Radiocarbon Dates[1]

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THE DATES OBTAINED during the past eighteen months by the radiocarbon technique are listed below. The dates quoted are based on 5568 ± 30 years as the half-life of radiocarbon—a new value resulting from a correction we recently made on our earlier determination (5720) and from an averaging with the best other published values. The number of runs is indicated by the number of dates listed. The errors quoted are standard deviations consisting solely of the error of counting random events. Naturally, other errors are involved, so the true error will be somewhat larger. The scatter appears to be little more than would be expected from the errors quoted, so perhaps one can conclude that the counting error is still dominant, and longer counting periods would pay. In this connection the counting time has been limited to 48 hours in order to accommodate the number of samples necessary to the over-all check of the method, which was the main purpose of this research.

RADIOCARBON DATES

I. *Mesopotamia and Western Asia*
(Principal collaborators: R. J. Braidwood, T. Jacobson, Richard A. Parker, and Saul Weinberg.)

A. Egypt

Our No.	Sample	Age (years)
1	*Zoser*: Acacia wood beam in excellent state of preservation from tomb of Zoser at Sakkara. Known age 4650 ± 75 years, according to John Wilson. Submitted by Ambrose Lansing, Metropolitan Museum.	3699 ± 770 4234 ± 600 3991 ± 500 Av. 3979 ± 350
12	*Sneferu*: Cypress beam from tomb of Sneferu at Meydum. Known age 4575 ± 75, according to John Wilson. Submitted by Froelich Rainey, University of Pennsylvania Museum.	4721 ± 500 4186 ± 500 5548 ± 500 4817 ± 240 Av. 4802 ± 210

RADIOCARBON DATES—(*Continued*)

Our No.	Sample	Age (years)
81	*Sesostris*: Funerary ship from tomb of Sesostris III. Known age 3750, according to John Wilson. Submitted by Col. C. C. Gregg, Chicago Natural History Museum.	3845 ± 400 3407 ± 500 3642 ± 310 Av. 3621 ± 180
62	*Ptolemy*: Wood from mummiform coffin from Egyptian Ptolemaic period. Known age 2280, according to John Wilson. Submitted by John Wilson and Watson Boyes, Oriental Institute, University of Chicago.	2190 ± 450
267	*Hemaka*: Slab of wood from roof beam of tomb of Vizier Hemaka, contemporaneous with King Udimu, 1st Dynasty, at Sakkara. Sample submitted by W. B. Emery, c/o British Embassy, Cairo. Accepted age 4700–5100, according to Braidwood.	4803 ± 260 4961 ± 240 Av. 4883 ± 200
463	*Predynastic*: Charcoal from point "A-15" of the house floors (*fonds de cabanes*) at El Omari, near Cairo, Egypt. Insofar as archeological material is available in published form, a typological assessment of the position of El Omari would be *ca.* midway between the time of the Upper K pits of the Fayum (457), and Hemaka (267). Submitted by Fernand de Bono, Service des Antiquités de l'Egypte, Cairo.	5256 ± 230
457	*Upper K*: Wheat and barley grain uncarbonized, with no preservatives added, from Upper K Pit No. 13 of the Fayum A material as described in *The Desert Fayum*, by Gertrude Caton-Thompson. Submitted by Miss Caton-Thompson and Elise Baumgartel, Museum of The University of Manchester.	6054 ± 330 6136 ± 320 Av. 6095 ± 250

B. Turkey

115	*Alishar*: Wood from the foundation cribbing for a fortification wall in Square 0-10 in III wall of the mound at Alishar, assigned by	3650 ± 350 2823 ± 350

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[2] The archaeological and geological significance of these results will be discussed by the donors of samples, collaborators, and the advisory committee, in articles in appropriate journals. The authors wish to thank Frederick Johnson, Donald Collier, Richard Foster Flint, and Froelich Rainey, the members of the Committee on Carbon 14 of the American Anthropological Association and the Geological Society of America for their indispensable direction and assistance throughout this research.

