U.S. Geological Survey Radiocarbon Dates II.

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RADIOCARBON dates of samples for which measurements were made in the laboratory of the U.S. Geological Survey from 1 May to 15 Oct. 1954 are listed in this article (*1*). Together with the first list of dates (*2*), this list presents the results obtained on 127 samples of previously unknown age during the first year of laboratory operation. The experimental procedure (*3*) and evaluation of the measurements have remained the same over the entire period of time, except that during June 1954 a complete set of new equipment that essentially duplicated the first set was installed and put into operation. Most of the samples listed were measured in both sets of counting equipment for a counting time of 1 day in each set. The ages given are weighted averages of the two measurements. Deviations in the results from the two sets correspond to those expected from statistics. Corrinne Alexander continued to assist in the preparation of the samples.

Our main efforts continued to be directed toward establishing an absolute time scale for the pre-Mankato substages of the last glaciation. Further evidence of the glacial advance on the North American continent around 20,000 yr ago was accumulated. The deposits representing this glaciation consist of at least most of the till of the Tazewell substage in Illinois and the drift called early Cary in Ohio. A glacial advance in the mountains of the western United States was determined to have occurred about 3000 yr ago. Evidence of a simultaneous continental glaciation was sought in Canada, but the results precluded such an episode.

As a different approach to the problem of the time scale of the climatic fluctuations during the Wisconsin age, the dating of calcareous deep-sea sediments was begun by utilizing Foraminifera shells from cores for which the environmental temperatures of growth had been determined from the O^{16}/O^{18} ratios by Cesare Emiliani at the University of Chicago. This combination of methods leads to the most direct evidence of temperature variations with time. The preliminary measurements that have been carried out to date on core material from the Caribbean Sea show that after a long period during which water temperatures were about 5°C below those of the present, the temperature of the surface water in the Caribbean began to increase rather suddenly about 12,000 yr ago.

Further clarification of the picture of Recent climatic fluctuations can be expected from the dating of material bearing on sea-level changes, and, of even greater importance, by absolute correlations with well-established archeologic sequences in Europe, Asia, and Africa. A number of samples were included in this connection.

No absolute dates are given for samples found to be older than 32,000 yr. Although the carbon-14 determinations as such are sufficiently accurate to measure radiocarbon from samples as old as 45,000 yr, we feel that further work is necessary to substantiate the validity of radiocarbon dates in that range. For some measurements larger limits of error were given than usually assigned. These measurements were carried out at a time when an exceptionally high atmospheric radioactivity was observed. This activity caused a slight increase in the uncertainty of the background of the counters.

Radiocarbon Dates. (Age of each sample is shown in column 3, on the same line as the sample number in column 1. Discussion of samples appears in column 2.)

No.	Sample	Age (yr)
I.	*Samples with oceanic implications*	
	A. *Deep-sea sediments*	
	The sediments contained Foraminifera tests that had been investigated for O^{18} temperatures by Cesare Emiliani, University of Chicago. The paleotemperatures as a function of depth show a very good correlation in the two cores investigated so far by Emiliani. The purpose of the radiocarbon measurements was to find the rates of deposition and hence the temperature of the surface water at a given time. In most of the samples, the total carbonate of a core segment was utilized for the measurement. In two samples, however, only the coarse fraction with a grain size greater than 74 μ, consisting mainly of Foraminifera tests, was used for the measurement. A comparison shows that the total carbonate probably contains a small fraction of material older than the Foraminifera. In addition, the presence of a small amount of	

