

GIF-SUR-YVETTE NATURAL RADIOCARBON MEASUREMENTS I

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The following list shows the age measurements carried out from 1958 to March 1963 at the Radiocarbon Laboratory at Gif-sur-Yvette. This laboratory has been replaced by a new one whose first measurements are also given in this volume.

It was equipped with 2 proportional counters similar to those used in Saclay laboratory and operating with 1 atm of pure CO₂. These counters were shielded by 15 cm lead, 5 cm iron and 1.5 cm of mercury.

Data have been calculated on the basis of a C¹⁴ half-life of 5570 yr, in agreement with the decision of the Fifth Radiocarbon Dating Conference. As a modern carbon standard, wood taken from old furniture was used. This standard was found equivalent to 95% of the activity of the NBS oxalic acid, if a 2% Suess-effect is adopted for this wood.

SAMPLE DESCRIPTIONS

I. ARCHAEOLOGIC SAMPLES

A. Southern France

Perte du Cros series, Saillac, Lot

Burnt wheat from Hearth III at entrance of cave of Perte du Cros, Saillac, Lot (44° 20' N Lat, 1° 37' E Long). Coll. 1957 by A. Calan; subm. by J. Arnal, Treviers, Herault.

Gsy-35 A. Perte du Cros **4210 ± 150**
2260 B.C.

Gsy-35 B. Perte du Cros **4800 ± 130**
2850 B.C.

General Comment: associated with Middle Neolithic of Chasséen type (Galan 1958); Gsy-35 A may be contaminated. There are Heidelberg unpublished dates from this site.

Roucadour series, Lot

Burnt wheat from stratified Neolithic levels in Doline de Roucadour, Thémînes, Lot (44° 50' N Lat, 1° 30' E Long). Coll. 1956 by A. Niederlender; subm. by Dr. J. Arnal (Coursaget *et al.*, 1960).

Gsy-36 A. Roucadour A **5940 ± 150**
3990 B.C.
From Early Neolithic level.

Gsy-36 B. Roucadour B **5190 ± 140**
3240 B.C.
From Middle Neolithic B 1 level.

Gsy-36 C. Roucadour C **4280 ± 125**
2330 B.C.
From Middle Neolithic B 2 level. *Comment:* somewhat contaminated.
General Comment: there are Heidelberg unpublished dates from this site.

Grotte de l'Église series, Var

Charcoal from Neolithic site at 60 m in interior of Grotte de l'Église, Baudinard, Var -Gorges du Verdon (43° 45' N Lat, 6° 15' E Long). Coll. 1959 and subm. by J. Courtin, Centre de la Recherche Scientifique, Marseille, France (Courtin, 1959).

Gsy-112 A. Grotte de l'Église, Layer 5 **4510 ± 125**
2560 B.C.
Associated with end of Middle Neolithic (Chasséen) ceramics.

Gsy-112 B. Grotte de l'Église, Layer 9 **4825 ± 130**
2875 B.C.
Associated with Middle Neolithic (Chasséen) ceramics.
General Comment: in good range of dates for meridional Chasséen Neolithic.

Gsy-77. Trou Arnaud, Drôme **4140 ± 135**
2190 B.C.
Wheat and wood from cave called Trou Arnaud, Saint-Nazaire-le-Désert, Drôme (44° 34' N Lat, 5° 17' E Long), Coll. 1958 and subm. by A. Blanc, C.N.R.S. *Comment:* associated with ceramics and artifacts of Middle Neolithic Chasséen style. A somewhat older date would have been expected (Blanc, 1956).

Gsy-57. La Bouissière, Var **3975 ± 130**
2025 B.C.
Patch of resin and charcoal, from under the under-paving in the megalithic cist of La Bouissière, Cabasse, Var (43° 25' N Lat, 6° 15' E Long). Coll. 1950 and subm. by G. Bérard, Direction de la Circonscription des Antiquités Préhistoriques, Draguignan, Var. *Comment:* agrees with grave goods of the tomb, of Late Neolithic or Chalcolithic appearance (Bérard, 1954).

