[RADIOCARBON, VOL. 10, NO. 2, 1968, P. 402-416]

UCLA RADIOCARBON DATES VIII*

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The measurements reported were made during the 2nd half of 1967 in the Isotope Lab. of the Inst. of Geophysics and Planetary Physics as a continuation of the UCLA date lists I through VII. Samples were analyzed as CO_2-gas at close to one atm in a 7.5 L proportional counter with 3 energy channels described earlier. Radiocarbon ages were calculated for uniformity on the basis of a 5568 yr half-life as was recommended by the Sixth International C^{14} and H^3 Dating Conference, June 1965, in Pullman, Washington. The standard for the contemporary biosphere remains as 95% of the count rate of NBS oxalic acid for radiocarbon labs. Background determinations have been based on CO_2 obtained from marble. The error listed is always at least a 1σ statistical counting error. In critical cases C^{13}/C^{12} isotope ratio measurements were made to correct the dates for fractionation. All samples were subjected to accepted NaOH and/or HCl pretreatments depending on the individual case as a minimum to exclude contamination.

A recent summary on the development of radiocarbon dating is that by Libby, 1965.

ACKNOWLEDGMENTS

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SAMPLE DESCRIPTIONS

A. United States

La Brea Tar Pit series

Bones from La Brea tar pits, Los Angeles, California (see UCLA V for details on locality and history). Part of extensive analysis of late Pleistocene fossil community now using bone of extinct species. Data with each bone represent pit, depth, and grid data on 3 foot square grid system (Howard, 1962).

Dense mid-shaft bone of femur of *Smilodon californicus* (sabre-tooth tiger) was used, except for UCLA-1292L which is tibia of same species.

Free amino acids were dated after liquid chromatography of collagen hydrolysate prepared according to procedures modified from Ho (1965)

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by T. Y. Ho. This procedure permits complete removal of petroleum contamination. NaOH treatment for possible humic acid contamination was included in a few samples as indicated. Complete procedure will be published elsewhere (Ho, Marcus, and Berger, 1968). Subm. 1967 by L. F. Marcus.

21,400 ± 560
UCLA-1292A. La Brea Tar Pits **19,450 B.C.**

LACMVP RLB A-675, A-511. Pit 3, coordinates E-5, 22 ft. Left femur. (UCLA-1292J is another sample from same bone treated with NaOH.)

12,650 ± 160
UCLA-1292B. La Brea Tar Pits **10,700 B.C.**

LACMVP RLB A-642. Pit 3, coordinates C-4, 7 ft. Left femur.

14,500 ± 190
UCLA-1292C. La Brea Tar Pits **12,550 B.C.**

LACMVP RLB A-398, A-719. Pit 3, coordinates E-2, 12 ft. Left femur. At same level as tree data (LJ-55, LJ-89, LJ-21; La Jolla I) (Y-354, Y-355; Yale IV), note UCLA-1292A is below this level, UCLA-1292B above, UCLA-1292E at approx. same level.

28,000 ± 1400
UCLA-1292D. La Brea Tar Pits **26,050 B.C.**

LACMVP RLB A-411. Pit 4, coordinates D-2, 15.5 ft. Left femur.

14,400 ± 2100
UCLA-1292E. La Brea Tar Pits **12,450 B.C.**

LACMVP RLB A-835. Pit 3, coordinates C-4, 11.5 ft. Right femur.

14,950 ± 430
UCLA-1292F. La Brea Tar Pits **13,000 B.C.**

LACMVP RLB A-797. Pit 13, coordinates E-11, 11 ft. Left femur.

26,700 ± 900
UCLA-1292G. La Brea Tar Pits **29,750 B.C.**

LACMVP RLB A-846. Pit 4, coordinates D-2 and 4, 8 ft. Right femur.

23,700 ± 600
UCLA-1292H. La Brea Tar Pits **21,750 B.C.**

LACMVP RLB A-4435. Pit. 60, coordinates C-10, 9 to 12 ft. Right femur.

15,300 ± 200
UCLA-1292I. La Brea Tar Pits **13,350 B.C.**

LACMVP RLB A-4436. Pit 13, coordinates F-10, 14.5 ft. Right femur.

20,500 ± 900

UCLA-1292J. La Brea Tar Pits **18,550 B.C.**

LACMVP RLB A-675, A-511. Additional sample from same specimen as UCLA-1292A, treated with 1/10 N NaOH (Berger, Horney, and Libby, 1964).

