
- Lv-378. Holsbeek F**  
Wood from uprooted Tree F, 110 cm depth, Trench 3, N Wall, Sq. 3G, imbedded in peat layer, palynologically dated as Alleröd to Atlantic. Falling trees disturbed underlying Pre-Boreal Mesolithic layer. *Comment* (P.V.): uprooting seems contemporaneous with 1st Neolithic cultivation.
- 3900 ± 140**  
**1950 B.C.**
- Lv-381. Holsbeek B**  
Wood from Tree B, Trench 2, S Wall, depth 100 cm.
- 3880 ± 85**  
**1930 B.C.**
- Lv-380. Holsbeek C**  
Wood from Tree C, Trench 2, S Wall, depth 90 cm.
- 7900 ± 150**  
**5950 B.C.**
- Lv-377. Holsbeek E**  
Wood from Tree E, Trench 3, N Wall, Sq. 3G, depth 140 cm.
- 7580 ± 110**  
**5630 B.C.**
- Lv-379. Holsbeek D**  
Wood from Tree D, Trench 3, N Wall, Sq. 3G, depth 130 cm. *Comment*: C<sup>14</sup> dates show 2 uprooting periods after Mesolithic settlement.
- 4260 ± 85**  
**2310 B.C.**
- Lv-475. Holsbeek II**  
Peat from top of Layer 13, 224 to 230 cm depth, Trench 3, N Wall, Sq. 3G. Level probably disturbed.
- 8110 ± 140**  
**6160 B.C.**
- Lv-476. Holsbeek II**  
Peat from 230 to 295 cm, middle part of Layer 13, Trench 3, N Wall, Sq. 3G. By pollen analysis, this level is attributed to Boreal-Atlantic transition. But profile is overturned between 220 and 290 cm, where it contains Boreal and Atlantic mixed sediments.

**Maisières series**

Humic matter from calcareous clay from Maisières (50° 29' N Lat. 3° 57' E Long), Prov. of Hainaut, Belgium, alt 40 m, depth 10 m. Samples related to a lithic industry attrib. to Perigordian V culture, and to an Arcy-Kesselt (Stillfried B) interstadial horizon (Bastin, 1970). Coll. 1966 and subm. by B. Bastin, Univ. of Louvain. According to Groningen date lists, Upper Perigordian IV to VI is generally dated 26,000 B.C. to 21,000 B.C. and Arcy-Kesselt interstadial 30,500 B.C. to 26,500 B.C.

		+2040
	(1)	31,080
		-1640
<b>Lv-304. Maisières 1</b>		29,130 B.C.
		+1890
	(2)	30,150
		-1540
		28,200 B.C.

From Sq. J-K 10, archaeol. horizon overlying Arcy-Kesselt interstadial. Sample from same horizon is dated 26,015 B.C.  $\pm$  260 (GrN-5523).

		+3140
	(1)	35,970
		-2250
<b>Lv-305. Maisières 2</b>		34,020 B.C.
		+650
	(2)	24,100
		-610
		22,150 B.C.

From archaeol. horizon at 12 cm over Lv-304. *Comment:* this excessive discrepancy is unexplained.

		+700
		24,400
		-640
<b>Lv-306. Maisières 3</b>		22,450 B.C.

From Sq. J-K 15-16, Arcy-Kesselt interstadial horizon below archaeol. layer. Next sample is dated 28,830 B.C.  $\pm$  400 (GrN-5690). *Comment:* NaOH soluble humic matter concentration is very low in this level.

		+550
		23,160
		-510
<b>Lv-307. Maisières 4</b>		21,220 B.C.

From same layer, 12 cm overlying Lv-306.

		+1040
		25,280
		-920
<b>Lv-353. Maisières 5</b>		23,330 B.C.

From Sq. K-11, clay layer including several "nuclei."  
*General Comment:* relative chronologic position of above C<sup>14</sup> dates is incompatible with stratigraphic evidence. Lv-306 and -307, poor in

organic matter, give C<sup>14</sup> dates too young compared to archaeol. layer dates. On the other hand, Lv-305 is too old and differs to a fault from Lv-305/2. These anomalies are attributed to problems often encountered with dating calcareous soil. We have no satisfactory explanation.

