

UNIVERSITY OF PENNSYLVANIA RADIOCARBON DATES X

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INTRODUCTION

This date list includes those series of samples completed in this laboratory as of November, 1966. The B.P. ages are based upon A.D. 1950, and are calculated with a half-life value of 5568 yr. All samples were counted at least twice for periods of not less than 1000 min each. Errors quoted are derived from measurements of sample, background, and modern-age calibration, but do not include any half-life error. All samples were pretreated with 3N HCl, and some, where noted, received additional pretreatment with 2% NaOH for the removal of possible humic contaminants.

Standard calibration samples are 125-yr old oak samples which, when corrected for age, have C¹⁴ contents equal to 95% of the NBS oxalic-acid standard. The C¹³ relationship between the oak standard and NBS limestone standard #20 is $-25.7 \pm 1.3\%$ as measured on the University of Pennsylvania mass spectrograph.

SAMPLE DESCRIPTIONS

I. ARCHAEOLOGIC SAMPLES: NEAR EAST

A. Pakistan

Mohenjo-daro series, West Pakistan

Mohenjo-daro (27° 19' N Lat, 68° 08' E Long), largest city-site of Indus (Harappan) civilization, is ca. 4 mi S of Dokri, Larkana Dist., West Pakistan. Samples are from latest level of mature Harappan period along top of W edge of HR mound. Structures from which samples come are believed to be contemporaneous. Coll. 1964 and 1965 during excavations by Univ. Mus., Univ. of Pennsylvania; subm. by G.F. Dales, Univ. Mus. (Dales, 1965a, 1965b, 1966a, 1966b; Mackay, 1938; Marshall, 1931; Wheeler, 1966).

	3801 ± 59
P-1176. Fireplace ash, Area VII, 4, Level 4	1851 B.C.

Ash from large storage jar set into house floor as fireplace, ca. 1.2 m below surface of mound. Ash mixed with silty clay deposited in ancient flooding of site. *Comment:* NaOH pretreatment.

	3985 ± 64
P-1177. Charcoal, Area VII, 3, Level 4a	1945 B.C.

Charcoal from center of floor, 1.5 m below surface of mound. *Comment:* NaOH pretreatment.

P-1178A. Charred straw, Area VI, 9, Level 4 **3802 ± 59**
1852 B.C.

Charred straw from floor of collapsed and burned room. Associated with P-1179, P-1180, and P-1182A, this list. *Comment:* NaOH pretreatment.

P-1179. Charred door jamb, Area VI, 9, Level 4 **3913 ± 64**
1963 B.C.

Outer rings of charred door jamb burned *in situ* ca. 2.0 m below surface of mound. Doorway belongs to room described with P-1178A, this list. Associated with P-1178A, P-1180, and P-1182A, this list. *Comment:* NaOH pretreatment.

P-1180. Charred door jamb, Area VI, 9, Level 4 **3828 ± 61**
1878 B.C.

Core of charred door jamb burned *in situ*. Same jamb as P-1179, this list. Associated with P-1178A, P-1179, and P-1182A, this list.

P-1182A. Charred straw, Area VI, 9, Level 4 **3702 ± 63**
1752 B.C.

Charred straw from doorway with jambs burned *in situ* described with P-1179 and P-1180, this list. Also associated with P-1178A, this list. *Comment:* NaOH pretreatment.

General Comment (G.F.D.): relative dating of structures from which samples were collected is tentative until further excavations can provide clarification of site stratigraphy. Structures are certainly latest mature Harappan buildings on western top side of HR mound, but whether or not they represent latest mature occupation of entire city is uncertain. The only other sample from Mohenjo-daro (TF-75, 3600 ± 110, Tata II) is too unreliable for comparison. More important is relation of these samples to life span of Indus civilization in general.

Dates are comfortably consistent with samples from other Harappan period sites, especially those from Gujarat, where latest phase of Harappan civilization has been defined through work of Archaeol. Soc. of India. Radiocarbon dates for other Harappan sites are found in Tata I, II, III, and IV, and in Pennsylvania VI. Analyses of the dating problem are given by Agrawal, 1964; Dales, 1966a; and Lal, 1963.