Gsy-116. La Grotte Murée, Montpezat (Basses-Alpes, France) **3960 ± 175**
2010 B.C.
Charcoal from Layer 6 from sealed stratigraphy of la Grotte Murée (Courtin, 1962), Montpezat, Basses-Alpes -Gorges du Verdon (43° 45' N Lat, 6° 15' E Long). Coll. 1960 and subm. by J. Courtin. *Comment:* in very good agreement with associated campaniform beakers.

Gsy-37. Les Côtes de Roquefort, Aveyron **3930 ± 150**
1980 B.C.

Carbonized acorns from Chalcolithic ossuary in cave of Les Côtes de Roquefort, Saint-Romé de Cernon, Aveyron (44° 0' N Lat, 2° 55' E Long). Coll. 1947-1950 and subm. by L. Balsan, Direction de la Circonscription des Antiquités Préhistoriques de Clermont-Ferrand. *Comment:* dates nicely the Chalcolithic of the Grands Causses.

Gsy-38. Aven du Gendarme, Aveyron **3890 ± 150**
1940 B.C.

Charcoal from falling-in of *aven*-cave called the Aven du Gendarme, La Roque Sainte-Marguerite, Aveyron (44° 05' N Lat, 3° 10' E Long). Coll. 1959 and subm. by L. Balsan. *Comment:* agrees with ceramics of the Chalcolithic of the Grands Causses type.

Gsy-120. Castello de Ceccia 3, Porto-Vecchio, Corsica **3295 ± 110**
1345 B.C.

Charcoal from lower layer of archaeological filling of the torrean monument of Castello de Ceccia, Porto-Vecchio, Corsica (41° 35' N Lat, 9° 15' E Long). Coll. 1961 and subm. by R. Grosjean, C.N.R.S., Paris. *Comment:* this type of monument is of the series of Corsican *torre* most like the archaic nuraghi of Sardinia.

Gsy-58. Filitosa, Corsica **3150 ± 150**
1200 B.C.

Charcoal from hearth in Cella I of a circular torrean monument of the complex site of Filitosa, Sollacaro, Corsica (41° 45' N Lat, 8° 0' E Long). Coll. 1959 and subm. by R. Grosjean. *Comment:* comparable to other dates of Corsican *torre* (Grosjean, 1961).

Tappa series, Corsica

Charcoal from interior of circular torrean monument (Grosjean, 1962), Tappa, Porto-Vecchio, Corsica (41° 35' N Lat, 9° 15' E Long). Coll. 1960 and subm. by R. Grosjean.

Gsy-94 A. Tappa I **2630 ± 200**
680 B.C.

Last occupation of the monument.

Gsy-94 B. Tappa II **3865 ± 125**
1915 B.C.

Sample from near foundations of the monument. Probably dates an occupation preceding the monument.

General Comment: to be compared with the other dates of Corsican *torre*.

Malpas series

Charcoal from the Oppidum of Malpas, Soyons, Ardèche (44° 50' N Lat, 4° 45' E Long). Coll. and subm. by A. Blanc.

Gsy-141. Malpas, Level 2	2060 ± 105 110 B.C.
Gsy-142. Malpas, Level 4	2230 ± 105 280 B.C.
Gsy-143. Malpas, Level 6	2470 ± 105 520 B.C.
Gsy-144. Malpas, Level 7	2580 ± 110 630 B.C.

General Comment: a site with occupation during whole Iron age.

Abri du Facteur series, Tursac, Dordogne

Charred bone from hearths from the Abri du Facteur, Tursac, Dordogne (45° 0' N Lat, 1° 5' E Long) (Delporte, 1962). Coll. 1957-1959 and subm. by H. Delporte, C.N.R.S., 19 Avenue de la Libération, Montbrison, Loire.

Gsy-67. Abri du Facteur G 1 + 2	27,890 ± 2000 25,940 B.C.
Layer G, with Aurignacian I industry.	

Gsy-69. Abri du Facteur B 1 3 + 4	23,180 ± 1500 21,230 B.C.
Layer B 1, with Upper Perigordian industry.	