Our No.	Sample	Age (years)
	the excavators to the Bronze Age. Reference, *Oriental Institute Publications XXVIII*, 209–10, Fig. 207. Submitted by R. J. Braidwood, Oriental Institute.	Av. 3212 ± 250
183	*Alishar Chalcolithic*: Wood from Level 14 (out of Levels 9–18). Reference, *Oriental Institute Publications XXVIII*. Submitted by R. J. Braidwood.	4519 ± 250
	C. Irak	
113	*Jarmo*: Land snail shells fairly well preserved from the basal Levels 7 and 8. Earliest village material of Mesopotamia and Western Asia. It is preceramic. Excavated and submitted by R. J. Braidwood.	6707 ± 320
	D. Syria	
72	*Tayinat*: Wood from the floor of a central room (I-J-1st) in a large Hilani (''palace'') of the ''Syro-Hittite'' period in the city of Tayinat in northwest Syria. Known age 2625 ± 50 years, according to R. J. Braidwood. Submitted by him.	2696 ± 270 2648 ± 270 2239 ± 270 Av. 2531 ± 150
	E. Iran	
492 547	*Early Mesolithic*: Charred bone from Belt Cave in Iran; mixture of Layers 25, 26, 27, and 28. Early mesolithic. Submitted by C. S. Coon, University of Pennsylvania.	8004 ± 900
524	*Late Mesolithic*: Burned bone from Belt Cave in Iran; Layer 11; end of Mesolithic. Submitted by C. S. Coon.	10560 ± 1200
494 495 523	*Neolithic*: Burned bone from Belt Cave in Iran, Neolithic Layers principally 10, with a little of 6, 7, 8, and 9. Submitted by C. S. Coon. Comment: Large errors in the Belt Cave samples are attributable to small size.	8085 ± 1400
II.	*Western Europe*	
	(Principal collaborators: H. J. Movius, E. S. Deevey, Jr., and R. F. Flint.)	
	A. France	
406	*Lascaux*: Charcoal from the Lascaux Cave near Montignac northeast of Les Eyzies in the Dordogne. This cave has the remarkable paintings. The charcoal was taken from the occupation level by M. Severin Blanc in 1949 and consisted of conifer *Abies* or *Larex*, neither of which grow in cold climate. Submitted by H. J. Movius, Harvard.	15516 ± 900
	B. Germany	
337	*German Alleröd*: Peat with birch remains from pollen zone IIb, the younger Alleröd, from Wallensen im Hils, northwest Germany. Submitted by F. Firbas. Comment: Subarctic birch following glacial retreat.	11044 ± 500
450	*Overbeck Peat*: Peat from an accurately dated (2500–2700 years) dry period extending throughout northern Europe and associated with good archaeology. This sample was taken carefully from 0 to 2 cm below the dry horizon. Submitted by F. Overbeck. Comment: Essentially a known. Poor check.	1446 ± 250 1452 ± 290 Av. 1449 ± 200
	C. Denmark	
432	*Danish Boreal II*: Pine cones from Denmark (Seeland, Aamosen; Øgaarde-K, PØ. 1949). They are from pollen zone V, thought to be 8500 years old. Submitted by J. Troels-Smith, National Museum, Copenhagen. Comment: Seems to agree with pollen date.	7583 ± 380
433	*Boreal IV*: Hazelnuts from Denmark (Seeland, Aamosen; Kildegaard-K., Ul.Ø., house 1). The nuts are from one single summer dwelling, belonging to the late boreal age, pollen zone VI, thought to be about 8000 years old. Submitted by Troels-Smith. Comment: Considerably older than expected and out of line with 432 and 434.	9935 ± 440 9927 ± 830 Av. 9929 ± 350
434	*Danish Boreal III*: Charcoal from the same summer house as 433. Expected age about 8000 years. Submitted by Troels-Smith. Comment: Charcoal and hazelnuts do not appear to agree. Charcoal seems to fall closer to expected age.	8631 ± 540
	D. Ireland	
358	*Boreal II*: Peat from Clonsast, County Offaly, Ireland. Late Boreal Zone VIc. Should be later than Danish 432 and earlier than English 343. Submitted by G. F. Mitchell, Trinity College, Dublin. Comment: Fairly agreeable result.	5824 ± 300

Our No.	Sample	Age (years)
355	*Irish Mud*: Lake mud from Knocknacran, County Monaghan, Ireland. Late glacial, pollen zone II. Submitted by G. F. Mitchell. Comment: Contemporaneous with the Two Creeks Mankato in America.	11310 ± 720
	E. England	
461	*Beeswax*: Lump of beeswax associated with a smith's hoard of late bronze age objects of estimated 2500–3000 years age. Submitted by J. W. Brailsford, British Museum. Comment: Not part of hoard; it is younger.	712 ± 200 926 ± 230 Av. 819 ± 160
347	*Shapwick Peat*: Modified humified peat (Sphagnum-Calluna) from Mid-Iron Age to Romano-British period, from Shapwick Heath, Somerset. Pollen zone VIII. Upper Oligotrophic layer; decay pool wood; collected Oct. 2, 1949–*cf.* S.H.6. Submitted by H. Godwin, Cambridge. Comment: Appears fairly reasonable.	3099 ± 250 3520 ± 300 Av. 3310 ± 200
343	*Shapwick Atlantic*: Humified Sphagnum-Calluna peat of Neolithic Age, early pollen zone VII, taken from 6′8″–7′ at base of old peat at Dewar's track excavation on Oct. 2, 1949. Submitted by H. Godwin, Cambridge. Comment: Should be older than 347 and younger than Danish 432.	6044 ± 380
462	*Mesolithic*: Piece of charred wood from the lakeside settlement at Ehenside Tarn, Cumberland. Neolithic "A" material. Conventional dating is 4000 years, *cf. Archaeologia*, **LXIV**, 280. One of rare cases in England where organic material has been preserved in association with characteristic Neolithic material. Submitted by J. W. Brailsford, British Museum. Comment: Appears to be a little older than expected.	4964 ± 300
353	*Starr Carr*: Wooden platform from Mesolithic site at Lake Pickering, Starr Carr, Yorkshire. Pollen zone IV. Collected July 1949. Submitted by H. Godwin. Comment: Looks too old.	10167 ± 560 8808 ± 490 Av. 9488 ± 350
340	*Post Glacial I*: Peat from Hawks Tor, Cornwall. Pollen zone IV. Collected from 7′–7′4″ at site 1 at base of upper peat Sept. 5, 1949. Submitted by H. Godwin. Comment: May be a little younger than 353.	8011 ± 400 8540 ± 780 Av. 8275 ± 350
349	*English Alleröd*: Calcareous silty nekron mud from 790 to 825 cm at D.B.5, Hockham Mere, Norfolk. Late glacial, pollen zones II and III. Submitted by H. Godwin. Comment: Looks young.	6619 ± 380 6491 ± 420 Av. 6555 ± 280
444	*Godwin*: Lake mud from Neasham near Darlington in the extreme north of England. Pollen zone II, correlated directly with last glacial stage. Submitted by H. Godwin. Comment: Looks like Two Creeks Mankato.	10851 ± 630
341	*Alleröd I*: Peat from Hawks Tor, Cornwall, late glacial, pollen zone II, 9′–9′4″ at site I, middle of lower peat. Submitted by H. Godwin. Comment: English and North American ice look contemporaneous.	9861 ± 500
479	*Ponders End*: Plant debris from Lea Valley Arctic Bed north of London at Ponders End. Glacial stage associated with mammoth, lemming, and arctic plants. Submitted by H. Godwin. Comment: Older than expected.	Older than 20,000 years
480	*Cambridge Interglacial*: Oak wood debris from interglacial period on Histon Road, Cambridge. Middle of last interglacial, time of maximum extension of the Eem Sea.	At least 17,000 years
	III. *United States*	
	(Principal collaborators: E. S. Deevey, Jr., R. F. Flint, J. B. Griffin, R. F. Heizer, F. Johnson, F. Roberts, and W. S. Webb.)	
	A. New England	
417	*Fishweir I*: Peat from Boylston Street fishweir site. Lower peat underlying the fishweir. Presumably the fishweir should be younger. Submitted by E. S. Barghoorn, Biological Laboratories, Harvard; (*cf.* pp. 60, 65, and 68, *The Boylston Street Fishweir II*).	5717 ± 500
418	*Fishweir II*: Fragment of coniferous wood from marine silt overlying the Lower Peat and the Fishweir. Submitted by E. S. Barghoorn. Comment: Fishweir may be contemporaneous with Frontenac, Lamoka, and ancient Kentucky sites.	3851 ± 390