19,300 ± 395

UCLA-1292K. La Brea Tar Pits **17,350 B.C.**

LACMVP RLB K-3407. Pit 3, coordinates E-4, 26 ft. Right femur. Treated with 1% NaOH.

15,200 ± 800

UCLA-1292L. La Brea Tar Pits **13,250 B.C.**

LACMVP RLB T-6101. Pit 4, coordinates C-2, 11.5 ft. This is suspected artifact; bone was carefully scraped from inside (included some cancellous bone). Sample treated with 1% NaOH.

General Comments (L.M.): the 5 specimen from Pit 3 indicate stratification in that deposit into 2 time periods. There is also preliminary indication that Pit 13 may be of same age as younger part of Pit 3. (R.B.): it had been thought that action of natural gas moving through levels of tar pits might exercize stirring action, greatly increasing difficulties of archaeologist and palaeontologist. Apparently, phenomenon was overestimated.

260 ± 80

UCLA-1296. Abalone shell, Malibu, California **A.D. 1690**

Haliotis cracheroidi from cemetery of village site near junction of Virgines and Malibu Canyons, Malibu, California (34° 5′ 45″ N Lat, 118° 45′ W Long). Pit S-10, W-22, 30-39′ below datum. Date corrected by −160 yr according to Berger, Taylor, and Libby (1966). Coll. and subm. by C. King, UCLA Archaeol. Survey.

B. Mexico

La Venta series

Continuation of series in UCLA VII concerning age of La Venta, Tabasco, site (18° 10′ N Lat, 94° 5′ W Long). Samples coll. July 1967 by R. F. Heizer, Univ. of California, Berkeley and P. Drucker, San Andreas Tuxtla, Mexico; subm. and commented on by R. F. Heizer and R. Berger.

2300 ± 60

UCLA-1330. La Venta **350 B.C.**

Charcoal from NW perimeter of Mound A-2. Stratigraphy not clear to which building phase of La Venta this belongs, but date indicates Phase IV.

2660 ± 140

UCLA-1331. La Venta **710 B.C.**

Charcoal stratigraphically below sample UCLA-1330 in same trench. Because no direct tie-in with phase-dated levels of 1955 excavation could be made, C^{14} age can be interpreted as belonging to Phase II or III.

UCLA-1332. La Venta **2550 ± 80**
600 B.C.

Charcoal from thin clay fill layer overlying Phase III old-rose floors inside and at W edge of Ceremonial Court area. Date agrees with recent revision of age of La Venta site (Berger, Graham, and Heizer, 1967).

UCLA-1288. Mexican idol **410 ± 80**
A.D. 1540
$\delta C^{13} = -24.29‰$

15-cm long carved wooden idol from Guerrero. No date known for respective style. Coll. and subm. 1967 by P. T. Fürst, Univ. of California, Los Angeles.

UCLA-1298. Tecualillo, Nayarit **700 ± 80**
A.D. 1250

Charcoal from site in Teacapan estuary (22° 27′ N Lat, 105° 39′ W Long). Test square A, 6 ft deep. Ceramic styles indicate late site for which confirmation was sought. Coll. by S. Scott, State Univ. of New York, Buffalo and subm. through C. W. Meighan, Univ. of California, Los Angeles.

C. South America

Northern Chile series

Undertaken under the Univ. of California/Univ. of Chile Cooperative Program to explore general archaeol. of N Chile which up till now is rather uncertain. Conclusions can only be drawn after more extensive investigation and dating. Samples coll. and subm. if not noted otherwise by D. L. True, Univ. of California, Davis, and C. W. Meighan.

UCLA-1293. **4690 ± 80**
2740 B.C.

Charcoal from small camp near Quebrada Tarapaca, Tarapaca (ca. 20° S Lat, 69° 30′ W Long). Assoc. with preceramic complex in Tr-12-1. Coll. Jan. 1967.

UCLA-1294A. **680 ± 80**
A.D. 1270

Matting from Site A-Z-8, Burial N 2/5, San Miguel de Azapa, (18° 34′ S Lat, 70° 12′ W Long). Dates San Miguel culture. Coll. 1965 by O. Espoueys.