General Comment: date Gsy-69 corresponds to layer containing a Venus; date Gsy-67 may be younger than expected.

B. North, East, Central France

Gsy-39. La Brèche au Diable, Calvados	4790 ± 150 2840 B.C.
Charcoal from Neolithic hearth (No. 2), situated inside rampart of promontory-camp of La Brèche au Diable, Mont-Joly, Soumont-Saint-Quentin, Calvados (48° 55' N Lat, 0° 5' W Long). Coll. 1954 and subm. by B. Edeine, C.N.R.S., Caen. <i>Comment:</i> fits with the ceramics, of Chasséen type (Edeine, 1960).	

Gsy-97. Fort-Harrouard, Eure et Loir	4400 ± 125 2450 B.C.
Charcoal from Level I, Hearths 128 and 133, from site of Fort-Harrouard, Sorel-Moussel, Eure-et-Loir (48° 45' N Lat, 1° 25' E Long). Coll. about 1930 by Abbé J. Philippe and subm. by G. Bailloud, C.N.R.S., Paris. <i>Comment:</i> dates the Middle Neolithic level, of Chasséen affinities, of this celebrated settlement (Bailloud, 1964).	

Gsy-32. Les Matignons, Charente	4570 ± 200 2620 B.C.
Charcoal from Level C 3 of the filling of the interior ditch of Neolithic camp of Les Matignons (Burnez <i>et al.</i> , 1958), Juillac-le-Coq, Charente (45° 40' N Lat, 0° 15' W Long). Coll. 1958 and subm. by C. Burnez,	

41 rue de Bellefonds, Cognac, Charente. *Comment*: dates end of Chasséen utilization of the site.

4470 ± 200

Gsy-49. Montagne de Lumbres, Pas de Calais 2520 B.C.

Charcoal from Layer B of Neolithic habitation site of La Montagne de Lumbres, Lumbres, Pas-de-Calais (50° 40' N Lat, 2° 15' E Long). Coll. 1958 and subm. by Dom R. Prévost, St. Omer, Pas-de-Calais. *Comment*: date agrees with Chasséen Middle Neolithic ceramics and industry (Prévost, 1962).

4435 ± 200

Gsy-71. Biard, Charente 2485 B.C.

Charcoal from bottom of the filling of the ditch of Neolithic camp of Biard, Segonzac, Charente (45° 40' N Lat, 0° 15' W Long). Coll. 1959 and subm. by C. Burnez. *Comment*: this camp belongs to the Peu-Richard culture.

3750 ± 150

Gsy-114. Les Mournouards II, Marne 1800 B.C.

Charcoal from artificial sepulchral cave, Les Mournouards, Le Mesnil-sur-Oger, Marne (48° 50' N Lat, 4° 0' E Long). Coll. 1960 and subm. by A. Leroi-Gourhan, Faculté des Lettres, Paris. *Comment*: associated with Late Neolithic industry of Seine-Oise-Marne culture (Leroi-Gourhan, 1962).

3320 ± 110

Gsy-91. Cys-la-Commune, Aisne 1370 B.C.

Charcoal from a sort of "henge-monument" with concentric circles, inner ditch, on a terrace on the river Aisne (Jouillié, 1962), Cys-la-Commune, Aisne (49° 25' N Lat, 3° 35' E Long). Coll. 1960 and subm. by H. Jouillié, 3, rue du Docteur Brocard, Vailly-sur-Aisne. *Comment*: Middle Bronze age.

2930 ± 250

Gsy-110. Videlles, Locus 5, Seine-et-Oise 980 B.C.

Charcoal from settlement of les Roches (Bailloud, 1958), Videlles, Seine-et-Oise (48° 25' N Lat. 2° 30' E Long). Coll. and subm. by G. Bailloud. *Comment*: sample was expected to come from a Late Neolithic level, but it appears to correspond to Middle and Late Bronze age material above it.

3215 ± 150

Gsy-85. Cronenbourg, Bas-Rhin 1265 B.C.