II. ARCHAEOLOGIC SAMPLES: MEDITERRANEAN

A. Macedonia

Nea Nikomedeia series, Macedonia

Samples come from Early Neolithic level of tell at Nea Nikomedeia (40° 36' N Lat, 22° 15' E Long), 10.5 km NNE of Verroia, west Macedonia, Greece. Coll. by R.J. Rodden, the excavator, Dept. of Anthropol., Univ. of California at Berkeley; subm. by B. Wailes, Univ. Mus., Univ. of Pennsylvania (Godwin and Willis, 1962; Rodden, 1962, 1965; Rodden and Rodden, 1964).

P-1202. Early Neolithic, A4/3**7557 \pm 91****5607 B.C.**

Organic carbon from A4/3 Feature A, ash-pit or post-hole. Early Neolithic, very probably first building period; should be approx. contemporary with P-1203A, this list, and Q-655 (Cambridge V). *Comment:* NaOH pretreatment.

P-1203A. Early Neolithic, B4/1**7281 \pm 74****5331 B.C.**

Organic carbon from B4/1 Feature A, ash-pit. Early Neolithic, probably first building period; should be approx. contemporary with P-1202, this list, and Q-655 (Cambridge V). *Comment:* NaOH pretreatment.

General Comment (R.J.R. and B.W.): compare Q-655, 8180 \pm 150 (Cambridge V) and GX-679, 7780 \pm 270 (Geochron III), both certainly from first building period of Early Neolithic settlement at this site; it is less certain that P-1202 and P-1203A belong to initial Early Neolithic building phase. Pattern of Q-655, GX-679, and P-1202 support archaeological view that first Early Neolithic building period was of long duration. Site was probably settled 6100 to 5600 B.C., possibly earlier rather than later within these limits. P-1203A probably is to be referred to second Early Neolithic building period. First Early Neolithic building period includes red-on-white painted ware; cf. Hacilar: BM-48, 7550 \pm 180 (British Museum II); P-314, 7340 \pm 94; P-313A, 7350 \pm 85; P-316, 7170 \pm 134; and P-315, 6990 \pm 121 (Pennsylvania V). Cf. also Elateia: GrN-2973, 7480 \pm 70; GrN-3037, 7360 \pm 90; GrN-3041, 7190 \pm 100; and GrN-3502, 7040 \pm 130 (Groningen IV).

III. ARCHAEOLOGIC SAMPLES: SOUTH AMERICA

*A. Bolivia***P-1134. Sokotiña mound, Bolivia****3098 \pm 60****1148 B.C.**

Charcoal and burned thatch (*ichu*) in reddish layer 4.0 to 4.2 m deep in Sokotiña (Sorasora) mound (18° 10' S Lat, 66° 55' W Long), Dept. of Oruro, Bolivia. Associated with early Sokotiña black pottery with coarse sand temper. Coll. 1966 and subm. by John Wesson, Centre Archaeol. Res. in Tiwanaku, Bolivia. *Comment:* NaOH pretreatment.

IV. ARCHAEOLOGIC SAMPLES: CENTRAL AMERICA

*A. Yucatan***Gruta de Balankanche series, Yucatan**

Gruta de Balankanche is limestone cavern 4 km E of Chichén-Itzá (20° 41' N Lat, 88° 32' W Long), Yucatan, Mexico. Samples are duplicate portions of LJ-272 and LJ-273 (La Jolla II). Coll. 1959 by E.W. Andrews, Middle Am. Res. Inst.; subm. by C.L. Hubbs, La Jolla lab.,

and L.S. Satterthwaite, Jr., Univ. Mus., Univ. of Pennsylvania (Hubbs, Bien, and Suess, 1962).

P-1132. Urn charcoal, LJ-272

1072 ± 51

A.D. 878

Charcoal from inside urns found in chamber No. 2. First dated as LJ-272, 1090 ± 200 (La Jolla II). *Comment:* NaOH pretreatment. Excellent agreement.

P-1133. Hearth charcoal, LJ-273

1028 ± 42

A.D. 922

Charcoal from hearth on which urns were set in chamber No. 2. First dated as LJ-273, 1090 ± 200 (La Jolla II). *Comment:* NaOH pretreatment. Excellent agreement.