RADIOCARBON DATES—(*Continued*)

Our No.	Sample	Age (years)
36–39	*Deevey Series*: A series of pond mud samples from Upper Linsley Pond in Connecticut, as described in E. S. Deevey, Jr., *Am. J. Sci.*, 241, 717–52 (1943). Samples were taken by boring through ice in center of pond. Collected and submitted by E. S. Deevey, Jr.	

Sample	*Depth (m)*	*Pollen zone*	
36	5.5	C 3	876 ± 250
37	8.05	C 2	1800 ± 500
38	9.15	C 1–C 2	5159 ± 350
39	11.65	C 1–B	8323 ± 400

Comment: End of pine period (Zone B) appears to be about 8300 years in Connecticut.

119–122	*Linsley Series*: Another series of mud samples from Upper Linsley Pond. These, however, were taken from the edge of the pond. Collected and submitted by E. S. Deevey, Jr.	

Sample	*Depth (m)*	*Pollen zone*	
119	4.65	C–2	2141 ± 250
120	6.65	C 1–C 2	5305 ± 250
121	8.65	C 1	Heterogeneous 6911 and 4088 ± 250
122	10.15	B	6668 ± 250

Comment: Mixing appears to be involved.

335	*Boreal I*: Peat from 6.0 m in Plissey Pond, Maine. Very top of pine zone B. Submitted by E. S. Deevey, Jr. Comment: Appreciably later than pine zone in Connecticut.	5962 ± 320

B. New York State

191	*Frontenac*: Charcoal from hearth in deepest refuse levels (Trench 4, Section 4) of Frontenac Island site (1939). This represents the Archaic period of the Frontenac Focus; (*cf.* W. A. Ritchie, *Research Trans. N. Y. Arch. Assoc.* X, 6 [1945]). Submitted by W. A. Ritchie, Rochester Museum of Arts and Sciences. Comment: Contemporaneous with oldest Kentucky mounds.	4930 ± 260
192	*Point Peninsula*: Charcoal from cremation (burial 6) on the Oberlander component No. 2 at Brewerton, Oswego Co., New York (1938). This is early Point Peninsula Focus; (*cf.* W. A. Ritchie, *Rochester Museum Arts and Sciences, Memoir 1*, 152–160 [1944]). Submitted by W. A. Ritchie.	2817 ± 270 3080 ± 200 Av. 2948 ± 170
367	*Lamoka III*: Charcoal from Lamoka Lake site in earliest occupation level 5′ below midden surface. Submitted by W. A. Ritchie.	5383 ± 250
288	*Lamoka*: Charcoal from hearth in subsoil under 5′ of undisturbed refuse at Lamoka Lake Site, Schuyler Co., New York. Some rootlets were present in this sample. They were segregated under a low-power magnifying glass. This sample was less carefully collected than 367. Submitted by W. A. Ritchie. Comment: Doubt that all rootlets were removed. In view of rootlets, perhaps the 5383 date for 367 should be taken. Contemporaneous with Frontenac.	4395 ± 350 4344 ± 300 Av. 4369 ± 200

