

LOUVAIN NATURAL RADIOCARBON MEASUREMENTS VII

E. GILOT

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

The following list comprises selected measurements made during 1967-68. The method is essentially the same as previously described. A 0.6 L proportional gas-counter at 3 atm CH₄ pressure is used. Ages are given relative to A.D. 1950 and half-life of 5570 yr has been assumed. The quoted error is the experimental standard deviation and includes the uncertainty on the unknown sample, the modern standard and the background.

The description of each sample is based on information supplied to the laboratory by the submitters.

Sincere thanks are due Prof. P. C. Capron for his constant guidance. Thanks are also due F. Frix for his help in operating the laboratory and to G. Michotte for maintenance of electronics. Financial support was provided by Institut Interuniversitaire des Sciences Nucléaires, Brussels.

SAMPLE DESCRIPTIONS

I. GEOLOGIC SAMPLES

Oorderen II series

Peat from Oorderen (51° 20' N Lat, 4° 19' E Long), Prov. of Antwerp, Belgium, alt 2 m. Holocene peat layer, 1.50 m thick, covered by clay of the Polders. Coll. 1963, pollen analyzed and subm. by A. Munaut, Univ. of Louvain, Lab. of Palynology and Dendrochronology. Pollen diagram is to be compared with those from Terneuzen and Zandvliet (Munaut, 1967).

2220 ± 70

270 B.C.

Lv-248. Oorderen II.1

Peat from 19 to 26 cm. Pollen diagram shows 2nd maximum of *Fagus* in beginning of Sub-Atlantic period. At Zandvliet a 2nd Sub-Atlantic maximum of *Fagus* is dated A.D. 940 (Lv-253, this list). Further investigations are necessary.

2390 ± 110

440 B.C.

Lv-249. Oorderen II.2

Peat from 40 to 45 cm. 1st Sub-Atlantic maximum of *Fagus*. Date agrees with those for same event at Terneuzen (Lv-117, Radiocarbon, 1964, v. 6, p. 163) and Zandvliet (Lv-254, this list).

3800 ± 70

1850 B.C.

Lv-250. Oorderen II.3

Peat from 60 to 65 cm. Just before Sub-Boreal decrease of *Ulmus*, not correlative with classical decrease. Same event is dated 1800 B.C. at Terneuzen (Lv-122, Radiocarbon, 1965, v. 7, p. 118) and 1840 B.C. at Zandvliet (Lv-255, this list).

Lv-251. Oorderen II.4**4750 ± 140
2800 B.C.**

Peat from 110 to 115 cm. Pollen diagram shows at this level beginning of the Sub-Boreal increase of *Ulmus*. Date a little too old according to Lv-116 (Radiocarbon, 1964, v. 6, p. 163), Lv-123 (Radiocarbon, 1965, v. 7, p. 119) and Lv-256 (this list).

Zandvliet VIII series

Peat from Zandvliet (51° 21' N Lat, 4° 17' E Long), Prov. of Antwerp, Belgium, alt 2 m. Holocene peat layer, 3.5 m thick, under clay layer of the Polders. Coll. 1962, pollen analyzed and subm. by A. Munaut. Pollen diagram is correlated with those from Terneuzen and Oorderen (Munaut, 1967).

Lv-253. Zandvliet VIII.1**1010 ± 90
A.D. 940**

Peat from 50 to 55 cm. Pollen analysis indicates 2nd Sub-Atlantic maximum of *Fagus*.

Lv-254. Zandvliet VIII.2**2350 ± 110
400 B.C.**

Peat from 100 to 105 cm, 1st Sub-Atlantic maximum of *Fagus*, dated 320 B.C. at Terneuzen (Lv-117, Radiocarbon, 1964, v. 6, p. 163) and 440 B.C. at Oorderen (Lv-249, this list).

Lv-255. Zandvliet VIII.3**3790 ± 160
1840 B.C.**

Peat from 165 to 170 cm, Sub-Boreal decrease of *Ulmus*. Date confirms Lv-122 (Radiocarbon, 1965, v. 7, p. 118) and Lv-250 (this list).

Lv-256. Zandvliet VIII.4**4480 ± 110
2530 B.C.**

Peat from 235 to 240 cm. Pollen diagram shows Atlantic-Sub-Boreal transition, with the last increase of *Ulmus*. At Terneuzen, this transition is situated between 2330 B.C. (Lv-116, Radiocarbon, 1964, v. 6, p. 163) and 2640 B.C. (Lv-123, Radiocarbon, 1965, v. 7, p. 119).

Lv-260. Solwaster**2310 ± 100
360 B.C.**

Wood from peat bog at Solwaster (50° 31' N Lat, 5° 56' E Long), Sart lez Spa, Prov. of Liege, Belgium, alt 310 m. Found at 0.60 m depth in peat layer used for thermal baths of Spa. Coll. 1965 by Hensol; subm. by J. M. Deumer, Spa Monopole Soc.