No.	Sample	Age (yr)
	younger carbon, presumably incorporated by exchange with the atmosphere during the drying and handling of the core after sampling, results in an apparent age of about 35,000 yr. The coarse fraction of a deep sea core therefore seems more suitable for dating. Further measurements are in preparation and a complete discussion of the results will be published jointly with the other investigators at a later date.	
W-132 W-133 W-148	*Core 189* (Swedish deep-sea expedition 1947–48). Obtained from the Mediterranean Sea, lat. 33°54′N, long. 28°29′E, depth, 3664 m. The top of this core, approximately 0.4 m, was missing. W-132: 10 to 20 cm below upper end of core; W-133: 170 to 180 cm below upper end of core; W-148: 360 to 370 cm below upper end of core.	17,200 ± 500 Older than 32,000 Older than 32,000
W-160 W-158 W-159 W-134 W-164 W-162 W-135 W-147	*Core A 179-4* (Lamont Observatory). Obtained from the Caribbean Sea, lat. 16°36′N, long. 74°48′W, depth 2965 m. The material was prepared by and obtained from David Ericson, Lamont Geological Observatory, Columbia University, Palisades, N.Y. The ages are calculated using modern shells for the contemporary assay. W-160: total carbonate carbon from 0 to 10 cm below top of core; W-158: carbonate of the fine fraction only (grain size less than 74 μ) from 23 to 30 cm below top; W-159: same depth as W-158, coarse fraction only; W-134: total carbonate from 30 to 35 cm below top; W-164: total carbonate from 60 to 65 cm below top. W-162: coarse fraction only, from 70 to 77 cm below top; W-135: total carbonate from 150 to 155 cm below top; W-147: total carbonate from 260 to 265 cm below top.	3950 ± 250 13,500 ± 400 11,800 ± 300 15,700 ± 400 21,300 ± 800 27,600 ± 1000 Older than 33,000 Older than 33,000
	B. *Sea-level changes and strandlines*	
W-170	*Essendon, Victoria, Australia.* Wood from sewer-excavation works, corner Brunel St. and The Boulevard, taken with marine borers from black silt containing many marine shells. The collector, E. D. Gill, expected the sample to be younger than the Keilor Terrace (sample W-169 *Archeology*) and possibly correlated with the 10-ft strandline of Australia (see, however, sample W-185).	4820 ± 200
W-185	*Port Campbell, Victoria, Australia.* Shells of *Ninella torquata* from a well-developed bench 10 to 12 ft above the present strandline near Port Campbell in western Victoria. Collector, E. D. Gill, National Museum of Victoria.	Older than 30,000
W-195	*Port Fairy, Victoria, Australia.* Shells of *Ninella torquata* collected from the 25-ft beach at Port Fairy in western Victoria (see *Natl. Mus. Melbourne Mem.* 18). Collected by E. D. Gill.	Older than 35,000
II.	*Glacial samples* A. *Ohio and New York*	
W-127	*Harrisburg, Ohio.* Log from deep road cut on a 1937 relocation of U.S. Highway 62 near Harrisburg, Darby Township, Pickaway County. The overlying till, probably 20 ft thick, contains sand lenses and is well back in the area mapped as early Cary drift by the submitter, R. P. Goldthwait, Ohio State University.	21,600 ± 1000
W-152	*North Hampton, Ohio.* Log from a creek cut exposing a "forest bed" 2½ mi west of North Hampton, Pike Township, Clark County. Submitted by R. P. Goldthwait.	Older than 40,000
W-166 W-184	*Streetsboro, Ohio.* Pieces of wood collected from peat in a deep cut along the new Ohio Turnpike 1 mi northwest of Streetsboro, Portage County. Peat deposit lies under about 12 ft of late Cary till and is underlain by gravel. According to the collectors, the deposit seems to have been a swamp, after early Cary time, which was overwhelmed by a late Cary ice advance. Collectors, G. W. White, University of Illinois, and J. Winslow, U.S. Geological Survey, Columbus, Ohio. W-184: because of the unexpected young age of sample W-166, another independent run was made.	8600 ± 300 8450 ± 250

