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INSTITUT ROYAL DU PATRIMOINE ARTISTIQUE RADIOCARBON DATES IV

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This list includes the results of datings made during 1970-71. The methods of measurements are the same as described in R., 1971, v. 13, p. 29-31.

SAMPLE DESCRIPTIONS

I. GEOLOGIC SAMPLES

IRPA-97 I. Heusden-Gent — **1195 ± 75** (**A.D. 755**)

Peat from Heusden-Gent, E Flanders, Belgium (51° 2′ 30″ N Lat, 3° 45′ 30″ E Long), at 4m alt. Coll. 1970 by C. Verbruggen, Univ. Ghent, Belgium. No NaOH pretreatment.

IRPA-97 II. Uitbergen — **1585 ± 80** (**A.D. 365**)

Peat from Uitbergen, E Flanders, Belgium (51° 0′ 40″ N Lat, 31° 57′ 48″ E Long), at 3.5m alt. Coll. 1970 by C. Verbruggen. No NaOH pretreatment.

General Comment (C.V.): control of palynologic dates, used for study of Sub-Boreal–Sub-Atlantic peat formation.

IRPA-108. Lubefu — **23,780 ± 535** (**21,830 B.C.**)

Clay with small pieces of plant material, from Lubefu valley, Zaïre (4° 35′ S Lat, 24° 15′ E Long). Coll. 1941 by P. Snock and subm. 1970 by J. Lepersonne, Mus. royal de l'Afrique centrale, Tervuren, Belgium. *Comment* (J.L.): date resolves interesting geologic and stratigraphic problem for prehistorians.

IRPA-122. Villa Angostura — **1600 ± 90** (**A.D. 350**)

Charcoal from Villa Angostura, Neuquen, Argentina (40° 39′ 40″ S Lat, 71° 42′ 40″ W Long), at 950m alt., in volcanic ash. Coll. 1968 by H. Laya and subm. 1970 by W. DeBreuck, Lab. Geol., Univ. Ghent, Belgium.

IRPA-123. Puerto Varas — **25,320 ± 570** (**23,370 B.C.**)

Charcoal from Puerto Varas, Llanquihue, Chili (41° 19′ S Lat, 73° 01′ W Long), at 50m alt., in volcanic ash. Coll. 1970 by R. Langohr and subm. 1970 by W. DeBreuck.

IRPA-124. Puerto Varas — **24,830 ± 560** (**22,880 B.C.**)

Wood from Puerto Varas, Llanquihue, Chili (41° 19′ S Lat, 73° 01′ W Long), at 50m alt. Coll. 1970 by R. Langohr and subm. 1970 by W. DeBreuck.

General Comment (W.DeB.): dates are very interesting because there are no geologic data about these countries; dates used for study of last ice period and volcanic ash.

II. WATER SAMPLE

This laboratory has begun dating water samples. Our method is based on those used in other laboratories (Broecker, 1959; Berger, 1965). CO_2 is extracted from water in a continuous flow extraction apparatus that consists of a 5-necked flask of 3 L. In the 1st is placed a heat exchanger, in the 2nd a funnel with concentrated sulfuric acid, in the 3rd a thermometer, in the 4th is introduced a stream of carrier gas N_2, CO_2 is removed through the 5th. The flask is heated in an electric muffle oven to ca. 80° to 90°C. Water in the tank is forced into the flask in continuous flow through N_2 over-pressure; the waste water is run through the heat exchanger, against incoming water, preheating it and is removed by a peristaltic pump. The rate of peristaltic pumping and the pressure of N_2 in the tank are regulated so that water level in the flask is always the same. Water is acidified in the flask, at a PH between 1 and 3 (Thymol Blue indicator). CO_2 is removed with the stream of carrier gas N_2 in 2 bubblers with silver nitrate and then in 2 with sulfochromic acid. The recovery of CO_2 is ca. 90%. Purified CO_2 is transformed to methane and counted. All CO_2 is removed from 50 L water after 4 hr. Water quantity is variable and depends on CO_2 present. In our case 50 L was enough.

4125 ± 125

IRPA-30. Vlissegem **2170 B.C.**

Ground water from Vlissegem, W Flanders, Belgium (51° 14′ 23″ N Lat, 3° 07′ 03″ E Long). Coll. 1972 by W. DeBreuck.

III. ARCHAEOLOGIC SAMPLES

11,350 ± 340

IRPA-92. Buvuma **9400 B.C.**

Charcoal from Buvuma I., Uganda (0° 15′ N Lat, 33° 20′ W Long), at 1162m alt. and 0.80 to 0.90m depth. Coll. 1968 and subm. 1970 by F. Van Noten, Mus. royal de l'Afrique centrale, Tervuren, Belgium. *Comment* (F.V.N.): sample from cave 28.5m above level of Lake Victoria at SW end of Buvuma I. At depth ca. 0.50m, uncontaminated Late Stone age artifacts (made of white vein quartz) were found. The excavation was carried out in spits of 0.10m; radiocarbon samples could be taken from each spit. Confirms dates of Groningen lab.

Meer series

Two pieces of charcoal from Upper Paleolithic (Tjongerian) site, near Meer, prov. Antwerp, Belgium (51° 27′ N Lat, 4° 45′ E Long). Coll. 1968 and subm. 1970 by F. Van Noten (1967).

IRPA-93 I. Meer II-2 — **7080 ± 290** / **5130 B.C.**

IRPA-93 II. Meer II-3 — **8025 ± 315** / **6075 B.C.**

General Comment: dates are much younger than archaeologic sites but confirm dates of Groningen lab. (GrN-4960, -4961, -5706).

IRPA-106 II. Kamoa — **760 ± 40** / **A.D. 1190**

Charcoal from Kamoa, Katanga, Zaïre (10° 24′ 54″ S Lat, 25° 9′ 19″ E Long), at 1030m alt. Coll. 1970 by D. Cahen, Mus. royal de l'Afrique centrale, Tervuren, Belgium. *Comment* (D.C.): sample from Iron age oven (underlayer). Archaeol. date: 5th to 15th centuries.

Pessinus series

Samples from Roman excavations at Pessinus, Eskisehir, Turkey. Coll. 1970-71 by G. Stoops, Geol. Inst., Univ. Ghent, Belgium.

Group I

Calcareous rock from Istikhal Bäge near Ballihisar (39° 24′ N Lat, 21° 26′ E Long). Samples from stratified deposit in water channel; 3 from lower part, 1 from upper. Pretreatment with HCl 1% until 40% weight loss.

IRPA-121. — **2105 ± 110** / **155 B.C.**

From 0 to 5mm depth, measured upward.

IRPA-120. — **1920 ± 100** / **A.D. 30**

From 5 to 17mm depth, measured upward.

IRPA-119. — **1790 ± 95** / **A.D. 160**

From 17 to 39mm depth, measured upward.

IRPA-118. — **2075 ± 105** / **125 B.C.**

From 2 to 7mm depth, measured downward. The 1st mm was removed to avoid contamination by algae. Date is too old but contamination by granite and marble is possible.

Group II

Charcoal from Ballihisar (39° 22′ N Lat, 31° 38′ E Long). Samples from foundation of Roman temple.

1730 ± 120

IRPA-126. **A.D. 220**

Charcoal from a fire near burned tiles and plaster. Because upper layer of fire has a colluvial origin, contamination by roots is possible.

2170 ± 110

IRPA-127. **95 B.C.**

Charcoal from calcareous ground between W wall tower and temple foundations. No contamination.

General Comment: results of 2 groups are used to date Pessinus sites.

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