Carbonized apples and wood from a potter's kiln, in an underground excavation, Cronenbourg, Strasbourg, Bas-Rhin (48° 35' N Lat, 7° 45' E Long). Coll. 1959 and subm. by J. J. Hatt, Faculté des Lettres, Strasbourg. *Comment*: the ceramics from the potter's kiln correspond to Late Bronze age II of E France, expected age between 1050 and 950 B.C.

- Gsy-62. La Viaube, Vienne** **3075 ± 175**
1125 B.C.
Charcoal, from Middle Bronze Age settlement, La Viaube, Jaunay-Clan, Vienne (46° 40' N Lat, 0° 20' E Long) (Coursaget *et al.*, 1961). Coll. 1948 and subm. by M. Taillet, Massy-Verrières, Seine-et-Oise. *Comment*: in good agreement.
- Gsy-84. Charmodot, Côte-d'Or** **2510 ± 100**
560 B.C.
Charcoal from hearth in a barrow at Charmodot, Villecomte, Côte-d'Or (47° 20' N Lat, 5° 07' E Long). Coll. 1960 and subm. by R. Ratel, 8 Bd. Thiers, Dijon, Côte-d'Or. *Comment*: this barrow contains sepulchres between the Late Bronze age and early La Tène period; its internal structures are very complex (Ratel, 1965).
- Gsy-113. Royat, Puy-de-Dôme** **2110 ± 100**
160 B.C.
Carbonized wood from ruins of a burnt building, on S side of Puy Chateix, Royat, Puy-de-Dôme (45° 45' N Lat, 3° 05' E Long). Coll. 1961 and subm. by P. Fournier, Director of Historic Antiquities, Clermont-Ferrand. *Comment*: no archaeological clue to date of building.
- Gsy-117. La Bellière, Maine-et-Loire** **1760 ± 95**
A.D. 190
Wood from a tank, Gallo-Roman mines of La Bellière, Saint-Pierre-Montlimart, Maine-et-Loire (47° 15' N Lat, 1° 0' W Long). Coll. 1900 by A. Poilane; subm. by A. Champigneulle, 9 R. d'Anjou, Leste, Maine-et-Loire. *Comment*: in good agreement (Giot, 1963).
- Gsy-60. Gorges, Manche** **1500 ± 100**
A.D. 450
Wood from a dug-out canoe, found at depth of 2.10 m to 2.40 m in peat-bog of Gorges, in Carentan marsh, Manche (49° 20' N Lat, 1° 15' W Long). (Coll. 1956 and subm. by H. Elhai, Mus. Natl. d'Histoire Naturelle, Paris. *Comment*: dug-out appears to be late Gallo-Roman or Dark-age.
- Gsy-48. La Garnache, Vendée** **970 ± 100**
A.D. 980
Charcoal from fire in central pit of a feudal motte, La Garnache, Vendée (46° 50' N Lat, 1° 45' W Long). Coll. 1959 and subm. by F. Eygun and P. R. Giot, Laboratoire d'Anthropologie Préhistorique Rennes (Ille-et-Vilaine). *Comment*: in the expected range of dating.
- Gsy-41. Alençon, Orne** **850 ± 100**
A.D. 1100
Wood from medieval fortification from Alençon, Orne (48° 25' N Lat, 0° 5' E Long). Subm. 1958 by du Mesnil du Buisson, 63, rue de Varenne, Paris.

575 ± 95

Gsy-45. Richemont, Charente**A.D. 1375**

Charcoal from souterrains of a castle built during 11th century, and sacked in 1179, Richemont, Charente (45° 40' N Lat, 0° 20' W Long). Coll. 1958 by Abbé J. Boucherit; subm. 1959 by J. Hennessy, Ecole Polytechnique, Paris. *Comment:* agrees with numerous sherds of 13th and 14th century found in these souterrains, possibly used for potter's workshop after destruction of castle.