No.	Sample	Age (yr)
W-188	*Sidney, Ohio.* Logs resting directly on well-zoned soil formed on top of more than 30 ft of till and buried by at least 20 ft of till. Exposure on cut along Baltimore and Ohio Railroad 2¼ mi south of Sidney, Shelby County, just east of the Miami River. Soil leached of carbonates to at least 4 ft with incomplete leaching to 6 ft and calcareous till above and below. Collected by Jane Forsyth, Ohio State University; submitted by R. P. Goldthwait.	23,000 ± 800
W-198	*Edon, Ohio.* Wood fragments from glacial lake bed within the Wabash moraine. Section exposed in road cut at junction of Ohio Turnpike and State Highway 49, 6 mi north of Edon, Williams County, in NW¼NW¼ sec. 3, T9S, R4W. Elevation approximately 980 ft. Section description, from top to bottom: (i) 6 ft gray silt, brown at top, stratified; (ii) 0.5 ft silt and clay with scattered wood fragments (sample horizon); (iii) 3 ft silt and fine sand, interbedded in thin layers; (iv) 4 ft bluish-gray till, clayey, exposed. The stratified silts are from a position necessitating the former presence of glacial ice to block the depression and form a lake. Collected by W. J. Wayne, R. P. Goldthwait, J. H. Zumberge, D. Eschman, and M. Rubin.	14,300 ± 450
W-199	*Marilla, N.Y.* Wood from lake clays exposed in pipeline ditch 2½ mi north of Marilla and 0.8 mi east of Town Line road on East Aurora quadrangle. Site is located between sand bar and beach strandline of glacial Lake Warren and is believed by collector to establish date for that lake stand. Section description, from top to bottom: Lake Warren sediments (i) 26 in. topsoil and clay loam, peaty near bottom; (ii) 2-in. peat layer; (iii) 6 in. clay, gray, red, and then yellow layer (sample W-199 was taken 4 in. from top); Lake Wayne sediments (iv) 8 in. silty sand, with clay patches. Collector, P. D. Blackmon, U.S. Geological Survey, Washington, D.C.	9640 ± 250
	B. *Illinois, Indiana, Michigan*	
W-140 W-161	*Dyer, Ind.* Wood from beach deposits of the Glenwood stage of glacial Lake Chicago found 1 mi west of Dyer NE¼ sec. 30, T35N, R15E, Illinois. Bretz states that the deposits of the Glenwood stage are late Cary. Section consists of lake sediments, a peat-and-wood horizon, and at the base a till. The lake sediments are from a late Glenwood spit that grew westward over the allochthonous peat and wood collected in a bay formed by an earlier and larger Glenwood spit that grew eastward. See ages of Libby's samples C-801, C-871, and C-872 (*4*). Collected by J H. Bretz and L. Horberg, University of Chicago, and M. Rubin, U.S. Geological Survey, Washington, D.C. W-140: wood at peat horizon, underlying approximately 12 ft of lake sediments and above till; W-161: wood in sand and gravel stratigraphically above peat horizon.	12,650 ± 350 12,200 ± 350
W-165	*Greencastle, Ind.* Wood from silt horizon thought to be equivalent to the Farmdale loess (*5*). Collected in quarry 1 mi southwest of Greencastle, NW¼ NW¼ sec. 29, T14N, R4W, Putnam County. Section consists of 15 ft of till, 4½ ft of silt (sample taken 2½ ft from base), and 3 ft of Illinoian gumbotil resting on Ste. Genevieve limestone. Collector, C. L. Bieber, DePauw University.	19,500 ± 800
W-167	*South Haven, Mich.* Wood lying immediately above a blue till near South Haven. Section consists of 40 ft of dune sand, 30 in. of peat, and 72 in. of bedded shallow lake sands with local dune sand, resting on blue till. The till surface is approximately at the surface elevation of Lake Michigan, 581 ft above sea level. This sample was run in collaboration with University of Michigan's C^{14} laboratory, each laboratory arriving at a date independently. Michigan's sample M288a was dated 11,200 ± 600 yr (*6*). Collected and submitted by J. H. Zumberge, University of Michigan.	10,860 ± 350
W-186	*Lake Bloomington Spillway II, Ill.* Wood from lower gray till exposed along spillway of Lake Bloomington, NW¼ sec. 1, T25N, R2E, McLean County. This till underlies a boulder pavement that separates the lower till from the middle and upper gray till described under	31,000 or older