UCLA-1294B. **280 ± 80**
A.D. 1670

Textile from same site as UCLA-1294A. Dates Burial M-10, San Miguel Tardio phase. Coll. Nov. 1965 by J. C. Montane.

UCLA-1294C. **580 ± 80**
A.D. 1370

Matting from same site as UCLA-1294A. Dates Burial M27 of San Miguel Tardio phase. Coll. Nov. 1967, J. Montane.

810 ± 80

UCLA-1294D. **A.D. 1040**

Textile from same site as UCLA-1294A. Dates Burial M4/2, San Miguel culture. Coll. by O. Espoueys.

610 ± 60

UCLA-1294E. **A.D. 1340**

Matting. Another date for same feature as UCLA-1294C.

D. Pacific

New Hebrides series

Continuation of archaeol. exploration of New Hebrides, UCLA IV. Samples coll. and subm. by R. Shutler, Jr., San Diego State College, San Diego, California.

645 ± 80

UCLA-1295A. Tanna **A.D. 1305**

Charcoal from heavy occupation level in cave, TaRs 1, Pit 16, depth 36 to 42 in. (19° 32′ 30″ S Lat, 169° 15′ 30″ E Long). Assoc. with stone and shell artifacts, and shell and bone debris from human habitation. Sample dates Conus cup bead type (*Conus miles*). This type of bead also found on Futuan and Efate Islands. Coll. 30 Mar. 1964.

1095 ± 80

UCLA-1295B. Tanna **A.D. 855**

Charcoal from same location as preceding sample but from Pit 14, depth 24 to 30 in., just above heavy occupation level. Sample dates stone disc bead type. Coll. 30 Mar. 1964.

455 ± 80

UCLA-1295C. Efate **A.D. 1495**

Charcoal from lowest level of rock shelter, EfRs 7, Tr. C, depth 26 to 32 in., on Efate (17° 45′ 0″ S Lat, 168° 17′ 30″ E Long). Assoc. with gorge fish hook and other debris.This hook type occurs also on Tanna, Futuan, and in Polynesia.

170 ± 80

UCLA-1295F. Futuna **A.D. 1780**

Charcoal from feature FuRs 12, Tr. 7, depth 18 to 24 in. (Level 5) on Futuna (19° 30′ 50″ S Lat, 170° 13′ 30″ E Long). Assoc. with shell and bone from human habitation. Might indicate introduction of taro into S New Hebrides as id. by pollen analysis.

790 ± 80

UCLA-1295G. Futuna **A.D. 1160**

Charcoal from Feature FuRs 12, Tr. 3, depth 18 to 24 in. near bottom of trench on Futuna (19° 30′ 30″ S Lat, 170° 13′ 30″ E Long). Assoc. with human burials, shell artifacts, and shell and bone debris from human occupation. Sample dates Conus cup bead type found also on Tanna (UCLA-1295A, above) and Efate.

Guam sherd series

Part of study to determine suitability of carbon-bearing potsherds for C^{14} dating by comparing sherds with assoc. charcoal samples (Taylor and Berger, 1968). Samples coll. by F. Reinman, Chicago Nat. Hist. Mus., 1965, to evaluate ceramic sequence on Guam (13° 30′ N Lat, 144° 40′ E Long). Samples obtained through courtesy of C. W. Meighan and subm. by R. E. Taylor and R. Berger.

UCLA-1232A. Guam **420 ± 100**
A.D. 1530
Charcoal from Pit 3, 6 to 12 in. depth.

UCLA-1232B. Guam **495 ± 80**
A.D. 1455
Sherds from same stratigraphic position as UCLA-1232A.

UCLA-1232C. Guam **965 ± 80**
A.D. 985
Charcoal from Pit 3, 24 to 30 in. depth.

UCLA-1232D. Guam **895 ± 120**
A.D. 1055
Sherds from same location as UCLA-1232C.

UCLA-1232G. Guam **320 ± 80**
A.D. 1630
Charcoal from Pit 4, 6 to 12 in. depth.

UCLA-1232H. Guam **275 ± 80**
A.D. 1675
Sherds from same stratigraphic unit as UCLA-1232G.

UCLA-1232I. Guam **805 ± 80**
A.D. 1145
Charcoal from Pit 4, 18 to 24 in. depth.

UCLA-1232J. Guam **670 ± 100**
A.D. 1280
Sherds from same location as UCLA-1232I.

