

LOUVAIN NATURAL RADIOCARBON MEASUREMENTS IX

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The C^{14} dates given below have been obtained by counting CH_4 at 3 atm pressure in a 0.6 L stainless steel counter. Details of procedure are given in the previous lists. Dates are reported in terms of the Libby half-life, 5570 ± 30 years; the errors quoted are based on the standard deviations in counting rate of samples and standards.

The descriptions and comments are essentially those of the submitters.

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SAMPLE DESCRIPTIONS

Sedentarization series, France

Samples from various localities from France subm. by M. Coûteaux, Lab. of Palynology, Univ. of Louvain, now at Research Center of Ecology and Prehistory, Saint André de Cruzières, Ardèche, France. Samples related to palynologic research on archaeol. sites, for the "Recherche co-opérative sur Programme no. 78: La Sédentarisation (CNRS)."

General Comment: samples leached with HCl but not with NaOH; the possible, but not probable, humic contamination is not removed.

Lv-384. Malaroumet II a

1290 \pm 80

A.D. 660

Peat from Malaroumet ($44^{\circ} 59'$ N Lat, $0^{\circ} 19'$ E Long) at Baleymas, Dept. of Dordogne, alt 120 m. From 501 to 511 cm below ground surface. Coll. 1968 and pollen analyzed by M. Coûteaux. *Comment:* pollen diagram shows at this level a maximum of *Carpinus* (Coûteaux, 1970). Date comparable with C^{14} dates from Belgium, where this maximum is generally dated ca. A.D. 700.

Lv-385. Malaroumet II b

1620 \pm 60

A.D. 330

Peat from 513 to 519 cm depth. *Comment:* pollen curves show an increase of *Carpinus* during a maximum of *Fagus* and *Quercus*. Date seems a little too old compared to Lv-386 and Lv-387, but confirms that the increase of *Fagus* in Aquitaine belongs to Sub-Atlantic period.

Lv-386. Malaroumet II c**1510 ± 90****A.D. 440**

Wood from 520 to 525 cm depth. *Comment*: pollen analysis shows a temporary increase of *Corylus* between 2 maxima of *Fagus*. Later than the 1st maximum of *Fagus*, confirms the Lv-387 date.

Lv-387. Malaroumet II d**1570 ± 80****A.D. 380**

Peat from 526 to 536 cm. *Comment*: dates the 1st maximum of *Fagus* lower than *Quercus* before increase of *Carpinus*. Date comparable to F I in Belgium. Some hypotheses implied an earlier increase of *Fagus* in Aquitaine (Paquereau, 1960).

Lv-388. Gaude**4060 ± 80****2110 B.C.**

Charcoal with sand from the Gaude cave (44° 36' N Lat, 4° 30' E Long) at Saint Etienne de Fonbellon, Dept. of Ardèche, alt 250 m. From Sq. 8 of the Nikitine excavating, at 8 m from upper inlet of cave, archaeol. level 28 to 42 cm below ground surface. At this level, Chalcolithic industry. Coll. 1966 by S. Nikitine. *Comment*: archaeol. estimation between 2200 and 2000 B.C. C¹⁴ date confirms estimation and helps to place on the time-scale a pollen diagram which cannot be palynologically dated because there is no pollen diagram reference yet in Ardèche.

Lv-389. Francin I**3870 ± 170****1920 B.C.**

Charcoal powder scattered in a sediment from Francin (45° 30' N Lat, 6° 01' E Long), Dept. of Savoie, alt 288 m. Horizon 4 at 90 cm depth. In the sediment, a rich Chassean industry (Malenfant *et al.*, 1970). Coll. 1967 by M. Malenfant. *Comment*: sample too poor to be treated in normal conditions is measured at 1000 mm Hg pressure. Date seems 500 yr too young in comparison with archaeol. estimation, probably because of large scattering of sample.

Lv-390. Francin 3**4300 ± 75****2350 B.C.**

Charcoal from Sq. 4, from a built hearth in Chassean dwelling site. Coll. 1967 by Malenfant. *Comment*: C¹⁴ date confirms archaeol. estimation (ca. 2400 B.C.) and helps to date the pollen diagram showing clearing and farming in the site.