No.	Sample	Age (yr)
	sample W-67 (*2*). These gray tills underlie Bloomington and Normal till of Willman and Payne (*7*). Submitted by L. Horberg.	
W-187	*Farmdale Dam, Ill.* Wood fragment from lower 1 ft of Shelbyville till (20 ft), which is underlain successively by 2 ft of Iowan loess and 15 ft of Farmdale silt (*5*) on Illinoian till near Farmdale, SE¼ SE¼ sec. 36, T26N, R4W, Tazewell County. Collector, L. Horberg.	19,200 ± 700
	C. *Iowa*	
W-126	*Mitchellville Section, Polk County.* Wood from loess underlying Cary till, NE¼ sec. 15, T80N, R22W. Sample was from lower woody horizon as described by collectors and should be similar to sample C-481 dated by Arnold and Libby as older than 17,000 yr (*8*). Section description, from top to bottom: (i) Cary till, 5 ft oxidized and leached; (ii) Iowan and Tazewell(?) loess, 3 ft oxidized and leached, 11 ft oxidized and unleached (upper sample horizon), and 15 ft unoxidized and unleached (lower sample horizon); (iii) road grade, State Highway 64. Collected by W. H. Scholtes, Iowa State College, and R. V. Ruhe, U.S. Department of Agriculture, Ames, Iowa.	16,720 ± 600
W-139	*Independence Section, Buchanan County.* Wood from pre-Iowan Wisconsin(?) silt, NW¼ sec. 3, T88N, R8W. Section description, from top to bottom: (i) 3 ft 2 in. Iowan loess; (ii) 6-in. pebble band; (iii) 5 ft 8 in. Iowan till, oxidized and leached; (iv) 2 ft Iowan till, oxidized and unleached; (v) 2 ft Iowan or pre-Iowan Wisconsin(?) leached, deoxidized silty clay; (vi) 1 ft Pre-Iowan Wisconsin(?) leached, black peat; (vii) 1 ft 9 in. Pre-Iowan Wisconsin(?) leached, unoxidized silt with abundant wood (sample horizon); (viii) 1 ft 6 in. Pre-Iowan Wisconsin(?) unoxidized and unleached till, exposed. Collected by W. H. Scholtes and R. V. Ruhe.	Older than 38,000
W-141	*Hancock Section, Pottawattamie County.* Wood from Farmdale loess of Leighton (*5*) on cut No. 33 on the Chicago, Rock Island, and Pacific Railroad relocation west of Atlantic, Iowa NE¼ sec. 23, T76N, R41W. Section description, from top to bottom: (i) 28 ft Wisconsin loess; (ii) 3 to 4 ft Farmdale loess, of which the A horizon consists of 18 in. of peaty, leached silt loam, black to dark gray, with abundant wood fragments (sample horizon) and the C horizon consists of 18 to 30 in. of leached gray to yellowish-brown silt loam; (iii) 15 ft Loveland loess, exposed. The Wisconsin loess above the Farmdale loess contains two faunal zones, the upper indicative of the Tazewell, the lower of the Iowan, according to the collector, R. V. Ruhe.	24,500 ± 800
W-153	*Clear Creek Section, Story County.* Wood from silt underlying approximately 10 ft of till along Clear Creek, NE¼ SW¼ sec. 5, T83N, R24W. Section described by R. V. Ruhe and W. H. Scholtes ["Radiocarbon dates in central Iowa," *J. Geol.* **63**, 82 (1955)] and dated by Libby (sample C-528) as 16,367 ± 1000 yr. Collector, R. V. Ruhe.	14,700 ± 400
	D. *South Dakota*	
W-115	*Brookings.* Spruce wood recovered from a depth of 138 ft in drift from a well drilled on the Harold Bruening farm, sec. 26, T110N, R48W, 12 mi east and 1 mi south of Brookings. Drill hole started in Iowan drift. Submitted by G. A. Avery, U.S. Department Agriculture, College Station, S.D., through R. F. Flint.	Older than 30,000
	E. *Western United States*	
W-143	*La Sal Mountains, Utah.* Charcoal hearth from the lower part of an unnamed unit located SE¼ NE¼ sec. 22, T26S, R22E, at mouth of arroyo on east side of Pack Creek, ¾ mi downstream from dam in Spanish Valley. Believed by collector to be of post-Altithermal age and equivalent to Tsegi formation (*9*) in Hopi County and Temple Lake glacial substage (*10*). This deposit, a reddish alluvium, can be traced upstream into outwash from moraine of Temple Lake substage. Collector, G. M. Richmond, U.S. Geological Survey, Denver, Colo.	2800 ± 200