General Comment (R.B.): Reasonable agreement between sample pairs is indicated suggesting that C^{14} dating of suitable ceramics is feasible. C. W. Meighan thinks dates based on ceramics may be preferable to charcoal twin as chances of stratigraphically disturbing many sherds are less than for compact charcoal sample. Additional Guam samples are GaK-1356-1371 (ms. in preparation).

E. Europe

European medieval architecture series

Continuation of investigation in UCLA III-VII into potential and limitations of radiocarbon dating in Middle Ages. For maximum pre-

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cision δC^{13} measurements are included, also sample location in timber as well as comparison with secular variations of C^{14} concentration in dendrochronologically dated wood (Suess, 1965). Samples coll. 1967, subm. and commented on by W. Horn, Univ. of California, Berkeley and R. Berger unless noted otherwise.

580 ± 80

UCLA-1301. Canteloup $\delta C^{13} = -26.88‰$

Oak sapwood from waney edge of Post V (carpenter's mark) S side of barn at Canteloup presently being dismantled and re-erected as church on grounds of Abbaye de Fontenelle, Saint Wandrille, Seine-Maritime, Ignace Dalle, Abbot. The building type of aisled and bay-divided medieval timber hall was and still is equally suitable as house, barn, festal hall or church as discussed in Horn and Born (1965). Coll. 19 July 1967.

650 ± 60

UCLA-1302. Canteloup $\delta C^{13} = -24.16‰$

Oak heartwood sample from same post used in UCLA-1301. Wood located ca. 30 yr from center of tree which was felled at age of ca. 100 yr. *Comment* (R.B.): when all correction factors are taken into account, Canteloup was erected most probably at very end of 13th or beginning of 14th century and will provide genuine medieval church at its new location (49° 32′ N Lat, 0° 45′ E Long).

380 ± 80

UCLA-1303. Richelieu $\delta C^{13} = -24.54‰$

Oak bark from lowest longitudinal rail marked VII between Posts VI and VII on S side of central aisle of market hall in Richelieu built by cardinal as model village *in toto* between A.D. 1631 and ca. 1640 near Tours (47° 1′ N Lat, 0° 20′ E Long). Growth-increment of bark correction 30 yr. Coll. 30 July 1967. *Comment* (R.B.): calculated most probable historical age of erection: ca. A.D. 1630.

930 ± 60

UCLA-1306. Sully $\delta C^{13} = -23.04‰$

Chestnut wood (*Castania vesca*) from curved long ashlar piece rising from floor to rafters in upper hall of castle of Sully-s-Loire (47° 46′ N Lat, 2° 22′ E Long). Castle built in A.D. 1363 according to L. Martin (1962). *Comment*: corrected date permits probable historical age from A.D. 1050 to 1220. Exact original position of timber in tree uncertain due to construction placement.

515 ± 60

UCLA-1307. Arpajon $\delta C^{13} = -23.83‰$

Oak heartwood from market hall in Arpajon (48° 35′ N Lat, 2° 15′ E Long) built according to local tradition in A.D. 1450-1470 by Louis Mallet de Graville. Tree-ring correction 40 yr. Coll. 10 July 1967. *Comment*: probable historical date ca. A.D. 1450.

400 ± 60

UCLA-1308. Troussures $\delta C^{13} = -24.42‰$

Chestnut sapwood from post replacing the original stone arcade pillar in 13th-century abbey barn of Troussures. Post bears date A.D. 1609 by carpenter. Coll. 17 July 1967. *Comment*: probable historical date ca. A.D. 1600 or 1450.

860 ± 80

UCLA-1309. Maubuisson $\delta C^{13} = -22.58‰$

Waney edge of Truss 9, S brace with carpenter mark 9 of barn of Abbey of Maubuisson founded A.D. 1236. *Comment*: probable historical age ca. A.D. 1050-1220 due to plateau in curve of secular variations in C^{14} content of wood.

330 ± 60

UCLA-1310. Questembert $\delta C^{13} = -26.02‰$

Bark from post of Truss IV (center aisle post), S side of building of market hall at Questembert (47° 40′ N Lat, 2° 36′ W Long). Barn built A.D. 1675 as marked on tie-beam. Bark growth increment correction –40 yr. *Comment*: probable historical age ca. A.D. 1660.