V. ARCHAEOLOGIC SAMPLES: ALEUTIANS

A. Anangula Island

Anangula series, Anangula Island, Aleutians

Anangula site (53° 00' N Lat, 168° 51' W Long), is on Anangula (Ananiulak) Island, 1.6 mi long, 0.5 mi wide, ca. 4.5 mi NW of Nikolski village on Umnak Island in eastern Aleutians. This is single-component site, 17 to 20 m above present sealevel, characterized by unifacial tools, including many lamellar-flake tools. Samples are from different areas within same stratigraphic unit, and no cultural differences are suggested. Coll. 1963 by A. McCartney; subm. by W. S. Laughlin, Univ. of Wisconsin (Black and Laughlin, 1964; Laughlin, 1963; Laughlin and Marsh, 1954).

P-1102. Sections 188 and 209

7701 ± 93

5751 B.C.

Charcoal from Sections 188 and 209, from below "basal Fe layer."

P-1103. Section 190

8173 ± 87

6223 B.C.

Charcoal from Occupation 1, Section 190. *Comment:* NaOH pretreatment.

P-1104. Sections 191 to 206

8129 ± 96

6179 B.C.

Charcoal from Occupation 1, Sections 191 to 206. *Comment:* NaOH pretreatment. Many roots.

P-1105. Section 189

7932 ± 500

5892 B.C.

Charcoal (*Picea*, *Betula*, and *Populus*, sp.) from Occupation 1, Section 189.

P-1107. Section B, Level F

7657 ± 95

5707 B.C.

Charcoal (birch) from Section B, NW half, Level F.

P-1108. Section 189, Zone 34**7287 \pm 86****5337 B.C.**

Charcoal (*Populus* and *Betula*, sp.) from Section 189, Zone 34. *Comment*: many roots.

*B. Umnak Island***Ashishik series, Umnak Island, Aleutians**

Ashishik site (53° 34' N Lat, 168° 05' W Long), is located on E side of Ashishik Point on NE Umnak Island in eastern Aleutians. Two major stratigraphic and cultural components are separated by volcanic ash layer attributed to Okmok Crater volcanism. The only source of obsidian, used by occupants of both Ashishik site and Chaluka midden, this list, is located near Ashishik Point. Coll. 1965 by C. and G. Denniston; subm. by W. S. Laughlin, Univ. of Wisconsin.

P-1059. Zone D, lowest occupation**1704 \pm 62****A.D. 246**

Charcoal from Zone D, lowest occupation zone, in matrix of 10 ft of sandy loam below distinctive volcanic ash layer. *Comment*: NaOH pretreatment.

P-1063. Upper Zone D**1317 \pm 48****A.D. 633**

Charcoal from pit dug down from occupation floor in upper portion of Zone D.

P-1062. Occupation Zone D or C**1234 \pm 47****A.D. 716**

Charcoal from Occupation Zone D or C, dated in order to facilitate correlation of two major excavation trenches.

P-1060. Upper Zone D and Lower Zone C**1025 \pm 49****A.D. 925**

Charcoal from upper portion of Occupation Zone D and lower portion of Occupation Zone C. *Comment*: NaOH pretreatment.

P-1061. Lower Occupation Zone A**421 \pm 36****A.D. 1529**

Charcoal and wood from important stratigraphic break in site, marking lowest portion of Occupation Zone A. *Comment*: charcoal (P-1061, NaOH pretreatment) dated 421 \pm 47, and wood portion (P-1061A, NaOH pretreatment) also dated 421 \pm 47; date quoted is average of four counts.

Chaluka midden series, Umnak Island

Chaluka midden (52° 56' N Lat, 168° 52' W Long), lies on 10-m beach line on N coast of Umnak Island in eastern Aleutians, near outlet of Umnak Lake and modern village of Nikolski. This large stratified

site was excavated in 1962. Samples subm. by W. S. Laughlin (Aigner, mss.; Laughlin, 1963; Lippold, mss.).

P-1077. Unit I, Level 3, Pit 10 **411 ± 45**
A.D. 1539
Charred wood from Level 3, Pit 10, of Unit I.

P-1078. Unit I, Level 3, Pit 13 **308 ± 45**
A.D. 1642
Wood from coffin in Level 3, Pit 13 of Unit I.

P-747. Unit I, Levels 3 and 4, Pits 11 and 13 **1402 ± 46**
A.D. 548
Charcoal from Level 3, Pit 11, and Level 4, Pit 13, of Unit I.

P-1092. Unit I, uncorrelated Level 3 **1251 ± 50**
A.D. 699
Wood from stone-peat contact zone in uncorrelated Level 3 (60 cm) of Pit O.