No.	Sample	Age (yr)
W-145	*Long Draw, Cache La Poudre River, Colo.* Log from peat bog on type Long Draw (W^4) substage of Bryan and Ray (*11*), deposits SW¼ SW¼ sec. 16, T6N, R75W, in saddle of La Poudre Pass, Rocky Mountain National Park quadrangle, Colo. A bog 10 ft thick formed in a depression on the hummocky Long Draw deposits. The log was taken from a position 18 in. above base of peat. Collector, G. M. Richmond.	6170 ± 240
W-200	*Castle Valley, Utah.* Charcoal from hearth in alluvium in lower Castle Valley, Utah, discovered in an excavation at Wolgamot Ranch, sec. 6, T25S, R23E. The hearth is 10 ft below the top of alluvium that is believed by collector to be correlative with the Tsegi formation (*9*), the Calamity formation (*12*), and the Piney Creek alluvium (*13*). Collector, C. B. Hunt, American Geological Institute, Washington, D.C.	1300 ± 250
W-190	*Unaweep, Colo.* Charcoal from a hearth in alluvium along East Creek, Unaweep Canyon, near State Highway 141 and 9.0 mi from its junction with U.S. Highway 50. The hearth is 6 ft below the top of the alluvium, which is believed to be correlative with the Tsegi-Calamity-Piney Creek alluvial series (*9, 12, 13*). Collector, C. B. Hunt.	1100 ± 250
	F. *Canada*	
W-121	*Toronto Subway.* Woody material found in rapid transit excavation in stratified sands under upper till, near St. Clair Avenue, Toronto, Ontario. In the opinion of the collector, this peat is the same age as the famous Toronto interglacial horizon exposed in the eastern part of the city and thought to be Sangamon. Collector, A. K. Watt, Ontario Department of Mines. Submitted by R. F. Flint, Yale University.	Older than 30,000
W-130	*Cochrane I, Ontario.* Buried silty peat exposed in excavation cut on west end of bridge crossing Trans-Canada Highway, Frederick House River, west of Cochrane. Peat occurs at a depth of 30 ft and is apparently overlain by till; exposure was such that it is impossible to eliminate the possibility that the buried peat zone is overlain entirely by fill.	Less than 200
W-176 W-136	*Cochrane II, Ontario.* On Trans-Canada Highway ½ mi east of Frederick House River bridge crossing and just west of Cochrane. Samples taken from forest peat zones made up of stumps *in situ* and prostrate trunks and limbs. Section consists of 4 ft of peat resting on preglacial varved silts containing scattered pebbles. The samples from Cochrane were collected by T. N. V. Karlstrom, U.S. Geological Survey, specifically for the purpose of dating the "Cochrane" advance. Karlstrom, Rubin, and Suess are jointly preparing an article on this subject. W-176: from 2 ft below surface underlying a wood zone and a silty mossy peat; W-136: from 3½ ft below surface separated from upper sample horizon by mossy peat and from underlying varves by woody moss.	5300 ± 300 6380 ± 350
W-157	*Hillsborough, Nova Scotia.* Spruce wood from peat bed underlying stony and bouldery clay 1½ mi west of Hillsborough Church, Hillsborough, near Mabou, Cape Breton Island, Nova Scotia. Identical with sample Y-232 determined at Yale University to be older than 21,000 yr. Collected by L. R. Wilson, University of Massachusetts, and furnished by the Yale Geochronometric Laboratory.	Older than 38,000
W-177	*Plum Point, Ontario.* Larchwood found at Plum Point, north shore of Lake Erie, 10 mi west southwest of Port Stanley, 8 ft above the lake level in the "lower till." The same till covers the interstadial gyttja, sample W-100, *Port Talbot*, dated as older than 32,000 yr (*2*). Submitted by A. Dreimanis, University of Western Ontario, London.	27,500 ± 1200
W-189	*St. Pierre-les-Becquets Section, Quebec.* Wood from uppermost of three organic layers separated by silty sand in a section approximately 110 mi downstream from Montreal on the south shore of the St. Lawrence River, 1 mi along Provincial Highway 3 southwest of the village St. Pierre-les-Becquets and ¼ mi up a creek from the highway. Organic layer is about 76 ft down, underlying a very thick varved silt and clay section. Three feet of silty sand and silt are exposed under the bottom	Older than 40,000