11,230 ± 500

Gsy-34. La Garenne, Indre**9280 B.C.**

Charcoal cinders and charred bone from a lower hearth from Magdalenian site of La Garenne (Allain, 1961), Saint-Marcel, Indre (46° 34' N Lat, 1° 30' E Long). Coll. 1953 and subm. 1959 by J. Allain, 15 Bd. Gambetta, Bourges, Cher. *Comment:* this hearth was stratigraphically between those dated L 399 D and C577-578-579.

C. Western France: Brittany

5195 ± 300

Gsy-64. Ile Bono, Côtes du Nord**3245 B.C.**

Charcoal from bottom of chamber of a ruined passage grave, Ile Bono, Les Sept-Iles, Perros-Guirec, Côtes-du-Nord (48° 50' N Lat, 3° 30' W Long). Coll. and subm. 1959 by P. R. Giot. *Comment:* one of oldest passage graves with Middle Neolithic ceramics.

Curnic series I, Guissény, Finistère

Charcoal from submerged Neolithic settlement site on beach of Curic, Guissény, Finistère (48° 35' N Lat, 4° 25' W Long). Coll. and subm. 1959 by P. R. Giot.

4600 ± 200

Gsy-47 A. Curnic**2650 B.C.**

Charcoal disseminated in the old ground and coll. in 1959.

5980 ± 150

Gsy-47 B. Curnic**4030 B.C.**

Charcoal from a single hearth, coll. in 1960.

General Comment: the settlement site contains ceramics and implements from the Middle and possibly early Late Neolithic. Date GRN-1966, 5340 ± 60 (Groningen IV), and date Gsy-47 A span the evidence of the artifacts. Date Gsy-47 B is a hint to the presence of Early Neolithic populations on this coast.

Mané-Miguel series, Carnac, Morbihan

Charcoal from small cists in interior of huge mound of Mané-Miguel (Mont-Saint-Michel), Carnac, Morbihan (47° 35' N Lat, 3° 05' W Long). Coll. 1900-1906 by Z. Le Rouzic; subm. by P. R. Giot.

Gsy-89. Mané-Miguel Y **4980 ± 150**
3030 B.C.

Gsy-90. Mané-Miguel Z **8800 ± 300**
6850 B.C.

General Comment: Gsy-89 corresponds to beginning of Middle Neolithic, and goes well with present ideas about date of large mounds of the Carnac group. But Gsy-90 is very extraordinary, and can only be explained by the use of sub-fossil wood from a peat-bog for some ritual fire.

Compare with date Sa-96 from central funeral vault of same monument, a date rather older than could be expected: 5840 ± 300 (Saclay I).

Gsy-56. Le Restudo, Côtes-du-Nord **4830 ± 150**
2880 B.C.

Cinders and charcoal from a layer, covered by 1.20 m of earth, near chapel of Restudo, Saint-Pever, Côtes-du-Nord (48° 25' N Lat, 3° 5' W Long). Coll. and subm. 1959 by P. R. Giot. *Comment:* shows site to be a Neolithic habitation place.

Gsy-111. Kerléven, Finistère **4825 ± 125**
2875 B.C.

Charcoal from chamber of a passage-grave with compartmented chamber, at Saint-Laurent, Kerléven, La Forêt-Fouesnant, Finistère (47° 55' N Lat, 3° 55' W Long). Coll. and subm. 1961 by J. L'Helgouach, Laboratoire d'Anthropologie, Rennes. *Comment:* associated with Middle Neolithic ceramics, in good agreement with other dates for passage graves (L'Helgouach, 1965).

Gsy-88. Mané-Kernaplaye, Morbihan **4585 ± 200**
2635 B.C.

Charcoal from passage grave of Mané-Kernaplaye, Saint-Philibert, Morbihan (47° 35' N Lat, 3° 05' W Long). Coll. 1938 by Z. Le Rouzic; subm. 1960 by P. R. Giot. *Comment:* these collective tombs having being in use during long periods of the Neolithic, it is always the oldest date which gives the nearest approximation for the construction (Giot, 1962).

Gsy-31. Cojoux, Ille-et-Vilaine **4270 ± 120**
2320 B.C.