420 ± 60

UCLA-1312. Milly $\delta C^{13} = -22.80‰$

Oak wood peg from original post of market hall sawed and trimmed into bench at St. Blais des Simples, burial chapel of Jean Cocteau (48° 24′ N Lat, 2° 28′ E Long). Market hall built A.D. 1479 by Louis Mallet de Graville. *Comment*: probable historical age ca. A.D. 1450.

555 ± 60

UCLA-1313. Parcey-Meslay $\delta C^{13} = -24.23‰$

Oakwood from waney edge of Post 4 counted from W, S side of barn of Parcey-Meslay, near Tours (47° 28′ N Lat, O° 21′ W Long). Barn built in time of Abbot Hugue de Rochecourbon (A.D. 1211-1227). Coll. 31 July 1967. *Comment*: previous measurement UCLA-570 (UCLA IV) at A.D. 1215 is corroborated by this date which after modification yields time span of ca. A.D. 1400-1250.

670 ± 60

UCLA-1314. Lenham $\delta C^{13} = -24.30‰$

Charred oak sapwood from arcade plate in W part of minor barn at Lenham, Kent (51° 13′ N Lat, O° 38′ W Long). A 13th-century document mentions destruction of church and subsidiary buildings by fire in A.D. 1298. Tree-ring correction –15 yr. Coll. 19 August 1967. *Comment*: probable historical date based on C^{14} measurement after correction yields A.D. 1250.

560 ± 60

UCLA-1315. Ter Doest $\delta C^{13} = -24.19‰$

Oakwood from waney edge from transverse brace reaching from suspended wall-piece to aisle-tie northernmost freestanding truss. Barn of Abbey of Ter Doest near Bruges (51° 16′ N Lat, 3° 12′ E Long).

Coll. 19 Aug. 1967. *Comment*: adjusted radiocarbon date yields probable historical span of erection from A.D. 1270-1400. Re-examination of previous dates UCLA-568A and B (UCLA IV) and UCLA-1036 and 1038 (UCLA VI) together with present date allow for time span of construction from late 13th through 14th centuries. Stylistically, barn is late 13th century when compared with elements of historically dated church a few mi. away.

630 ± 60

UCLA-1316. Church Enstone $\delta C^{13} = -24.61‰$

Bark of oak from foot of N cruckblade of Truss 5, upper face, E edge, 12 in. above pad. Church dated by inscription A.D. 1382. Coll. 23 Aug. 1967. Growth increment correction 40 yr. *Comment*: probable historical date range: 14th century.

120 ± 80

UCLA-1317. Beaumont-in-Gatinais $\delta C^{13} = -23.85‰$

Oak bark from Post h' SW edge, directly under tie-beam of Beaumont Hall (48° 8′ N Lat, 2° 29′ E Long). *Comment*: probable historical age of post as old as mid-17th century.

490 ± 60

UCLA-1318. Egreville $\delta C^{13} = -22.52‰$

Oak wood from central shake in Post c′ under bracing strut, W face of market hall in Egreville (48° 10′ N Lat, 2° 52′ E Long). Coll. July 1967. Tree-ring allowance 30 to 50 yr. *Comment*: probable historical date first half of 15th century.

890 ± 60

UCLA-1338. St. Pierre-sur-Dives $\delta C^{13} = -23.03‰$

Oak heartwood from central shake under aisle tie-beam of Post 1, NE corner of market hall (49° 1′ N Lat, 2′ W Long). One of apparently 4 old posts, rest all post-1945 replacements. Coll. 24 July 1967. *Comment*: probable historical age: 12th to mid-13th centuries.

550 ± 60

UCLA-1340. Frindsbury

Oak sapwood from 2. post of W row counting from N, NW edge of barn at Frindsbury near Rochester (51° 24′ N Lat, 30′ E Long). Coll. 21 Aug. 1967. *Comment*: probable historical age: end of 13th through all of 14th centuries.

450 ± 60

UCLA-1341. Brook $\delta C^{13} = -24.34‰$

Oakwood from waney edge from shoring beam, N aisle, easternmost truss, upper side, W edge of Court Lodge Barn at Brook near Wye (51° 11′ N Lat, 56′ E Long). Coll. 20 Aug. 1967. *Comment*: probable historical age: ca. A.D. 1450.