P-761. Unit II, Level 7, Pit 13 **2588 ± 55**
638 B.C.
Charcoal from Level 7, Pit 13, of Unit II.

P-1079. Unit II, Level 7, Pit 13 **2761 ± 57**
811 B.C.
Charcoal from Level 7, Pit 13, of Unit II. *Comment:* NaOH pre-treatment.

P-1080. Unit II, Level 8, Pit 13 **2823 ± 57**
873 B.C.
Charcoal from Level 8 (145 cm), Pit 13, of Unit II.

P-1081. Unit II, Levels 9 and 10, Pit 12 **2769 ± 57**
819 B.C.
Charcoal from Levels 9 and 10 (114 to 127 cm), Pit 12, of Unit II.

P-762. Unit II, Level 11, Pit 14 **2817 ± 56**
867 B.C.
Charcoal from Level 11, Pit 14, of Unit II.

P-1082. Unit II, Level 11, Pit 13 **2980 ± 57**
1030 B.C.
Charcoal from Level 11 (180 cm), Pit 13, of Unit II.

P-763. Unit II/III transition **2942 ± 56**
992 B.C.
Charcoal from Level 11, Pit 13, of Unit II/III transition.

P-1083. Unit III, Level 13, Pit 12 **2811 ± 57**
861 B.C.
Charcoal from Level 13 (176 cm), Pit 12, of Unit III.

P-1084. Unit III, Level 16, Pit 14**3488 ± 43****1538 B.C.**

Charcoal from Level 16, Pit 14, of Unit III. *Comment:* half of sample (P-1084, 3464 ± 62) received usual 3N HCl pretreatment, while remaining half was given additional 2% NaOH pretreatment (P-1084A, 3512 ± 59); difference is not significant, and average of both portions is quoted here.

P-1085. Unit III, Level 17, Pit 13**3056 ± 57****1106 B.C.**

Charcoal from Level 17 (275 cm), Pit 13, of Unit III.

P-765. Unit III, Levels 22 and 23, Pits 13 and 14**3022 ± 57****1072 B.C.**

Charcoal from Level 22, Pit 13, and from Levels 22 and 23, Pit 14, of Unit III.

P-1086. Unit III, Levels 24 and 25, Pit 13**3015 ± 57****1065 B.C.**

Charcoal from Levels 24 and 25, Pit 13, of Unit II.

P-1087. Unit IV, Level 25, Pit 14**3567 ± 53****1617 B.C.**

Carbonized soil and bits of bone from Level 25, Pit 14, of Unit IV.

P-766. Unit IV, Level 26, Pit 14**3359 ± 128****1409 B.C.**

Charcoal from Level 26, Pit 14, of Unit IV. *Comment:* sample undersized and counted at 76% full counter pressure.

P-1088. Unit IV, house fill rubble**3126 ± 50****1176 B.C.**

Charcoal from basal rubble of house fill under wall in Pit 9 of Unit IV.

P-1091. Sheep Creek site, Level 14**3178 ± 58****1228 B.C.**

Charcoal from Level 14, Pit 1, of Sheep Creek site, 1.5 mi NE of Chaluka midden, this list, where cultural material correlation with Chaluka midden is unsatisfactory but suggests some correspondence to either Unit II or III at Chaluka. Date suggests same time range as lower Unit III.

VI. ARCHAEOLOGIC SAMPLES: PACIFIC

A. Hawaiian Islands

Waiahukini shelter series, Hawaii

Waiahukini shelter is cave site (H-8) on South Point (18° 57' N Lat, 155° 42' W Long), Island of Hawaii. Coll. by W. Bonk; subm. by K. P. Emory, Bernice P. Bishop Mus., Honolulu. Cultural deposits are pene-

trated by roots of living vine, and are subject to water drip from cave roof as well as horizontal flooding in heavy rains.

227 ± 46

P-1118A. Phase I-1 and I-2

A.D. 1723

Charcoal from depth of 12 in. at bottom of cultural Phase I-1 and top of Phase I-2. *Comment:* half of sample received usual 3N HCl pretreatment (P-1118, 73 ± 45), while other half was given additional 2% NaOH pretreatment; (P-1118A, 227 ± 46); difference (154 ± 32 , 4.3 sigma) is significant, and P-1118A is quoted here.