C. Iowa, Illinois, Kentucky, Pennsylvania, and Ohio

116	*Webb I*: Annis mound, Kentucky, Archaic period, shell from the 6.5′ level. Shells powdery on surface but shiny and apparently untouched underneath. Submitted by W. S. Webb. Comment: Agrees with antler from same level (251).	5149 ± 300
180	*Webb IV*: Annis mound shell from the 3.0′ level. Submitted by W. S. Webb. Comment: Shells powdery and in poorer condition than those of 116.	7374 ± 500
251	*Deer Antler*: Annis mound deer antler from Archaic 6.5′ level. Submitted by W. S. Webb. Comment: Agrees with Frontenac and Lamoka Archaics.	4900 ± 250
254	*Indian Knoll*: Antler from Indian Knoll Oh2 mound at 1.0′ level. Submitted by W. S. Webb.	5709 ± 350 4894 ± 560 Av. 5302 ± 300
126	*Adena I*: Adena material from Drake Mound, Fayette Co., Kentucky, Site No. 11. Fragments of bark preserved by contact with copper reel-shaped breast plate, in association with Burial No. 7, lying on bottom of pit, the central feature of this site. Submitted by W. S. Webb.	1168 ± 150
214	*Ohio Adena*: Adena material from Cowan Creek mound, Ohio. Charcoal from subfloor fireplace just outside house structure. Submitted by R. S. Baby.	1509 ± 250

RADIOCARBON DATES—(*Continued*)

Our No.	Sample	Age (years)
136	*Hopewell III*: Hopewell material from mound 25, Hopewell site, Ohio. Charcoal of sample No. 56,424. Submitted by G. Quimby, Chicago Natural History Museum.	1951 ± 200
137	*Hopewell Shell*: Same as 136 except material is conch shells. Sample Nos. 56,358 and 56,605. Submitted by G. Quimby. Comment: Agrees with charcoal (136).	2285 ± 210
139	*Hopewell I*: Same as 136 and 137 except material is bark. Sample No. 56,094. Comment: Agrees with charcoal and shell (136, 137).	2044 ± 250
152	*Hopewell II*: Wood from Hopewell mound 9 at Havana, Illinois. Submitted by Thorne Deuell, Illinois State Museum. Comment: Seems to check with Ohio Hopewell.	2336 ± 250
465	*Goldthwaite*: Large log from the Tazewell or Cary drift near Oxford, Ohio, Hamilton, Ohio, Quadrangle, Oxford township, Section 26, just north of the creek. Submitted by R. P. Goldthwaite, Ohio State University.	At least 15,000 years
364	*Tolleston*: Wood from Tolleston level, Lake Chicago (may be Algonquin instead). Log found at base of lake sand overlying till in clay pit at Dalton, Illinois. Submitted by H. Bretz, Department of Geology, University of Chicago.	3469 ± 230
466	*Illinoian*: Wood found in till directly below Illinoian gumbotil in Vermillion Co., Illinois. Submitted by G. W. White, Department of Geology, University of Illinois.	Older than 17,000 years
535	*Tazewell*: Early Tazewell Shelbyville wood from Lake Kickapoo, Wedron, La Salle Co., Ill. This is supposed to be our only truly authentic Tazewell sample. Submitted by L. Horberg and H. Bretz, University of Chicago.	13842 ± 780
510	*Farmdale*: Wood from Farm Creek, Illinois, representing the earliest stages of the Wisconsin glaciation. Found 3′–4′ below the surface of the Farmdale loess. Submitted by Guy D. Smith, Bureau of Plant Industry, Beltsville, Maryland.	Older than 20,000 years
481	*Skunk Creek*: Wood found beneath presumably Mankato till on north bank of Skunk Creek, NE quarter, Section 15, T8ON, R22W, Polk Co., Iowa. Submitted by W. H. Scholtes, Iowa State College, Ames.	Older than 17,000

RADIOCARBON DATES—(*Continued*)

Our No.	Sample	Age (years)
438	*Bridgeville*: Peat found beneath 17′ of alluvial deposit just west of Bridgeville, Pennsylvania. Thought to be Tazewell or Cary. Submitted by E. R. Eller, Carnegie Museum, Pittsburgh.	Older than 16,000
	D. West Virginia, North Carolina, and South Carolina	
336	*West Virginia Boreal*: Peat of pollen zone B (pine) from 12′3″ to 12′9″ in Cranberry Glades, West Virginia. Submitted by H. C. Darlington.	9423 ± 840
475	*Singletary Mankato*: Peat and lake sediments from Singletary Lake, North Carolina. The lake has three organic horizons. This sample is the second which has been tentatively identified from pollen as lying between the Mankato and Cary substages. Submitted by David G. Frey, University of North Carolina. Comment: Appears too old for Mankato.	Older than 20,000
476	*Singletary Cary*: Lowest of three layers in Singletary Lake. Submitted by David G. Frey.	Older than 20,000
363	*Santee*: Cypress wood from a large stump buried under 30′ of sand deposited by the Santee River in South Carolina. Stump was 11′ in diameter, larger than any now growing in the region. Submitted by Stephen Taber, University of South Carolina.	Older than 17,000
105	*Myrtle Beach*: Cypress wood from the Myrtle Beach area under the Pamlico Terrace. Submitted by Stephen Taber.	Older than 20,000
	E. Louisiana, Missouri, Mississippi, and Nebraska	
143	*Quimby IV*: Charcoal from secondary mantle of mound, Crooks Site, Marksville period mound (LA-3), in Louisiana. Submitted by G. Quimby, Chicago Natural History Museum.	1158 ± 250
150	*Quimby II*: Charcoal from top level of Tchefuncte site ST 2, Midden A, in Louisiana. Submitted by G. Quimby.	633 ± 150