#### **Entre-Sambre-et-Meuse series**

Wood pieces from Entre-Sambre-et-Meuse region, Prov. of Namur, Belgium. From lignitic sands in detrital formations (age unknown, presumed Tertiary) occupying dissolution pockets in Carboniferous Limestones. Coll. 1969 and subm. by J. Soyer, Univ. of Louvain.

*General Comment:* antiquity of lignitic material doubtful because digging removed presumed overlying sands and clays; it is also possible that wood was recent (e.g., supports for subterranean workings). C<sup>14</sup> dates support Tertiary age and show that most karst evolution was completed before or during Tertiary.

**Lv-477. Bioul A** **>32,500**

Wood from Rouchat sandpit near Bioul (50° 20' 40" N Lat, 4° 48' 00" E Long), alt 220 m. From lignitic sand mound, depth 5 m, center of sandpit.

**Lv-478. Bioul B** **>32,500**

As above, depth 6 m.

**Lv-479. Freyr** **>32,500**

Wood from sandpit of Freyr, from Sté. Sambre-et-Dyle (50° 14' 30" N Lat, 4° 51' 30" E Long) at Waulsort, alt 215 m. From bottom of sandpit, depth 10 m, underlying thin red clay.

**Lv-434. Geistingen, B1**

**2670 ± 100**  
**720 B.C.**

Wood from Geistingen (51° 07' 33" N Lat, 5° 48' 56" E Long), Prov. of Limburg, Belgium, alt 27.5 m. From a layer with wood between alluvium and gravels at 2 m depth in alluvial plain of Meuse R. Coll. 1969 and subm. by E. Paulissen, Univ. of Louvain. *Comment* (E.P.): this date, with others from same series (R., 1970, v. 12, p. 557), confirms that, contrary to previously published opinion, clayey alluvium of Meuse R. is recent (Paulissen, 1970).

#### **Opgrimbie series**

Samples from a sand hill at Opgrimbie (50° 57' 17" N Lat, 5° 39' 10" E Long), Prov. of Limburg, Belgium, alt 55 m. Coll. 1968 by A. V. Munaut and E. Paulissen; subm. by A. V. Munaut, Univ. of Louvain.

**Lv-457. Opgrimbie I, 200 cm**

**11,910 ± 170**  
**9960 B.C.**

Peat from 200 cm depth, from a peat layer imbedded in whitish layer with charcoal, between Sand Layers 3 and 2. Pollen analysis, by A. V. Munaut, gives Alleröd age to peat layer. C<sup>14</sup> date agrees with expectation.

**Lv-456. Opgrimbe, 275 cm** **12,640 ± 190**  
**10,690 B.C.**

Humic matter from a dark to whitish sand horizon at 275 cm depth, between Sand Layers 2 and 1. Bölling age, ascertained by pollen analysis, is confirmed by carbon dating. A whitish Bölling horizon is proved for the first time; the name "Opgrimbe soil" is proposed (Paulissen and Munaut, 1970).

## II. ARCHAEOLOGIC SAMPLES

### Baie Diana series, Canada

Samples from Diana I. (60° 57' N Lat, 70° 00' W Long), New Quebec, Canada. Coll. 1969 and subm. by P. Plumet, Quebec Univ., Montreal.

**Lv-468. Baie Diana I** **2070 ± 140**  
**120 B.C.**

Charcoal from a lengthened house with 2 hemicycles and inside partitions. From Level IV belonging to a former camping hearth. *Comment* (P.P.): at Pamiok, a late reoccupation in a similar site is dated 1050 A.D. The 2 dates are 1st chronologic limits for this kind of house uncommon in Arctic (Plumet, 1969).

**Lv-469. Baie Diana II** **1360 ± 90**  
**A.D. 590**

Charred fat on an upturned slab used to support a fat or oil lamp.

**Lv-470. Baie Diana II bis** **1510 ± 65**  
**A.D. 440**

Charred fat under a sloped slab, near Lv-469, in lobby of a Dorset semi-underground house.