200 ± 42

P-1119. Phase I-2

A.D. 1750

Charcoal from depth of 13 to 14 in. within cultural Phase I-2. *Comment:* for other dates from Phase I, 17 to 21 in., see M-863b, 730 ± 200 (Michigan IV); M-1245, 600 ± 200 (Michigan VIII); and GrN-2901, 350 ± 60 (Groningen V).

P-1120. Phase II

+62% modern

Charcoal from depth of 24 to 25 in. within Phase II. *Comment:* for other dates from Phase II, see M-666, 25 to 27 in., 1000 ± 200 (Michigan IV); and GrN-2149, 34 in., 350 ± 40 (Groningen V).

B. Marquesas

Hane Dune series, Uahuka Island, Marquesas

Hane Dune site lies on S coast of Uahuka Island ($8^{\circ} 56' \text{ S Lat}$, $139^{\circ} 32' \text{ W Long}$), in Marquesas group of the Pacific. Site reaches height of 10.5 m above present sealevel on beach in mouth of Hane Valley, and was struck by tidal waves in 1946 and 1960. Cultural deposit is 2.0 m deep, presenting six levels: Level I, stone pavement; Level II, sterile sand; Level III, stone pavement; Level IV, sterile sand with burials; Level V, stone pavement; and Level VI, midden. Coll. 1964 and subm. by Y.H. Sinoto, Bernice P. Bishop Mus., Honolulu (Suggs, 1961; Gakushuin V; Packard II).

414 ± 46

P-1121. Level III

A.D. 1536

Charcoal from fireplace in Level III, 85 cm. *Comment:* for other dates from Level III, see PIC-19, modern $< 180 \text{ yr}$ (Packard II); and GaK-538, modern $< 180 \text{ yr}$ (Gakushuin V).

637 ± 64

P-1123. Level V

A.D. 1313

Charcoal from fireplace in Level V, 200 cm. *Comment:* for other dates from Level V, see GaK-529, 188 cm, 1100 ± 100 ; and GaK-531, 406 cm, 715 ± 100 (Gakushuin V).

*C. Carolines***Nukuoro Atoll series, Carolines**

Samples are from two excavations, Nu-1 and Nu-5, both within present Nukuoro village (4° 00' N Lat, 155° 00' W Long), on Nukuoro Atoll in Caroline Islands of Pacific. Location on prograding lagoon shore and artifact content suggest that Nu-1 represents only a late occupation of the atoll. Nu-5 is continuous cultural deposit 2.9 m deep; P-1128 and P-1129 were expected to approximate dates from Nu-1 (P-1126 and P-1125), but P-1130 and P-1131 are much younger than expected in view of depth of deposit. Coll. 1965 by J. Davidson; subm. by K.P. Emory.

P-1126. Nu-1, 85 to 100 cm **215 ± 37**
A.D. 1735

Charcoal and ash scattered near hearth or small oven 85 to 100 cm below surface at Nu-1.

P-1125. Nu-1, 115 to 135 cm **376 ± 127**
A.D. 1574

Charcoal and ash scattered near hearth or small oven 115 to 135 cm below surface at Nu-1.

P-1128. Nu-5, 75 to 80 cm **212 ± 43**
A.D. 1738

Charcoal from small hearth or oven 75 to 80 cm below surface at Nu-5.

P-1129. Nu-5, 100 to 135 cm **273 ± 41**
A.D. 1677

Charcoal from fill of posthole 100 to 135 cm below surface at Nu-5.

P-1130. Nu-5, 195 cm **342 ± 45**
A.D. 1608

Charcoal from layer of charcoal and oven stones 195 cm below surface at Nu-5.

P-1131. Nu-5, 220 cm **341 ± 111**
A.D. 1609

Charcoal from layer of charcoal and oven stones 220 cm below surface at Nu-5.

*D. British Solomon Islands***Feiru cave series, British Solomon Islands**

Feiru No. 1 is limestone cave site on S coast of Santa Ana (Oa Rapa) Island (10° 48' S Lat, 162° 25' E Long), in British Solomon Islands. No charcoal was found below depth of 60 in., but evidence of human occupation persists to bottom of sand deposit at depth of 80 in. at rear

of cave. Coll. 1966 and subm. by W. Davenport, Univ. Mus., Univ. of Pennsylvania.

548 ± 106

P-1204. Feiru No. 1, 8 to 28 in. A.D. 1402
Charcoal from depth of 8 to 28 in. at rear of cave.