RADIOCARBON DATES—(*Continued*)

Our No.	Sample	Age (years)
151	*Quimby III*: Shell from top level of same Tchefuncte site as 150. Submitted by G. Quimby.	1233 ± 250
385	*Bonfils I*: Wood from the Bonfils sand terrace near the mouth of the Missouri River. This terrace is a remnant of the Festus Terrace, and the date therefore should apply to the Festus Terrace. Sample taken from 2′ above top of the gravel. Submitted by Louis C. Peltier, Washington University, St. Louis. Comment: Might be Mankato.	12148 ± 700
154	*Bynum II*: Bynum vegetal material from site MCs-16 in Mississippi. Submitted by John Cotter, National Park Service.	1276 ± 150
65	*Schultz I*: Charcoal from Medicine Creek Site Ft-50 in Nebraska. It is a mixture of soil bands A and B, which are 2′ apart. Submitted by C. B. Schultz, University of Nebraska.	5256 ± 350
108a	*Schultz III*: Charcoal from Soil B of above site.	8274 ± 500
470	*Schultz II*: Charcoal from Soil B at Ft-50, lower occupation zone feature 18, N 155/E 45. Collected later and more carefully, otherwise duplicate of 108a. Submitted by C. B. Schultz.	10493 ± 1500
471	*Lime Creek*: Lime Creek site charcoal, Ft-41, Frontier Co., Nebraska. Reference, p. 34, *Lime Creek Bulletin*. Submitted by C. B. Schultz.	9880 ± 670 9167 ± 600 Av. 9524 ± 450

F. Arizona, California, and New Mexico

162–174 *Bat Cave*: Corncobs and wood fragments from the debris in Bat Cave, New Mexico. The depth below the top correlates with the development of corn from a primitive form at the lowest layer of 6′ to essentially modern corn at the top. Excavated by Herbert Dick. Submitted by P. C. Mangelsdorf, Harvard.

Sample No.	*Layer (depth, ft)*	
167, cobs	0–1	1752 ± 250
173, wood	1–2	1907 ± 250
172, wood	2–3	2239 ± 250
164 + 171, corn and wood	3–4	2249 ± 250
170, wood	4–5	2862 ± 250

Comment: Lowest layer containing corn, of which there was insufficient material, would appear to be 3000–3500 years by extrapolation.

Our No.	Sample	Age (years)
186	*California Archaic*: Charcoal from deepest levels of a San Francisco Bay shell mound. Submitted by R. F. Heizer.	633 ± 200 911 ± 180 Av. 720 ± 130
440 and 522	*California Early Horizon*: Charcoal from California Early Horizon Site SJo-68. Earliest recognized California culture. Submitted by R. F. Heizer.	4052 ± 160
216	*Cochise*: Charcoal bearing dirt from b^1 and b^2 beds shown in Fig. 13, p. 47, *The Cochise Culture*. This is the Sulphur Springs stage of the culture. Submitted by E. B. Sayles, Arizona State Museum, Tucson.	7756 ± 370
511	*Sulphur Springs*: Charcoal from Cochise Site No. 6 North, Sulphur Springs stage. Submitted by E. B. Sayles.	6210 ± 450
515	*Chiricahua*: Charcoal from Cochise Site No. 12, Chiricahua Stage. Submitted by E. B. Sayles.	4006 ± 270
556	*Antevs I*: Cochise charcoal found in wall of an arroyo tributary to main Wet Leggett arroyo in New Mexico. Depth, 9′8″ in beds which may be either Chiricahua or San Pedro. Collected and submitted by Ernst Antevs. Comment: Apparently this is Chiricahua.	4508 ± 680
519	*San Pedro*: Charcoal from Cochise Site No. 3, San Pedro stage. Submitted by E. B. Sayles. Comment: Samples 511, 515, and 519 show the expected age sequence.	2463 ± 310
377	*Folsom*: Charcoal from Folsom type site by H. J. Cook, Agate, Nebraska. Charcoal sample from hearth in secondary channel of later date than bison and artifact deposit.	4575 ± 300 3923 ± 400 Av. 4283 ± 250

G. Nevada and Oregon

221	*Gypsum Cave*: Dung of giant sloth from Gypsum Cave, Las Vegas, Nevada. Collected by M. R. Harrington in 1931 from Room 1, dung layer 6′4″ from surface. Submitted by M. R. Harrington via Ruth Simpson, Southwest Museum, Los Angeles.	10902 ± 440 10075 ± 550 Av. 10455 ± 340
222	*Gypsum Cave*: Same from small room southwest of room 1. Taken	8692 ± 500 8051 ± 450