II. ARCHAEOLOGIC SAMPLES

Pincevent series, France

Charcoal sediment from fabricated hearth of open-air prehistoric dwelling place at Pincevent (48° 22' 20" N Lat, 0° 33' 20" E Long), Dept. of Seine et Marne, France. Imbedded at 3.50 m below ground surface in clay horizon, 2 m thick, overlain by sand layer. At same level, Late Mag-

dalenian industry (Leroi-Gourhan and Brezillon, 1967). Coll. 1964 and subm. by A. Leroi-Gourhan, Centre de Recherches Préhistoriques et Protohistoriques, Univ. of Paris (Sorbonne).

General Comment: samples are not pretreated. Organic matter, finely divided and adsorbed on clay, was chemically extracted by solubilization in NaOH and precipitation by HCl. Ages are thus minimum, because possible recent humic contamination is not removed. However, C-14 ages agree with archaeol.

Lv-291. Pincevent 1	10,920 ± 540
Upper level of Hearth I.	8970 B.C.
Lv-292. Pincevent 2	11,610 ± 400
Lower level of Hearth I.	9660 B.C.
Lv-293. Pincevent 3	11,310 ± 330
Hearth III, contemporary and of same structure as Hearth I.	9360 B.C.

Kinshasa series, Congo

Series dates prehistoric industries in Kinshasa plain (Van Moorsel, 1968). Parts are publ. in Radiocarbon: 1962, v. 4, p. 95; 1964, v. 6, p. 160; 1965, v. 7, p. 118. All dates agree with each other and with chronology of industries. Coll. 1965 by H. Van Moorsel, Prehistorical Mus. Lovanium Univ., Kinshasa; subm. by F. Gullentops, Univ. of Louvain.

Lv-287. Basoko	12,230 ± 250
Charcoal from valley of Basoko R. (4° 21' S Lat, 15° 17' E Long), Prov. of Kinshasa, Congo. Charcoal imbedded at ca. 1.5 m depth in muddy yellow sand 3 m thick overlying polymorphous sandstone blocks. Sample related to evolving Middle Lupembian stone industry. Just above sandstone layer, Older Lupembian industry dated > 26,000 (Lv-163, Radiocarbon, 1965, v. 7, p. 121). In clay bank of river, Tshitolian horizon dated 9730 ± 200 B.P. (Lv-164, Radiocarbon, 1965, v. 7, p. 121). Date agrees with other Middle Lupembian site at Cabu (Lv-166, Radiocarbon, 1965, v. 7, p. 121: 15,080 ± 480 B.P.)	10,280 B.C.

Lv-288. Kinsuka	3870 ± 90
Charcoal from Kinsuka (4° 20' 38" S Lat, 15° 12' 45" E Long), Prov. of Kinshasa, Congo. Imbedded at 2 m depth in 5-m-thick alluvion bank of Congo R. Nearby the top, Late Tshitolian remains. At base on red sandstone, a gravel layer with altered stone industry estimated Middle Lupembian. Sample, not directly related to prehistoric industry, gives minimum age to alluvions.	1920 B.C.

Lv-289. Kizenzu**6280 ± 130
4330 B.C.**

Charcoal from Kizenzu (4° 24' 51" S Lat, 15° 19' 51" E Long), Prov. of Kinshasa, Congo. From 60 cm depth in marshy white sand. At same level, Late Tshitolian industry and old potsherds. Date agrees with other Late Tshitolian site at Gafula (Lv-45, Radiocarbon, 1962, v. 4, p. 97, and Lv-162, Radiocarbon, 1965, v. 7, p. 121) dated 5830 ± 180 B.C. and 5750 ± 110 B.C. Potsherds probably come from intrusive pottery; stratigraphy gives no evidence.

Sampont series

Wood substructure from Sampont (49° 40' 50" N Lat, 6° 09' 55" E Long), Prov. of Luxembourg, Belgium. Squared beams found at 1.40 m depth under several alluvion layers. In same site, 6 square piles, 1.50 m long, vertically driven in ground. Coll. 1966 and subm. by J. Noel. Attributed to road joining Roman road from Reims to Treves across "Marais de Vance" (Noel, 1967). Date also gives information about gravelly alluvions of the Semois R. (Coûteaux, 1967).

Lv-345. Sampont 1966 B**250 ± 100
A.D. 1700**

Alder beam (*Alnus*, id. by J. Heim), *in situ*.

Lv-346. Sampont 1966 C**500 ± 100
A.D. 1450**

Oak beam, exhumed in 1963.

Lv-347. Sampont 1966 D**730 ± 90
A.D. 1220**

From same beam as Lv-346.