116 ± 40

P-1205. Feiru No. 1, 28 to 42 in. A.D. 1834
Charcoal from depth of 28 to 42 in. at rear of cave. *Comment* (W.D.): date is apparently not in agreement with site stratigraphy, but natural stratigraphy is not clearcut, and some wave disturbance may be possible.

668 ± 38

P-1206. Feiru No. 1, 45 to 60 in. A.D. 1282
Charcoal from depth of 45 to 60 in. at rear of cave. *Comment:* NaOH pretreatment.

E. New Hebrides

Efate series, New Hebrides

This series represents two areas on island of Efate (17° 45' S Lat, 168° 18' E Long), in New Hebrides group of Pacific. Ef-1 lies at elev of 15 ft above present sealevel, while nearby Ef-3 is 20 ft above sealevel. Coll. 1964 and subm. by R. Shutler, Jr., Bernice P. Bishop Mus., Honolulu.

479 ± 46

P-1184. Ef-1, Pit 3, 12 to 18 in. A.D. 1471
Charcoal and bits of shell from Ef-1, Trench C, Pit 3, 12 to 18 in. below surface. Associated with tridacna shell adze. *Comment:* many roots.

473 ± 46

P-1185. Ef-3, Pit 4, 12 to 18 in. A.D. 1477
Charcoal from Ef-3, Loc. E, Pit 4, 12 to 18 in. below surface. Found with burial No. 2, and with shell pendant, cut-and-drilled conus end.

250 ± 37

P-1186. Ef-3, Unit II A.D. 1700
Charcoal and small bits of shell from Ef-3, Loc. D, Unit II. Associated with terebra shell adzes, shell gouges, and unfinished conus shell artifacts.

168 ± 44

P-1187. Ef-3, Unit III A.D. 1782
Charcoal from Ef-3, Loc. D, Unit III. Associated with lambes shell "paring knife," terebra adze fragment, and ground bone spatula.

Tanna series, New Hebrides

Tarsi location (19° 33' S Lat, 169° 16' E Long), 40 ft above present sealevel, provides this series from Tanna Island in southern New Hebrides. Coll. 1964 and subm. by R. Shutler, Jr.

P-1188. Tarsi, Pit 14, 6 to 12 in. 176 ± 44 A.D. 1774

Charcoal from Pit 14, 6 to 12 in. below surface at Tarsi. Associated with conus spire-topped drilled bead.

P-1189. Tarsi, Pit 13, 24 to 30 in. 502 ± 45 A.D. 1448

Charcoal from Pit 13, 24 to 30 in. below surface at Tarsi. Associated with conus top bead.

P-1190. Tarsi, Pit 13, 30 to 36 in. 751 ± 46 A.D. 1199

Charcoal from Pit 13, 30 to 36 in. below surface at Tarsi. Associated with large conus cup beads and worked bird bone.

P-1191. Tarsi, Pit 20, 36 to 42 in. 551 ± 45 A.D. 1399

Charcoal from Pit 20, 36 to 42 in. below surface at Tarsi. Associated with conus disc bead and shell scrapers.

P-1192. Tarsi, Pit 15, 42 to 48 in. 705 ± 46 A.D. 1245

Charcoal from Pit 15, 42 to 48 in. below surface at Tarsi. Associated with deepest occurrence at this site of conus top bead.

Futuna series, New Hebrides

Fursia site lies at elev of 150 ft above sealevel on Futuna Island (19° 31' S Lat, 170° 14' E Long) in southern New Hebrides. Coll. 1964 and subm. by R. Shutler, Jr.

P-1193. Fursia, Room 2, 6 to 12 in. 171 ± 44 A.D. 1779

Charcoal from Room 2, 6 to 12 in. below surface at Fursia. Associated with polished stone adze, coral file, grinding stone fragment, coconut shell cup, and stone bowl rim.

P-1194. Fursia, Room 3, 12 to 14 in. 269 ± 44 A.D. 1681

Charcoal from Room 3, 12 to 14 in. below surface at Fursia. Associated with sole occurrence here of mitra shell gouge.

P-1195. Atrsi, Aneityum Island 448 ± 45 A.D. 1492

Charcoal and bits of shell from Pit 3, 24 to 30 in. below surface at Atrsi site, 20 ft above present sealevel on Aneityum Island (20° 14' S

Lat, 169° 46' E Long), in southern New Hebrides. Associated with tri-doena shell scraper.

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