Our No.	Sample	Age (years)
	2′6″ from surface.	8838 ± 430 Av. 8527 ± 250
281	*Leonard Rock*: Unburned guano from layer containing wooden artifacts in Leonard Rock shelter, Nevada (LRS2). Submitted by R. F. Heizer, University of California, Berkeley.	8443 ± 510 8820 ± 400 Av. 8660 ± 300
298	*Leonard Rock II*: Atlatl foreshafts of hardwood (*sarcobatus*, greasewood) from layer described in 281. Submitted by R. F. Heizer.	7038 ± 350
554	*Leonard Rock III*: Carbonized basketry from upper guano layer, Area C. Associated with infant burial. Submitted by R. F. Heizer.	2736 ± 500
277	*Lovelock I*: Burned guano from pre-occupation level, Lovelock Cave, Nevada. (LC4A.) Submitted by R. F. Heizer.	4448 ± 250
278	*Lovelock II*: Unburned guano, pre-occupation level, Lovelock Cave. (LC4B.) Submitted by R. F. Heizer.	6046 ± 300 5961 ± 400 Av. 6004 ± 250
247	*Mazama*: Charcoal from a tree killed by the eruption of Mount Mazama in eastern Oregon (this formed Crater Lake). Submitted by L. S. Cressman, University of Oregon.	6389 ± 320 7318 ± 350 5938 ± 400 6327 ± 400 Av. 6453 ± 250
428	*Sandals*: Several pairs of woven rope sandals found in Fort Rock Cave, covered by the Newberry eruption in Oregon. Submitted by L. S. Cressman. Comment: Oldest artifacts measured in the Americas.	9188 ± 480 8916 ± 540 Av. 9053 ± 350
430	*Catlow Cave*: Organic debris from Catlow Cave No. 1 in Oregon. Taken from 2.88′ depth (No. 1–3025). Submitted by L. S. Cressman.	1118 ± 190 798 ± 230 Av. 959 ± 150
	H. Minnesota, Wisconsin, and Wyoming	
496	*Bronson Interglacial*: Wood from a well, Bronson Station No. 1, 88′ below surface in association with a wealth of plant material in a preglacial spruce-tamarack forest. Collected by C. O. Rosendahl, Department of Botany, University of Minnesota; (*cf. Ecology*, 29, 291–6 [1948]). Submitted by W. S. Cooper, University of Minnesota. Comment: Older than 497.	Older than 19,000
497	*Moorhead Interglacial*: Wood from Moorhead Station No. 2, Minnesota, late Pleistocene. May be associated with early history of Lake Agassiz; (*cf. Ecology*, 29, 289–90 [1948]). Collected by C. O. Rosendahl and submitted by W. S. Cooper. Comment: Appears to be contemporaneous with Two Creeks Mankato.	11283 ± 700
454	*Angostura*: Charcoal from Angostura Reservoir, South Dakota; horizontal zone 3.5″ thick mixed with clay (decomposed Pierre Shale). Sample No. 39FA65–203 from Square N7E4, Area B. Submitted by F. H. H. Roberts. Comment: Looks like Yuma or Cochise.	7715 ± 740
334	*Boreal III*: Peat from Jackson Camp, Minnesota. Taken from 8′ depth in Pollen Zone B (Pine period) by J. E. Potzger, Butler University, Indianapolis, Indiana. Submitted by E. S. Deevey, Jr., Yale.	7586 ± 490 6866 ± 350 Av. 7128 ± 300
332	*Minnesota Boreal*: Peat from 8.5 m depth in Cedar Bog Lake, Minnesota. Pollen zone B. Collected by M. Buell. Submitted by E. S. Deevey, Jr.	7988 ± 420
308 365 366 536 537	*Two Creeks*: Wood and peat samples from Two Creeks Forest Bed, Manitowoc Co., Wisconsin. Forest Bed underlies the Valder's Drift (Thwaites). Apparently the spruce forest was submerged, pushed over, and buried under glacial drift by the last advancing ice sheet in this region. Thought to be Mankato in age.	
	Sample — *Collection*	
	308 (Spruce-wood) — L. R. Wilson, University of Massachusetts	10877 ± 740
	365 (Tree root) — J. H. Bretz, University of Chicago	11437 ± 770
	366 (Peat in which root [365] was rooted) — University of Chicago	11097 ± 600
	536 (Spruce-wood) — J. H. Bretz and L. Horberg, University of Chicago. Collected several	12168 ± 1500

RADIOCARBON DATES—(*Continued*)