Lv-391. Gare de Couze**10,900 ± 230****8950 B.C.**

Bone collagen (principally *Rangifer tarandus*) (Prat, 1962), from Couze (44° 50' N Lat, 0° 82' E Long) at Lalinde, Dept. of Dordogne, alt 40 m. Found at 20 to 40 cm below present ground surface, in the Magdalenian VI archaeol. level, said "level 2, grey-blackish principal archaeol. layer" (Fitte and Sonneville-Bordes, 1962), including the strat. Horizons B to G (Laville, 1964). Coll. 1965 by J. Guichard and M.

Coûteaux. *Comment*: bones are dissolved in cold HCl. 1N and collagen heated to 250°C before combustion. Date is averaged from 2 dates: 10,993 and 10,782 B.P. C¹⁴ date places to Alleröd-Recent Dryas transition a temperate-cold pollen sequence characterized by the sporadic occurrence of a few thermophile plants. Without local pollen diagram reference, it is not possible to check this chronologic position; nevertheless, the observed vegetation seems to exclude Alleröd and Pre-Boreal periods. From archaeol. results, an older age (500 to 1000 yr, according to Bordes) is expected, because the industry is certainly evolved but not final.

5660 ± 110

Lv-395. Chazelle, Layer VII

3710 B.C.

Ash from Chazelle (44° 18' N Lat, 4° 11' E Long) at Saint André de Cruzières, Dept. of Ardèche, alt 200 m. Layer VII of the Nikitine excavation. Neolithic hearth related to Cardial pottery from Montalut (Gard). Coll. 1967 by S. Nikitine. *Comment*: dates a pollen phase from Chazelle cave. At this level, forest component is still small on the plant scenery (30% trees, principally *Quercus*); human influence is very marked: plantago up to 6%, grain up to 8%, but vine is not yet observed. C¹⁴ date is not in contradiction with the 1st archaeol. estimation, but a total discussion will be possible only after complete study of the excavated material by Nikitine.

3240 ± 120

Lv-396. Chazelle, Layer IV

1290 B.C.

Charcoal from Layer IV of the Nikitine excavation in Chazelle cave. Archaeol. level attributed to Middle Bronze age. *Comment*: pollen diagram shows a treeless phase, where human influence is marked (*Plantago*) but grain is very rare and vine discontinuous. Date is too young according to the 1st archaeol. estimation; the results of complete study by Nikitine are expected.

Oetrang series, Luxembourg

Samples from Haed Plateau at Oetrang (49° 35' 45" N Lat, 6° 14' 30" E Long), Luxembourg. The plateau, Hettangien sandstone, is flanked by 2 valleys in which samples were found. Coll. 1932 to 1939 by N. Thill; subm. by M. Heuertz, Nat. Hist. Mus. of Luxembourg.

16,070 ± 450

Lv-466. Oetrang 1

14,120 B.C.

Horns of reindeer from sandy, stony and calcareous ground ca. 1 m thick, slipped down at foot of perpendicular rocks in Schlaederbâch Valley, SW of the Plateau.

16,770 ± 390

Lv-467. Oetrang 2

14,820 B.C.

Bones, principally horse, from filled joint in the Kakesbach valley, NE of the Plateau.

General Comment: dates on collagen extracted by sample dissolution in cold HCl-1N; NaOH-leach omitted. Fauna of Oetrange sites is characteristic of Middle and Upper Pleistocene (Ferrant *et al.*, 1942). The prehistoric industry is attributed to Upper Pleistocene (Ferrant and Thill, 1938; Baudet *et al.*, 1953). C¹⁴ dates confirm expectation and give minimum date of creation of joint.

Mios series, France

Samples from Mios, Dept. of Gironde, France. Coll. 1910 by B. Peyneau; subm. by J. P. Mohen, Aquitaine Mus., Bordeaux.