Charcoal from a Late Neolithic long barrow, La Croix-Saint-Pierre, Grée de Cojoux, Saint-Just, Ille-et-Vilaine (47° 40' N Lat, 2° 0' W Long). Coll. 1953-1954 and subm. by P. R. Giot, 1958. *Comment:* agreement with the grave goods.

Gsy-73. Kerméné, Morbihan **4030 ± 110**
2080 B.C.

Charcoal from a Late Neolithic barrow, Kermené, Guidel, Morbihan (47° 45' N Lat, 3° 30' W Long). Coll. 1958 and subm. 1960 by P. R. Giot. *Comment:* associated with Late Neolithic ceramics and artifacts, and fragments of a broken statue menhir.

Curnic series II, Guissény, Finistère

Charcoal from hearths in pits corresponding to a Late Bronze age salt-pan industry, submerged site on the beach of Curnic, Guissény, Finistère (48° 35' N Lat, 4° 25' W Long). Coll. and subm. 1962 by P. R. Giot.

3220 ± 110

Gsy-47 C. Curnic **1270 B.C.**
W pit.

Poulguen series, Finistère

Wood and charcoal from T-shaped passage grave, under a barrow, of Poulguen, Penmarc'h, Finistère (47° 45' N Lat, 4° 20' W Long). Coll. by A. du Châtellier, 1862, and A. Martin and P. du Châtellier, 1902; subm. 1959 by P. R. Giot.

1460 ± 105

Gsy-55 A. Poulguen 1902 **A.D. 490**

Charcoal from a secondary use of the tomb. *Comment:* site has given some Gallo-Roman material.

3560 ± 120

Gsy-55 B. Poulguen 1862 **1610 B.C.**

Wood from a sort of flooring.

General Comment: agrees with a very late Neolithic (Secondary Neolithic) dating of this special monument (Giot, 1961).

3295 ± 150

Gsy-86. Kervellerin, Morbihan **1345 B.C.**

Charcoal from Middle Bronze Age barrow, Kervellerin, Cléguer, Morbihan (47° 50' N Lat, 3° 20' W Long). Coll. and subm. 1960 by P. R. Giot. *Comment:* date A comes from charcoal found in the funeral vault itself; date B from charcoal disseminated in earth of the barrow.

2520 ± 110

Gsy-42. Saint-Bugan, Côtes-du-Nord **570 B.C.**

Charcoal from hearth next to a hoard of 800 socketed axes of Late Bronze age, Saint-Bugan, Loudéac, Côtes-du-Nord (48° 10' N Lat, 2° 45' W Long). Coll. and subm. 1959 by P. R. Giot. *Comment:* good proof that Late Bronze age armorican socketed axes are contemporary with Early Iron age elsewhere.

Grée de Carate series, Morbihan

Charcoal from small barrows on Grée de Carate, Pluherlin, Morbihan (47° 40' N Lat, 2° 20' W Long) (Giot, 1960). Coll. 1957-1958 by A. Lepart; subm. 1958 by P. R. Giot.

Gsy-33. Grée de Carate No. 9 **2460 ± 150**
510 B.C.

Gsy-46. Grée de Carate No. 15 **2540 ± 150**
590 B.C.

General Comment: confirms that these barrows are Late Bronze age and Early Iron Age. To be compared with date GRN-1973, 2650 ± 60 (Groningen IV).

Gsy-107. Kervernier, Côtes-du-Nord **2635 ± 175**
685 B.C.

Charcoal from artificial souterrain of the Iron age, Kervernier, Pluzunet, Côtes-du-Nord (48° 35' N Lat, 3° 20' W Long). Coll. 1960 by J. R. Geoffroy; subm. 1961 by P. R. Giot. *Comment:* several hundred years older than expected.

Gsy-63. Kervénarc'hant, Finistère **2565 ± 150**
615 B.C.

Charcoal from an Iron age souterrain, Kervénarc'hant, Pleyber-Christ, Finistère (48° 25' N Lat, 3° 55' W Long). Coll. and subm. 1959 by P. R. Giot. *Comment:* a few centuries older than expected.