No.	Sample	Age (yr)
	organic layer. In nearby sections this bottom silt is underlain by a red till, and the varves are overlain by a gray till. Indebted to N. R. Gadd, Canada Geological Survey, Ottawa, and R. F. Flint for the sample.	
W-194	*Amber, Ontario.* A fragment of a ball of peat, found at a depth of 65 ft in a kame gravel deposit, Markham gravel pit, 1½ mi north of Amber (north of Toronto). Section consists of 10 ft of late Wisconsin till, 100 ft of stratified gravel, and Wisconsin till underneath. Pollen analysis by J. Terasmae indicates a composition corresponding to the upper Scarborough beds, but also to the Two Creeks forest beds. Submitted by A. Dreimanis.	Older than 34,000
	G. *Alaska*	
W-174	*Goose Bay.* Wood from organic silt and peat overlying iron-stained gravels and underlying drift near Goose Bay, north shore Knik Arm. Sample W-77, which dated older than 32,000 yr (*2*) came from base of this 41-in. peat section; this sample, from the upper 6 in. of the section, was run to determine whether the top of the peat was within range of radiocarbon dating. Extended range of new equipment allows placing older limit on the sample and does not represent a reversal of sequence. Collected by T. N. V. Karlstrom.	Older than 38,000
W-175	*Kenai Lowland.* Wood from tidal bog exposed along the shores of Turnagain Arm, near Girdwood. Wood was from a tripartite forest zone overlying tidal silts presumed to be from a glacial minimum. The forests are believed to record a relatively low sea-level stand that was terminated by a period of higher sea level, during which the overlying tidal silts were deposited. Collector, T. N. V. Karlstrom.	700 ± 250
W-183	*Fairbanks wood.* Stump from top of muck section 30 ft thick that overlies 140 ft of loess and is stratigraphically under 20 ft of loess. May date end of muck deposition and start of the excessive loess deposition. Collected at Gold Hill, 7 mi west of Fairbanks by T. L. Péwé, U.S. Geological Survey, College, Alaska.	4020 ± 200
W-192	*Cape Deceit.* Spruce log from silt bluffs at east base of Cape Deceit, 1½ mi west of Deering. Wood is from under thick section of organic silts and is expected to date a warm period in northern Seward Peninsula. Collector, D. M. Hopkins, U.S. Geological Survey, Washington, D.C.	Older than 35,000
	H. *Europe*	
W-173	*Godarville, Belgium.* Peat lens at base of Younger Loess II, excavated from canal P. 34 near Godarville 35 km south of Brussels, resting on a gravel that contains Mousterian artifacts, Levalloisian flakes, mammoth, and rhinoceros remains. Submitted by J. de Heinzelin, Institut Royal des Sciences Naturelles, Brussels, through R. F. Flint.	Older than 36,000
III.	*Other geologic samples*	
W-112	*Mexico, D.F.* Bellas Artes core. Wood from depth of 31 to 32.5 m. In conjunction with W-50, which dated 4900 ± 250 yr (*2*), the date obtained was to be used for calibrating the remainder of the core, which is being analyzed palynologically. Collector, L. Zeevaert, Consulting Engineer, Mexico, D.F. Submitted by P. B. Sears, Yale University.	Older than 32,000
W-197	*Singletary Lake, N.C.* Peat and lake sediments from Singletary Lake, Bladen County. Sample is from middle organic layer of three such layers occurring in deposits of the lake. See also Arnold and Libby's samples, C-474, C-475, and C-476 (*8, 14*). Section details are described by the collector, D. G. Frey, Indiana University, in *Ecology* [**32**, 518 (1951)].	Older than 38,000
W-149	*Crane Key, Fla.* Core sample from peat layer 26 in. thick below 75 in. of pure calcilutaceous sediment. Taken on largest of Crane Keys, 222 ft east of western shore near middle of island, lat. 25°00′18″N, long. 80°37′03″W (U.S. Coast and Geodetic Survey chart 1250). Sample measured to determine rate of sedimentation. Collector, R. N. Ginsburg, University of Miami.	3300 ± 240