**Lv-471. Baie Diana III** **1300 ± 75**  
**A.D. 650**

Charred fat on a slab *in situ* used as support of lamp. *Comment* (P.P.): 3 dates agree with each other and with another sample from this site dated A.D. 500 ± 90 in Gif-sur-Yvette laboratory. They also agree with lithic industry, but not with type of building. Till now, this Dorset house type was estimated to be related to arrival of Thule tradition ca. A.D. 1000 (Plumet, 1968).

**Lv-483. Peu, New Caledonia** **270 ± 120**  
**A.D. 1680**

Human skeleton from Peu (27° 31' 40" S Lat, 167° 59' 10" E Long) in Mare I., Royalty Archipelago, New Caledonia. From cave used as ossuary in Rawa forest. Skeleton is insulated from ossuary by a small wall. Coll. 1946 and subm. by M. J. Dubois, Mus. de l'Homme, Paris. *Comment* (M.J.D.): according to tradition, the man belongs to Si Peu people diminishing in 18th century. However, skeleton shows very marked archaic aspect (Hartweg, 1948). C<sup>14</sup> date confirms that very archaic type has been preserved till recently.

**1090 ± 80****Lv-367. Mont Noir, France****A.D. 369**

Charcoal from Mont Noir at St. Jans Cappel (50° 45' N Lat, 2° 45' E Long), Dept. of Nord, France, alt 150 m. From Level 4, 1.20 to 2.40 m depth, dark sand filling layer of Neolithic pit near a dwelling house. Coll. 1967 by G. Tieghem; subm. by P. Moisin, Recherches Prehist. en Hainaut Soc. *Comment* (G.T.): assoc. lithic and ceramic industries are only Middle Neolithic. C<sup>14</sup> date is still unexplained.

**2040 ± 120****Lv-510. Russeignies****90 B.C.**

Charcoal from Russeignies (50° 45' N Lat, 3° 39' E Long), Prov. of Hainaut, Belgium, alt 30 m. Imbedded at 80 cm depth in a sandy clay layer with Roman tiles. Coll. 1970 by J. M. Vlieghe; subm. by R. Vandenhaute, Univ. of Louvain. *Comment*: C<sup>14</sup> date confirms Gallo-Roman age of site.

**560 ± 110****Lv-496. Gomery****A.D. 1390**

Charcoal (*Quercus*) id. by J. Heim, from Bleid-Gomery (49° 34' 15" N Lat, 5° 34' 54" E Long), Prov. of Luxembourg, Belgium, alt 240 m. From hearth 70 cm below ground surface. Coll. 1969 by M. Seret; subm. by J. Heim, Univ. of Louvain. *Comment* (J.H.): hearth, within a few m from "dolmen" of Gomery, was assumed of Mesolithic Seine-Oise-Marne culture (1600 to 1900 B.C.). Soil profile taken below a big stone of dolmen, pollen analyzed by J. Heim, shows a Sub-Atlantic pollen curve (40% *Carpinus*). Palynology and carbon dating agree with each other, and disprove Mesolithic assumption.

**840 ± 65****Lv-485. Haltinne****A.D. 1100**

Charcoal from Haltinne (50° 27' N Lat, 5° 04' E Long), Prov. of Namur, Belgium. Exhumed from 35 cm below tillable layer, during preliminary excavating to determine questionable disappearance of a Middle age village during 15th century. Coll. 1969; subm. by L. F. Genicot, Centre Belge d'Histoire Rurale, Louvain. *Comment* (L.F.G.): C<sup>14</sup> date agrees with analysis of potsherds and is consistent with historical data of the country.

**195 ± 75****Lv-442. Wuustwezel****A.D. 1755**

Collagen from human bones from H. Willibrord chapel (51° 23' N Lat, 4° 33' E Long) at Westdoorn near Wuustwezel, Prov. of Antwerp, Belgium. Skeleton found at 1 m depth below tile floor of chapel. Coll. 1967; subm. by K. C. Peeters, Univ. of Louvain. *Comment* (K.C.P.): historical date would be A.D. 1500 to A.D. 1660.

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