Gsy-87. Kerlescan, Morbihan **2360 ± 110**
400 B.C.

Carbonized acorns from the long barrow at Kerlescan Carnac, Morbihan (47° 35' N Lat, 3° 05' W Long). Coll. 1942 by M. Jacq; subm. 1960 by P. R. Giot. *Comment:* a Neolithic date was expected.

Barnenez series, Finistère

From the reutilization of the different passage-graves of the great cairn or Barnenez, Plouézoch, Finistère (48° 40' N Lat, 3° 51' W Long). Coll. 1955-1956 and subm. 1962 by P. R. Giot.

Gsy-30. Barnenez E **2200 ± 200**
250 B.C.
Burnt grains and plants.

Gsy-147. Barnenez C **2690 ± 105**
740 B.C.
Charcoal.

General Comment: large collective tombs such as the 11 passage graves of the cairn of Barnenez have been revisited at various times.

D. Asia

Ras-Shamra series, Syria

Charcoal from monuments of Ras Shamra, North Syria (35° 37' N Lat, 35° 48' E Long). Coll. 1958, 1960 and subm. 1961 by C. F. A. Schaeffer, College de France, Paris.

Gsy-102. Ras Shamra 60 No. 7 **9030 ± 400**
7080 B.C.

From old Neolithic level, probing of the Temple of Baal, topographic point 125, depth 12.15 m. *Comment:* 1000 yr older than expected from P-459 and P-458 V (Pennsylvania VI).

Gsy-104. Ras Shamra 58 No. 11 **3070 ± 200**
1120 B.C.

From Late Bronze age III level, dromos of Tomb I, S small palace of Ugarit. *Comment:* agrees with P-462.

Mundigak series, Afghanistan

Charcoal from site of Mundigak (Casal, 1961), near Kandahar, Afghanistan (32° 30' N Lat, 65° 30' E Long). Coll. 1956-1958 and subm. 1959 by J. M. Casal, C.N.R.S., Paris.

Gsy-50. Mundigak CCCXXIV **3945 ± 150**
1995 B.C.
Period I, Layer 5 (Neolithic).

Gsy-51. Mundigak CCIV **2995 ± 110**
1045 B.C.
Period III, Layer I.

Gsy-52. Mundigak CCCII **3480 ± 115**
1530 B.C.
Period II, Layer 1.

Gsy-53. Mundigak CXXXII **4185 ± 150**
2235 B.C.
Period III, Layer 5.

General Comment: there are numerous difficulties in this sequence of dates.

Enkomi-Alasia series, Cyprus

Charcoal from site Enkomi-Alasia, near Famagouste, Cyprus (35° 07' N Lat, 33° 57' E Long. Coll. 1959-1960 and subm. 1961 by C. F. A. Schaeffer.

Gsy-105. Enkomi 59 No. 13 **2850 ± 200**
900 B.C.

From topographical point 239, depth 2 m, extreme end of Late Bronze age, Late Cypriot III ("close style" of the Mycenaean chronology). *Comment:* younger than expected.

Gsy-106. Enkomi 60 No. 14 **3280 ± 110**
1330 B.C.

From topographic point 512, Z.74, depth 1.20 m, Cypriot Iron age I (corresponding to Mycenaean III C 1/2). *Comment:* slightly older than expected.

General Comment: samples 105 and 106 appear to have been inverted.

E. Africa

Tchad series, Africa

Charcoal from habitation mounds in Chari delta, 17 km N of Fort-Lamy, Tchad (12° 30' N Lat, 15° E Long). Coll. and subm. 1960 by J. P. Lebeuf, C.N.R.S., Paris.

Gsy-92. Maguira, Tchad, No. 148 **250 ± 90**
A.D. 1700

Gsy-93. Mdaga, Tchad, No. 69 **165 ± 100**
A.D. 1785

Gsy-109. Tedgaoust No. 2, Mauritania **145 ± 100**
A.D. 1805

Charcoal from Tedgaoust, Pit 1 bis, Mauritania (17° N Lat, 12° W Long). Coll. and subm. by J. Devisse, 1961, Faculté des Lettres, Dakar, Sénégal. *Comment*: result identical to Sa-219: 150 ± 100 (Saclay I).