570 ± 60

UCLA-1342. Leigh Court $\delta C^{13} = -25.25‰$

Oak sapwood from upper fare of N blade of Truss 2, 3′6″ above springing of blade of Leigh Court Barn near Worcester (52° 11′ N Lat, 2° 13′ W Long). *Comment*: probable historical age: end of 13th through 14th centuries. Leigh Court appears to be most beautiful extant cruck barn discovered by F. W. D. Charles and is of great importance in history of cruck construction.

390 ± 60

UCLA-1257. Harwell Church $\delta C^{13} = -26.37‰$

Oakwood from N transept tie-beam of Harwell Church (51° 37′ N Lat, 1° 18′ W Long). Some 60 tree-rings removed and older than UCLA-1250 (UCLA VII). Implications of this measurement and earlier ones with respect to secular variations in C^{14} content of wood are discussed in Fletcher, 1968. Coll. 1962 and subm. by J. M. Fletcher, Harwell, England.

Ukrainian Bronze age series

First radiocarbon dates on aspects of Ukrainian Bronze age in greater framework of Indo-European migrations. Samples obtained 1966 through Inst. of Archaeol., Soviet Acad. of Sci., Moscow by M. Gimbutas, Univ. of California, Los Angeles.

4210 ± 80

UCLA-1270. Tsatsa **2260 B.C.**

Wood from Barrow 6, Grave 3 at Tsatsa (48° 13′ N Lat, 44° 40′ E Long). Early Yamna culture. Coll. 1962 by V. P. Shilov.

4150 ± 80

UCLA-1271. Ust'man **2200 B.C.**

Wood from Barrow 1, Grave 13 at Ust'man. Early Yamna culture. Coll. 1962 by V. P. Shilov.

3390 ± 80

UCLA-1272. Argadinskaja **1440 B.C.**

Wood from Barrow 9, Grave 4 at Argadinskaja. Timber Grave culture. Coll. 1959 by V. P. Shilov.

3860 ± 80

UCLA-1273. Kudinov **1910 B.C.**

Wood from Barrow 2, Grave 6 at Kudinov. Catacomb Grave culture. Coll. 1961 by A. P. Mantsevich.

3525 ± 80

UCLA-1274. Kudinov **1575 B.C.**

Wood from Barrow 1, Grave 7 at Kudinov. Timber Grave culture. Coll. 1961 by A. N. Melent'ev. *Comments* (M.G.): dates fall in expected time ranges and confirm expectations. (R.B.): when tree-ring calibrated C^{14} dating is applied, age increases by 3 to 600 yr for some samples.

7560 ± 1000

UCLA-1247E. Lothagam, Turkana, Kenya **5610 B.C.**

Shells from basal level of fishing camp on 210 ft beach of Lake Rudolph (4° N Lat, 36° E Long) assoc. with burials showing robust physical type and mesolithic industry with bone harpoons and leister points plus micro- and macrolithic stone technology. Coll. 1966 by L. Robbins and subm. by J. D. Clark, Univ. of California, Berkeley. *Comment* (RB): date is uncorrected and may not represent best obtainable age until more data are forthcoming on radiocarbon content of Lake Rudolph. Margin of error has been increased to reflect uncertainty.

Fingira Rockshelter series

Located SW end of Nyika Plateau, Malawi (10° S Lat, 33° E Long) between 7 to 8000 ft. Occupied in Later Stone age times by short, robust group, of which 2 burials and other scattered human bones have been found. Material culture includes microlithic tools in quartz, interesting bone industry, shell beads, pendants, much ocher. Found also was much food waste. Schematic paintings occur on rock-shelter wall. Deposit was shallow, 33 in. where tested. Practically no evidence of Iron age occupation. Coll. Aug. 1966 by Beatrice Sandelowsky and K. R. Robinson; subm. by J. D. Clark.

3260 ± 80

UCLA-1258. Fingira **1310 B.C.**

Charcoal from Trench E, 15 to 18 in. deep.

3430 ± 80

UCLA-1259. Fingira **1480 B.C.**

Charcoal from Test Pit E, 27 to 33 in. deep. *Comment* (J.D.C.). data indicates the Nyika was settled by hunters and gatherers earlier than expected. Archaeological assemblage very different from contemporary assemblage found in Malawi Rift.

885 ± 80

UCLA-1289. Mwavarambo **A.D. 1065**

Charcoal from Test Pit B 2, 16 to 18 in. deep, Mwavarambo site already dated as UCLA-1242 (UCLA VII) at 655 ± 80. Date confirms contemporaneity of Mwavarambo Ware at this site with two other early Iron age wares in Karonga district. Coll. July 1966 by K. R. Robinson; subm. by J. D. Clark.