Our No.	Sample	Age (years)
	years later than 308, 365, and 366 in 1950.	
537 (Peat)	(Same as above)	11442 ± 640 Av. 11404 ± 350
	Comment: Agreement among samples seems satisfactory.	
504	*Sand Island*: Peat from Sand Island, Bayfield Co., Wisconsin. This unique peat dates the one-outlet stage of the Nipissing Great Lakes. Submitted by L. R. Wilson.	3656 ± 640
419	*Lake Butte*: Glacial wood (*cf. Bull. Geol. Soc. Am.*, 54, 136 [1943]) found between Appleton and Menasha, Wisconsin, on the eastern short of Little Lake Butte des Morts. Log protruded from a sloping bank of varved clay, perhaps reworked but older than the surface till of Valder's Drift. Appears flattened by pressure. Collected and submitted by F. T. Thwaites, University of Wisconsin, Madison. Comment: Looks young.	5938 ± 300 6864 ± 300 Av. 6401 ± 230
302	*Yuma*: Partially burned bison bone with high organic content, from Sage Creek, Wyoming, Yuma site of Eisely and Jepsen. Submitted by G. L. Jepsen, Department of Geology, Princeton University.	6619 ± 350 7132 ± 350 Av. 6876 ± 250
	I. Alaska	
101 102 112	*Johnson I*: Charcoal and charred wood samples from frozen artifact layer in the Yukon. Submitted by F. Johnson, Phillips Academy, Andover, Massachusetts.	1606 ± 180 1460 ± 180 Av. 1519 ± 150
260	*Ipiutak*: Wood from the Ipiutak culture deposit at Deering, Seward Peninsula, Alaska. Third level. Estimated date A.D. 0–500. Excavated by Helge Larsen, summer of 1949. Submitted by F. Rainey, University Museum, Philadelphia.	973 ± 170
266	*Ipiutak II*: Wood from grave 51 at Ipiutak as described in "Ipiutak and the Arctic Whale Hunting Culture." Larsen and Rainey, *Arch. Papers Am. Mus. Nat. Hist.*, 42. Submitted by Helge Larsen, University of Alaska. Comment: Seems to agree with other Ipiutak sample (260).	912 ± 170
409	*Aleut I*: Charcoal from an Aleut village site near Nikolski on Uniak Island. This particular sample was taken from a depth of 433 cm and is pre-Aleut in age. Submitted by W. F. Laughlin, University of Oregon.	2920 ± 240 3407 ± 520 Av. 3018 ± 230
299	*Fairbanks*: Wood found under 80–100 feet of frozen muck in the gold diggings near Eva Creek, Fairbanks, Alaska. Submitted by Wendell Oswalt, University of Alaska Museum.	Older than 20,000
506	*Alaska II*: Charred wood from middle levels, Iyatayet site, Norton Bay, Alaska. Excavated by Giddings, 1949. Submitted by Froelich Rainey, University of Pennsylvania Museum.	1460 ± 200
	IV. Mexico	
	(Principal collaborator: H. de Terra.)	
199	*Mexico I*: Charcoal from Tlatilco, early to middle Archaic. Collected by H. de Terra. Submitted by D. F. R. de la Borbolla, Museo Nacional de Antropologia, Mexico, D. F.	3407 ± 250
196	*Mexico II*: Charcoal from Zacatenco I, early Archaic. Collected by H. de Terra. Submitted by D. F. R. de la Borbolla.	3310 ± 250
203	*Mexico III*: Charcoal from the core filling of the Pyramid of the Sun, Teotihuacán I. Collected by H. de Terra. Submitted by D. F. R. de la Borbolla. Comment: Looks as though sample is inhomogeneous.	2434 ± 500 1519 ± 200 Av. Heterogeneous
198	*Mexico IV*: Charcoal from preceramic level at Tlatilco. Collected by H. de Terra. Submitted by D. F. R. de la Borbolla.	6904 ± 450 6017 ± 320 Av. 6390 ± 300
200	*Cuicuilco*: Charcoal from pottery level below lava. Late Archaic. Collected by H. de Terra. Submitted by D. F. R. de la Borbolla.	2422 ± 250
202	*Loma*: Charcoal from Loma del Tepalcate. Late Archaic. Collected by H. de Terra. Submitted by D. F. R. de la Borbolla.	2565 ± 200
207	*Pueblito*: Charcoal from preceramic level of MacNeish in rock shelter of Sierra de Tamaulipais, northeast Mexico. Site 174,	505 ± 165 990 ± 220

RADIOCARBON DATES—(*Continued*)

Our No.	Sample	Age (years)
	Square N25, La Perra or Pueblito culture. Collected by H. de Terra. Submitted by D. F. R. de la Borbolla. Comment: Much too young.	Av. 651 ± 150
204	*Becerra Wood*: Wood from Ciudad de los Deportes (Mexico City), Armenta Horizon, associated with mammoth, horse, etc. Younger Becerra formation. Collected by H. de Terra. Submitted by D. F. R. de la Borbolla.	Older than 16,000
205	*Becerra Peat*: Peat from same station as 204 but 500 m east. Also from the Armenta Horizon. Collected by H. de Terra. Submitted by D. F. R. de la Barbolla.	11003 ± 500
421	*Tepexpan I*: Stems and roots of aquatic plants 48″–70″ down at the fossil man site, Tepexpan, El Risco Horizon. Collected and submitted by H. de Terra. Comment: Younger than expected.	3800 ± 450 4430 ± 350 Av. 4118 ± 300
422	*Sun Temple*: Charcoal from Atetelco, Teotihuacán. Taken from floor of temple south of the painted patio. Collected and submitted by H. de Terra.	1878 ± 200 2611 ± 330 Av. 2244 ± 180
423	*Sun Temple*: Wood from large pillar on exhibit at Teotihuacán, originally in temple of Quetzalcoatl Nuevo (younger temple) in the "*Ciudadella*" of Teotihuacán. Submitted by H. de Terra. Comment: Much too old.	3424 ± 230
424	*Alban I*: Charcoal from Monte Negro, Temple X, Tilantongo, Oaxaca. Monte Alban I level. Submitted by Alfonso Caso.	2518 ± 250 2680 ± 200 Av. 2600 ± 170
425	*Monte Alban II*: Clean charcoal from Monte Alban, IIa level. Submitted by Alfonso Caso.	2223 ± 145
426	*Alban III*: Wood from tomb of Chochapan, Monte Alban III level. Submitted by Alfonso Caso. Comment: This date needs checking because of experimental difficulties in the measurement.	1652 ± 185
	V. South America (Principal collaborator: J. B. Bird.)	
75	*Peruvian*: Algaroba wood from roof beam section of subterranean house found in Huaca Prieta No. 5, at the level of first appearance of maize and Cupisnique pottery, Chicama Valley, Peru. Collected and submitted by J. B. Bird,	2665 ± 200