F. South and Central America

Sambaqui series, Paraña, Brasil

Charcoal from sambaqui kitchen-middens, Paraña, Brasil. Coll. 1958 and subm. 1960 by A. Laming-Emperaire, Faculté des Lettres, Paris.

Gsy-79. Sambaqui Guaraguassu, Paraña **4220 ± 200**
2070 B.C.

Gsy-78. Sambaqui José Viéra VIII **6685 ± 175**
4735 B.C.

Gsy-82. Sambaqui José Viéra VI **3435 ± 175**
1485 B.C.

Gsy-80. Sambaqui José Viéra IV **5240 ± 150**
3290 B.C.

Gsy-81. Sambaqui José Viéra II **1380 ± 150**
A.D. 570

Gsy-61. Mixco Viejo, Gautemala **825 ± 150**
A.D. 1125

Charcoal from bottom of a wall, near and under Structure A 9, ruins of Mixco Viejo, Guatemala (14° 38' N Lat, 90° 22' W Long). Coll. 1957 and subm. 1959 by H. Lehmann, Musée de l'Homme, Paris.

Gsy-100. Ortega 3/L6, Costa Rica **2195 ± 130**
245 B.C.

Charcoal from hearth in site of Ortega, Guanacaste province, Costa Rica (31° 20' N Lat, 112° 40' W Long). Coll. 1960 and subm. 1961 by C. Baudez, C.N.R.S., Paris. *Comment*: corresponds to the expected age.

La Bocana series, Costa Rica

Charcoal from cave of La Bocana, Guanacaste province, Costa Rica (31° 20' N Lat, 112° 40' W Long). Coll. 1960 and subm. by C. Baudez.

Gsy-98. La Bocana 1/G1 **515 ± 150**
A.D. 1435

Gsy-99. La Bocana 1/M3 **1005 ± 90**
A.D. 945

General Comment: somewhat later than expected.

Gsy-74. Chillon Valley, Peru **3275 ± 175**
1325 B.C.

Human bones from basis of a scree, in Chillon Valley, Central Peru (11° 50' S Lat, 76° 37' W Long). Coll. 1958 and subm. 1960 by O. Dollfus, French Embassy, Lima, Peru.

II. GEOLOGIC SAMPLES—FRANCE

Gsy-95. La Motte d'Aveillans, Isère **>30,000**

Fossil wood of *Picea* from interglacial clay of La Motte d'Aveillans, near La Mure, Isère (44° 55' N Lat, 5° 45' E Long). Coll. and subm. 1960 by L. Moret, Faculté des Sciences, Grenoble.

Gsy-135. Appeville 2, Cotentin **6950 ± 170**
5000 B.C.

Peat from 3.05 to 3.10 m in sub-littoral peat-bog of Carentan, at Appeville, Manche (49° 20' N Lat, 1° 15' W Long). Coll. and subm. 1961 by H. Elhäi. *Comment:* on palynological evidence corresponds to Sub-boreal phase, but date agrees with Atlantic phase (Elhäi, 1963).

Gsy-75. Brignogan, Finistère **4980 ± 120**
3030 B.C.

Peat from submerged peat bog on beach of Chardons Bleus, Brignogan, Finistère (48° 42' N Lat, 4° 40' W Long). Coll. and subm. 1960 by M. T. Kerfourn, Inst. de Géologie, Rennes, who has studied it palynologically (Kerfourn, 1960). *Comment:* Zone VII of Atlantic period in good agreement.

Gsy-59. Lingreville, Manche **1435 ± 200**
A.D. 515

Peaty mud from Level C No. 43 of submerged bog of Lingreville, Manche (48° 55' N Lat, 1° 35' W Long). Coll. 1958 and 1959 by H. Elhäi, Rouen. *Comment:* younger than expected, as level is covered by a layer with Gallo-Roman pottery of the 1st century A.D.

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