No.	Sample	Age (yr)
W-168	*Buck Run, Pa.* Log from top of gravel underlying 3 ft of silty flood-plain deposits on left bank of Buck Run (tributary of Brandywine Creek) 1 mi south of Ercildoun. Sample is a characteristic or "type" piece from the stratigraphic section found in numerous localities throughout the Middle Atlantic and parts of the South Atlantic region. Date on this suggests considerable stability of a very thin stratigraphic section (3 ft), representing a relatively long period of time. See M. G. Wolman, *U.S. Geol. Survey Profess. Paper* No. 271 (in press). Collected by M. G. Wolman, U.S. Geological Survey, Washington, D.C.	1450 ± 200
IV.	*Archeology*	
	A. *America*	
W-142	*Scripps service yard charcoal.* Charcoal exposed during excavations for a new building on the campus of the Scripps Institution of Oceanography, La Jolla, Calif., in a section of terrace fill, 13 ft below the surface of a midden. According to the collectors, C. L. Hubbs and G. F. Carter, the charcoal is probably of human origin, although no definite proof can be given at the present time for the occupation of this layer by man.	21,500 ± 700
W-154 W-155	*La Jolla Canyon.* Shells and charcoal from a single large hearth just south of Scripps Institution, 30 m back from beach cliff. The materials are definitely of human origin and came from the same terrace fill as sample W-142, but the possibility of a more recent canyon cut and fill was mentioned by the collector at the time the samples were submitted. The dates show that the samples are indeed from this younger fill. Collected by C. L. Hubbs, University of California. W-154: Shells, *Mytilus californianus* Conrad; W-155: Charcoal.	580 ± 200 600 ± 200
	B. *Europe*	
W-150	*La Colombière, France.* Ashy material from hearth No. 3 in trench 19 of the site near Poncin (Ain) in eastern France, excavated and collected in 1948 by H. L. Movius, Jr., Harvard University. The horizon rests immediately upon and is in part interfingered with sediments accumulated during the final depositional stage of the 20- to 23-meter terrace of the Ain River. It is believed that this terrace was formed during the Wurm II stage of glaciation. The material should date an Upper Périgordian (or Gravettian) occupation layer. The possibility of contamination could not be excluded because the top of the hearth lay only 35 cm below a surface deposit containing a great deal of charcoal and other debris from recent campers, and because modern roots were noticed 25 cm below the level of the hearth. Two determinations by J. L. Kulp *et al.* on samples from the same hearth gave ages of 13,400 ± 400 and 15,500 ± 700 yr. The radiocarbon dates are too young for archeologic interpretation and indicate that the material of the hearth is heterogeneous.	11,750 ± 600
W-151 W-191	*Abri Pataud.* Les Eyzies (Dordogne) in southern France. Ashy material containing charcoal traces from basal hearth found at a depth of 30 to 40 cm below the top of the Black Layer in trench II (Sections X and Y). Archeologic horizon: Périgordian IV (Upper Paleolithic). Locality described by the collector, H. L. Movius, Jr., in *Archaeology* [7, 82 (1954)]. W-191: the result on sample W-151 was considered by the collector to be the most important single date ever measured for an archeologic locality in Europe and therefore a second independent determination was made on similar material, collected separately by H. L. Movius, Jr., from the same spot at the same locality.	23,600 ± 800 24,000 ± 1000
W-172	*Meiendorf, Holstein, Germany.* Lake deposit (gyttja) from the glacial kettle with Hamburgian implements of the important Meiendorf site, about 13 km northeast of Hamburg. Assuming that the organic part of the gyttja is relatively free of reworked secondary material, the sample should date the Meiendorf stage of the Hamburgian Upper	15,750 ± 800