Lv-351. Tumulus de Pujaut **420 ± 85**
A.D. 1530

Charcoal from Tumulus G at Pujaut (44° 35' N Lat, 0° 57' W Long). *Comment:* C¹⁴ age is averaged from 2 dates: 414 and 423 yr. Date absolutely inconsistent with furniture of tumulus. Probably charcoal from a woodcutter fire.

Lv-352. Truc du Bourdiou **2810 ± 130**
860 B.C.

Charred acorns from Truc du Bourdiou (44° 35' N Lat, 0° 55' W Long). From Pit K at 50 cm depth under an urn-field (Peyneau, 1926). *Comment:* urn-field is late classical of 1st Iron age in Aquitaine, but potsherds found in the pits filled by charred acorns seem older and not related to 1st Iron age necropolis (Coffyn and Mohen, 1969). C¹⁴ date agrees with Last Atlantic Bronze age.

Elkab series, Egypt

Charcoal from Elkab (25° 08' N Lat, 32° 47' E Long), Prov. of Edfu, Egypt. From an Epipaleolithic hearth found in Nile R. sediments. Coll. 1968 and 1969 and subm. by P. Vermeersch, Univ. of Louvain, Lab. of Phys. Geog.

Lv-464. Elkab **7990 ± 150**
6040 B.C.

From lower layer, 70 to 80 cm below ground surface.

Lv-465. Elkab **7930 ± 160**
5980 B.C.

From upper layer, 30 to 50 cm depth.

General Comment: not leached with NaOH. Confirms date 6400 B.C. for Lv-393 (Radiocarbon, 1970, v. 12, p. 157). They are the 1st dates of prehistoric industry in Egypt between 9000 B.C. and 4600 B.C.

Lv-443. Etang de Lierneux **320 ± 70**
A.D. 1630

Oak wood from Lierneux (50° 20' N Lat, 5° 48' E Long), Prov. of Liege, Belgium. From emptying duct of a pond, at ca. 5 m depth under clayey schistous embankment. Coll. 1965 and subm. by J. Humblet,

Univ. of Liege. *Comment:* dates building of pond by monastery nearby (now Noire-fontaine farm-house) amenable to Abbey of Stavelot.

Basse Meuse series

Wood samples from former channels of Meuse R. in Prov. of Limburg, Belgium. Coll. 1967 and 1968 and subm. by E. Paulissen, Univ. of Louvain, Lab. of Phys. Geog.

General Comment: this series dates lateral shifting of Meuse R. channel and shows that river transported gravel during the Holocene (Paulissen, 1970).

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| | 7060 ± 150 |
| Lv-435. Leut, B 2 | 5110 B.C. |
| From Leut (50° 59' 23" N Lat, 5° 43' 52" E Long), alt 32 m. Overlain by 4 m alluvium. | |
| | 5080 ± 120 |
| Lv-436. Geistingen, B 3 | 3130 B.C. |
| From Geistingen (51° 08' 13" N Lat, 5° 49' 47" E Long), alt 27 m. Overlain by 4 m alluvium. | |
| | 1550 ± 70 |
| Lv-439. Geistingen, B 6 | A.D. 400 |
| From 450 m E from Lv-436, depth 5 m, in a gravel layer overlain by 1 m sandy clay. | |
| | 1130 ± 75 |
| Lv-438. Geistingen, B 5 | A.D. 820 |
| From 110 m SW from Lv-439, under 5 m alluvium. | |
| | 5940 ± 110 |
| Lv-437. Boorseme, B 4 | 3990 B.C. |
| From Boorseme (50° 56' 46" N Lat, 5° 42' 53" E Long), alt 43 m, depth 2.70 m, in gravel overlain by 1.20 m alluvium. | |
| | 3810 ± 75 |
| Lv-440. Kessenich, B 7 | 1860 B.C. |
| From Kessenich (51° 08' 47" N Lat, 5° 50' 56" E Long), alt 27 m, under 4 m alluvium. | |
| | 1050 ± 75 |
| Lv-441. Aldeneik, B 8 | A.D. 900 |
| From Aldeneik (51° 06' 10" N Lat, 5° 49' 27" E Long), alt 29 m, depth 4 m. From alluvial gravel depth 2 m. | |

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