RADIOCARBON DATES—(*Continued*)

Our No.	Sample	Age (years)
	American Museum of Natural History, New York.	
271	*Paracas*: Cotton cloth from the mummy brought to New York in 1949 by Rebecca Carrion, National Museum of Anthropology and Archaeology, Peru. From Paracas Necropolis. Submitted by J. B. Bird.	2190 ± 350 2336 ± 300 Av. 2257 ± 200
316–322	*Chicama*: A series of samples from Huaca Prieta Mound No. 3. Collected and submitted by J. B. Bird.	

Sample No.	*Level (depth in ft from top)*	
321 (12) (plant material)	HP3-D, 6	2966 ± 300
318 (9) (wood)	HP3-J2, 22	3550 ± 600
316 (7) (wood)	HP3-M, 30	4380 ± 270
315 (6) (shell)	HP3-M, 30	3572 ± 220
313 (4) (wood)	HP3-Q1, 36	4257 ± 250

Comment: Sample 318, first run, looks incorrect.

322	*Chicama IV*: Wooden digging stick from House No. 7 of Huaca Prieta Mound No. 5. Should be more than 100 years older than Cupisnique (75). Submitted by J. B. Bird. Comment: Checks satisfactorily.	3278 ± 250 3333 ± 340 Av. 3310 ± 200
460	*Nazca I*: Wooden shafts of Atlatl darts banded with black pigment, Nazca A period; Section Aj, Location A, Grave 10. Cahuachi, Valley of Nazca, Peru. Should be roughly contemporaneous with Paracas mummy. Collected by A. L. Kroeber, University of California, Berkeley, and submitted by D. Collier, Chicago Natural History Museum. Comment: Too young.	1314 ± 250
521	*Nazca II*: Wood fragments of Atlatl shaft from Grave 12, Location A, Section Aj, Cahuachi, Valley of Nazca. Nazca A period. Catalogue numbers: 171,245; 171,246. Should be contemporaneous with Paracas mummy. Collected by A. L. Kroeber and submitted by D. Collier.	1681 ± 250 2477 ± 200 Av. 2211 ± 200
	Grand average, including 460	1988 ± 200

Comment: Agrees better.

RADIOCARBON DATES—(*Continued*)

Our No.	Sample	Age (years)
484	*Chilean Sloth*: Dung of giant sloth from Mylodon Cave, Ultima Esperanza, Chile (51°35′S). Not associated with human artifacts, though sloth and man found together in three caves 125 miles distant (*cf.* sample 485). There is an as yet undetermined correlation with the last ice advance in Patagonia. Submitted by J. B. Bird. Comment: Looks like Gypsum Cave, Two Creeks.	10800 ± 570 10864 ± 720 Av. 10832 ± 400
485	*Chilean Bone*: Burned bone of sloth, horse, and guanaco, associated with human bones and artifacts. Valuable in determining time of arrival of man at tip of South America. Material found in Palliaike Cave, 125 miles east of Mylodon. Submitted by J. B. Bird. Comment: Most ancient of human samples from South America. Contemporaneous with Gypsum Cave, etc.	8639 ± 450
378	*Chincha*: Guano from North Chincha Island found beneath 3′6″ of windborne sand at Quebrada del Panteon by G. Kubler, Department of History of Art, Yale. Submitted by G. Kubler. Comment: Very ancient.	Older than 19,000

RADIOCARBON DATES—(*Continued*)

Our No.	Sample	Age (years)
382	*Moche*: Ash mixed with bone from Moche site at Huaca del Sol, northern Peru. Taken from habitation site, ground level, beneath pyramid on north face in center. Collected by G. Kubler.	2823 ± 500
	VI. Tree Ring Samples	
103	*Tree Ring*: Douglas fir wood excavated by Morris in 1931 from Red Rock Valley, Room 6, Broken Flute Cave. Inner ring, A.D. 530; outer ring, A.D. 623. Submitted by T. L. Smiley, Laboratory of Tree Ring Analysis, University of Arizona, Tucson. Comment: Looks low *vs.* expected 1370.	973 ± 200 1070 ± 100 Av. 1042 ± 80
159	*Sequoia*: Wood from the heart of the giant redwood known as the "Centennial Stump," felled in 1874 with 2905 rings between the innermost (and 2802 rings between the outermost) portion of the sample and the outside of the tree. Therefore known mean age was 2928 ± 51 years. Submitted by E. Schulman, Laboratory for Tree-Ring Research, University of Arizona, Tucson. Comment: Agreement satisfactory. Apparently sap and heartwood do not exchange.	3045 ± 210 2817 ± 240 2404 ± 210 Av. 2710 ± 130

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