No.	Sample	Age (yr)
	Paleolithic (compare with sample W-93, *2*). Collected and submitted by A. Rust, Ahrensburg, Holstein.	
	C. *Asia*	
W-179 W-178 W-180	*Shanidar Cave, Zagros Mountains, Kurdistan, Iraq.* The deposits of the cave extending to a depth of about 45 ft below the surface can be classified into 4 major cultural layers. The top layer, A contains material from modern to about Neolithic times; layer B contains material from Mesolithic and Gravettian cultures of the Upper Paleolithic; layer C contains material from a new culture period (Baradost) in the Near East that seems to be contemporaneous with Aurignacian of Europe; and layer D contains Mousterian material of the Middle Paleolithic. The three samples of earthy charcoal were collected and submitted by R. Solecki, Smithsonian Institution, Washington, D.C. W-179: this sample, from the lower part of the Upper Paleolithic layer B, should give an early date for the Zarzi culture in that area; W-178: from a depth of 10 ft below datum in square S3W1 in layer C, 2 ft below the contact of layers B and C, where a widespread hearth, indicating an occupational horizon, was found; W-180: from a depth of 15 ft in square S2W4 in layer C and from a hearth zone in an occupational horizon heavily charged with material about 2 ft above the contact of layers C and D.	12,000 ± 400 29,500 ± 1500 Older than 34,000
	D. *Australia*	
W-125 W-169	*Keilor Terrace, Victoria.* Two charcoal samples from aboriginal hearths found and submitted by E. D. Gill, National Museum of Victoria. These samples were expected to date the Keilor terrace and therefore the Keilor skull, previously believed by some workers to be the oldest remains of *Homo sapiens* ever found. However, the collector, E. D. Gill, expected the terrace to have formed during a relatively recent pluvial period, possibly contemporaneous with the Mankato, and the skull to be of about the same age. No charcoal has been found at the exact site where the Keilor skull was discovered, but there seems to be no reason to assume that the skull is substantially older than the hearths from which the samples were collected. W-125: relatively large pieces of charcoal collected from a number of hearths with bones and artifacts buried in the Keilor Terrace at Braybrook south of Keilor. The age suggests that the material was at least in part intrusive; W-169: charcoal from aboriginal hearth in Keilor Terrace collected from middle of terrace (vertically) at the east end of a molding-sand quarry on the south bank of the river at Braybrook, Victoria, about 200 yd west (upstream) from where Milleara Road crosses the river. According to the collector this material and the terrace are no doubt of the same age.	3010 ± 160 8500 ± 250

References and Notes

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