Lv-290. Chaumont-Gistoux**4040 ± 90
2090 B.C.**

Charcoal from Chaumont-Gistoux (50° 41' N Lat, 4° 42' E Long), Prov. of Brabant, Belgium. Found 1.10 m below ground surface, mixed with Michelsberg-type potsherds. Coll. 1965 by Y. Graff; subm. by A. Munaut. Charcoal is related to pollen diagram by A. Munaut, showing at this level Atlantic-Sub-Boreal transition. C-14 date agrees with archaeol. and palynological estimations.

Lv-301. Vaux sous Chèvremont**1040 ± 80
A.D. 910**

Charcoal from feudal castle of Chèvremont (50° 36' N Lat, 5° 37' E Long) at Vaux sous Chèvremont, Prov. of Liège, Belgium, alt 196 m. Sample from burned horizon in Excavation V, 66 VC 23, at 1.30 m depth. Coll. 1966 by Papeleux; subm. by J. Mertens, Univ. of Louvain, Archaeol. Inst. Castle was destroyed in 10th century; C-14 date agrees with archaeol. Another sample from same site (Lv-228, Radiocarbon, 1966, v. 8,

p. 254) is dated 540 ± 80 B.P., probably because of presence of many recent rootlets.

Abbaye des Dunes series

Samples from Abbaye des Dunes at Koksijde ($51^{\circ} 06' 20''$ N Lat, $6^{\circ} 05' 35''$ E Long), Prov. of W Flanders, Belgium, alt 10 m. Site was certainly occupied as early as High Middle ages. Abbey was definitively forsaken in A.D. 1579. Now archaeol. layer is overlain by 7 m sand. Coll. 1965-66 by P. Schittekat, Abbaye des Dunes; subm. by M. Parmentier, Univ. of Louvain.

Lv-340. Abbaye des Dunes, Sample 2 <260

Charred wood found at surface of archaeol. layer in cess-pit contemporaneous with abbey. Several glass articles were also found in pit (Parmentier, 1968).

Lv-341. Abbaye des Dunes, Sample 3 350 ± 120 A.D. 1600

Wood from pale driven 1 m deep at N side of church.

Lv-342. Abbaye des Dunes, Sample 3 bis 460 ± 100 A.D. 1490

Collagen from bone found with Lv-341.

Lv-343. Abbaye des Dunes, Sample 4 520 ± 120 A.D. 1430

Wood from humic layer, 1 m deep, date of which is assumed end of 16th century.

Lv-348. Abbaye des Dunes, Sample 1 870 ± 140 A.D. 1080

Wood from geogr. center of necropolis of High Middle ages at 2 m below archaeol. level. Central part of necropolis was again handled probably during beginning of 12th century. Date agrees with this assumption (Schittekat, 1968).

REFERENCES

Date lists:

Louvain I	Dossin, Deumer, Capron, 1962
Louvain II	Deumer, Gilot, Capron, 1964
Louvain III	Gilot, Ancion, Capron, 1965
Louvain IV	Gilot, Ancion, Capron, 1966

- Coûteaux, M., 1967, Evolution du paysage végétal du Bas-Luxembourg depuis le Pléni-Würm: thesis, Bot. Inst. Univ. Louvain, 413 p.
- Deumer, J. M., Dossin, J. M., Capron, P. C., 1962, Louvain natural radiocarbon measurements I: Radiocarbon, v. 4, p. 95-99.
- Deumer, J. M., Gilot, E., Capron, P. C., 1964, Louvain natural radiocarbon measurements II: Radiocarbon, v. 6, p. 160-166.
- Gilot, E., Ancion, N., Capron, P. C., 1965, Louvain natural radiocarbon measurements III: Radiocarbon, v. 7, p. 118-122.
- , 1966, Louvain natural radiocarbon measurements IV: Radiocarbon, v. 8, p. 248-255.

- Leroi-Gourhan, A. and Brezillon, M., 1967, L'habitation magdalénienne n° 1 de Pincevent: *Gallia-Préhistoire*, v. 9, fasc. 2, 1966, p. 263-385.
- Munaut, A., 1967, Recherches paléo-écologiques en Basse et Moyenne Belgique: *Acta Geographica Lovaniensia*, v. 6, 191 p.
- Noel, J., 1967, Découverte archéologique dans la vallée de la Semois à Sampont: *Inst. Archéol. du Luxembourg Bull.*, no. 1-2, p. 39-45.
- Parmentier, M., 1968a, Un "Krautstrunk" à Koksijde: Centre scientif. et culturel de l'Abbaye des Dunes et du Westhoek *Bull.*, no. 11, p. 120-130.
- 1968b, La datation par le carbone 14: Centre scientif. et culturel de l'Abbaye des Dunes et du Westhoek *Bull.*, no. 11, p. 172-175.
- Schittekat, P., 1968, Compte-rendu des fouilles 1966-67: Centre scientifique et culturel de l'Abbaye des Dunes et du Westhoek *Bull.*, no. 11, p. 68-79.
- Van Moorsel, H., 1968, Atlas de la Préhistoire de la Plaine de Kinshasa: *Lovanium Univ. of Kinshasa Ed.*, 287 p.