1100 ± 80

UCLA-1299. Vintukutu **A.D. 850**

Charcoal with sherds at Vintukutu Iron age Site 54 8 to 10 in. below surface. This is earlier Iron age site 40 mi. S of those excavated in Karonga district (9° 54′ S Lat, 33° 55′ E Long) (UCLA VII) showing affinites with Mwamasapa pottery and derivative wares. Coll. 1966 by K. R. Robinson; subm. by J. D. Clark.

General Comment (R.B.): preceding African dates and those in UCLA VII are discussed in detail in individual papers in Proceedings of VI. Congrès Panafricain de Prehistoire et de L'Etude du Quaternaire, Dakar, Senegal, December 1968.

G. C^{14} in Atmospheric Carbon Dioxide

Atmospheric Radiocarbon Activity series, California

This series is continuation of data published in UCLA IV-VI. C^{14} content in ground level atmospheric CO_2 is monitored monthly at China Lake, California (35° 37′ N Lat, 117° 41′ W Long). Samples are coll. with cooperation of Gilbert Plain, Assoc. Head, Research Dept., Naval Ordnance Test Station, China Lake, California.

The following list contains exposure times of NaOH solutions to air and percent increase of C^{14} above reference level of 1890 or 0.95 NBS oxalic acid. Data are graphed in Fig 1. The statistical error is less than one-half percent.

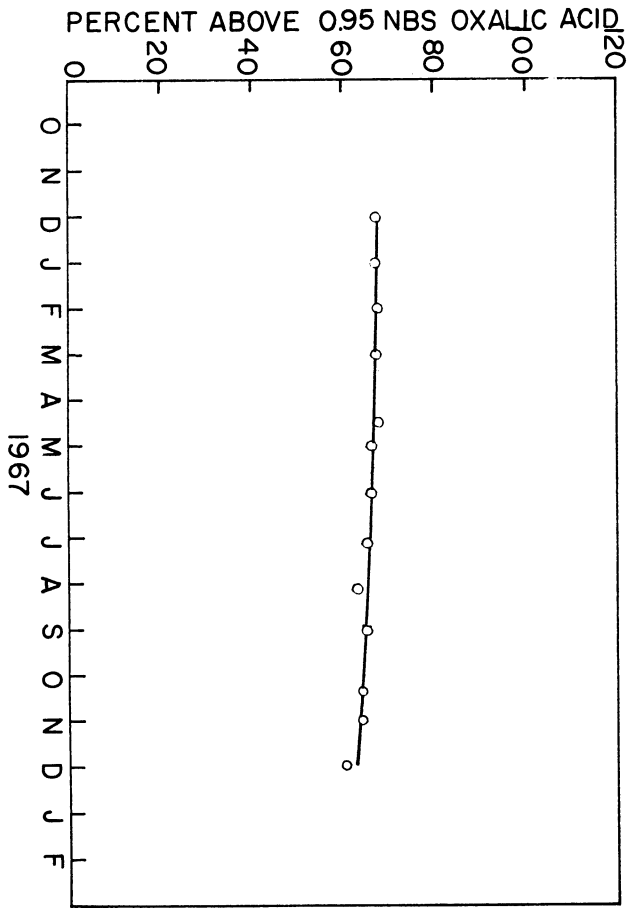

Fig. 1.

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Sample no.	Exposure time	C^{14}, %
UCLA-1154	26 Nov.–3 Dec. 1966	+66.9
UCLA-1155	28 Dec.–4 Jan. 1967	+66.8
UCLA-1132	28 Jan.–5 Feb. 1967	+67.5
UCLA-1168	25 Feb.–4 Mar. 1967	+67.3
UCLA-1174	10 Apr.–17 Apr. 1967	+66.9
UCLA-1175	29 Apr.–5 May 1967	+65.9
UCLA-1179	27 May–3 June 1967	+65.8
UCLA-1182	2 July–9 July 1967	+65.1
UCLA-1183	7 Aug.–13 Aug. 1967	+62.8
UCLA-1184	1 Sept.–8 Sept. 1967	+64.9
UCLA-1185	10 Oct.–17 Oct. 1967	+64.1
UCLA-1187	28 Oct.–4 Nov. 1967	+64.0
UCLA-1188	26 Nov.–3 Dec. 1967	+60.5

Atmospheric Radiocarbon Activity series, Brazil

C^{14} content in ground level atmospheric CO_2 was also monitored for several months at Escola de Engenharia, Sao Carlos, Brazil (22° S Lat, 47° 52′ W Long). Samples were coll. with cooperation of M. Tolentino, Dept. of Chem. and Geol. through J. H. Reynolds, Univ. of California, Berkeley and U. G. Cordani, Univ. of Sao Paulo.

Sample no.	Exposure time	Brazil C^{14}, %	Calif. C^{14}, %
UCLA-1156	27 July–1 Aug. 1966	+64.8	+66.6
UCLA-1157	24 Aug.–31 Aug. 1966	+64.1	+72.3
UCLA-1158	24 Sept.–1 Oct. 1966	+65.4	+70.4
UCLA-1159	24 Oct.–31 Oct. 1966	+79.0	+67.2
UCLA-1180	23 Nov.–30 Nov. 1966	+62.5	+66.9
UCLA-1181	27 Dec.–30 Dec. 1966	+63.2	+66.8

For convenience, California data from UCLA VI for similar time periods have been added. Comparison shows almost complete gross equilibration of atmospheres of both hemispheres.

H. Geochemical Determination

UCLA-1186. Methane **>40,000**

Gas sample from location near 4843 Longridge, Van Nuys, California. Question if natural gas or sewage gas leak which kills deep-rooting trees in area. Subm. by F. J. Folmer and J. R. Mazelli, S California Gas Co., 1967. *Comment* (R.B.): natural gas origin is indicated, but it is still undecided if imported natural gas or seepage from geologic oil or gas bearing formations below Van Nuys.

UCLA-1228. Mt. Vesuvius, Italy **30,700 ± 1100**
28,750 B.C.

Presumably dates eruptive phase of Vesuvius. Carbonized wood enclosed in tuff considered from geomorphological evidence to be of Würm age. Subm. 1967 by E. Franco, Inst. di Mineralogia, Univ. of Naples.

Neotoma Midden series

Part of dating program begun with UCLA III-VI to use macrofossil plan rests of packrat middens to infer environmental conditions at time of deposition. Coll. 1966 and subm. by P. W. Wells, Univ. of Kansas, Lawrence and R. Berger.

UCLA-1098A. Laramie Basin, Wyoming **1860 ± 80** **A.D. 90**

Midden from 7500 ft, Site 1, No. 25. Contains *Pinus ponderosa* and *Juniperus scopulorum* in abundance in the midden whereas no living *Pinus* at site today and only 2 *Juniperus* barely surviving. Indicates time of more favorable growth conditions for woodland as well as higher rainfall for area.

UCLA-1098B. Laramie Basin, Wyoming **4060 ± 80** **2110 B.C.**

Midden from Site 2, No. 26. Contains *Pinus ponderosa* and *Juniperus scopulorum.*

UCLA-1098D. Laramie Basin, Wyoming **2320 ± 80** **370 B.C.**

Midden from 7500 ft, Site 4, No. 28. Contains *Juniperus scopulorum.*

UCLA-1098E. Laramie Basin, Wyoming **1735 ± 80** **A.D. 215**

Wood from beneath sand dune (*Juniperus scopulorum*). No. 29. Corroborates midden dates.

UCLA-1099. Pintwater Cave, Nevada **16,400 ± 250** **14,450 B.C.**

Midden from Pintwater Cave, S Nevada, elev. 1280 m. containing xerophytic semidesert assemblage. Pintwater dates are discussed in Wells and Berger (1967) and provide evidence for pluvial expansion of the pinyon-juniper zone at the close of the Wisconsin glacial to 600 m below present lower limit of woodland. Coll. 18 Dec. 1966.

UCLA-1218. North Muddy Mountains, Nevada **17,750 ± 200** **15,800 B.C.**

Midden from 530 m. in N Muddy Mts., 50 km NE of Gipsum Cave. Discussed in same publ. Coll. 17 Dec. 1966.

UCLA-1219. North Muddy Mountains, Nevada **12,900 ± 180** **10,950 B.C.**

Midden from 550 m. in same general location as UCLA-1218. Coll. Dec. 1966 and discussed as above.

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