

UNIVERSITY OF WISCONSIN RADIOCARBON DATES X

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Radiocarbon dates obtained since December, 1970, are summarized here. Procedures and equipment have been described previously (R., 1966, v. 8, p. 522). Wood, charcoal, and peat samples are pretreated with dilute NaOH and dilute  $H_3PO_4$  before conversion to the counting gas, methane; marls and lake cores are treated with acid only. Very calcareous materials are treated with HCl instead of  $H_3PO_4$ .

The dates reported have been calculated using 5568 as the half-life of  $C^{14}$ , with 1950 as the reference year. The standard deviation quoted includes only  $1\sigma$  of the counting statistics of background, sample, and standard counts. Methane prepared from NBS oxalic acid is used as the standard; the  $C^{13}/C^{12}$  ratios of the  $CO_2$  prepared from this oxalic acid are measured and the activity of the standard methane is corrected for any deviation of the  $\delta C^{13}$  value of the  $CO_2$  sample from the  $-19\%$  value (compared to the PDB standard) reported by Craig (1961). The dated samples for which  $\delta C^{13}$  values are listed have been corrected to  $-25\%$  (PDB standard), the "normal" value of terrestrial material.

ACKNOWLEDGMENTS

This research is supported by the National Science Foundation, Atmospheric Sciences Division, Grant GA-10651X. We thank the Chemistry Department for the use of the Nuclide RMS-660 mass spectrometer and Roger Arhart for technical assistance with the mass spectrometer.

I. ARCHAEOLOGIC SAMPLES

*A. Illinois*

**WIS-474. Divers site (MO-28)** **1010  $\pm$  55**  
**A.D. 940**

Wood, Specimen 319, from Feature 36, SW wall of house, 2nd burned house from Divers site, Monroe Co., Illinois ( $38^\circ 27' 42''$  N Lat,  $90^\circ 15' 25''$  W Long). Previous date, A.D. 1105, WIS-334, was reported earlier (R., 1970, v. 12, p. 340).

**Cahokia series**

Charcoal from E of Monks Mound, Cahokia Mounds State Park, Madison Co., Illinois ( $38^\circ 40'$  N Lat,  $90^\circ 04'$  W Long), and from Mound 72, Cahokia Mounds State Park, St. Clair Co., Illinois ( $38^\circ 39'$  N Lat,  $90^\circ 04'$  W Long). Coll. 1966 to 1970 by Melvin Fowler and J. B. Anderson; subm. by Melvin Fowler, Univ. Wisconsin-Milwaukee.

**WIS-492. Cahokia** **900  $\pm$  55**  
**A.D. 1050**

UWM Sample 70-23 from Mound 72, Feature 227. Feature is large.

irregular, shallow mound pit assoc. with earliest construction activity at Mound 72.

**WIS-494. Cahokia** **900 ± 55**  
**A.D. 1050**

UWM Sample 66-559 from structural timber, N199-200, E454-456, ca. 154 m E of Monks Mound. Structure preceded all phases of stockade construction E of Monks Mound. Sample directly assoc. with classic Ramey Incised pot.

**WIS-495. Cahokia** **850 ± 50**  
**A.D. 1100**

UWM Sample 67-1703, timber from Structure 4, N315.80-315.90, E466.90-467.05, ca. 166 m E of Monks Mound. Sample from floor of House 4, destroyed with contents in place. Ceramic inventory includes 2 variants of Ramey Incised, weeping eye design, and 1 cord marked vessel. Structure preceded all phases of stockade construction E of Monks Mound.

**WIS-493. Cahokia** **810 ± 45**  
**A.D. 1140**  
 $\delta C^{13} = -27.0\text{‰}$

UMW Sample 67-387, support beam for House 4, N315.38-315.48, E467.45-467.62, 166 m E of Monks Mound.

#### **Cahokia, Monk's Mound**

Charcoal from 4th terrace of Monk's Mound, Cahokia Mounds State Park, Madison Co., Illinois (38° 40' N Lat, 90° 04' W Long). Coll. 1970 by Univ. Washington, St. Louis, party dir. by Nelson Reed.

**WIS-525. Monk's Mound** **870 ± 55**  
**A.D. 1080**  
 $\delta C^{13} = -28.4\text{‰}$

Sample from Feature 1B.

**WIS-527. Monk's Mound** **890 ± 60**  
**A.D. 1060**  
 $\delta C^{13} = -26.5\text{‰}$

Sample from Feature 1H.

**WIS-528. Monk's Mound** **970 ± 65**  
**A.D. 980**  
 $\delta C^{13} = -28.3\text{‰}$

Sample from Post 6, Feature 26.

#### *B. Iowa*

#### **Brewster site series**

Excavations conducted during the summer of 1970, sponsored by Univ. Wisconsin—Madison and Sanford Mus., Cherokee, Iowa, at the Brewster site (13CK15) (42° 49' N Lat, 95° 36' W Long) resulted in two-directional sectioning of the midden. Dates from charcoal specimens at various depths imply relatively thick midden was constructed in brief

time period and that excavation of house pits and features disturbed the continuity of deposition. Subm. by D. A. Baerreis.

- WIS-496. Brewster site (13CK15)** **875 ± 60**  
**A.D. 1075**  
Charcoal from Level 1 to 2, 15 to 25 cm depth, Sq. S30W60.
- WIS-500. Brewster site (13CK15)** **1020 ± 55**  
**A.D. 930**  
 $\delta C^{13} = -26.5\text{‰}$   
Charcoal from Level 1 and 2, Sq. S30W70, Sample 191, and Sample 182 from Sq. S50W40, 20 to 30 cm deep.
- WIS-468. Brewster site (13CK15)** **925 ± 75**  
**A.D. 1025**  
Sample from Level 1, 20 to 30 cm depth, Sq. S25W85.
- WIS-480. Brewster site (13CK15)** **990 ± 55**  
**A.D. 960**  
Charcoal from Level 1, Sq. S30W85.
- WIS-453. Brewster site (13CK15)** **750 ± 50**  
**A.D. 1200**  
Sample from Level 3 to 4, 30.5 to 41 cm depth, Sq. S25W85.
- WIS-469. Brewster site (13CK15)** **810 ± 70**  
**A.D. 1140**  
Charcoal from Level 11 to 12, 71 to 81 cm below surface, Sq. S25W90.
- WIS-456. Brewster site (13CK15)** **925 ± 55**  
**A.D. 1025**  
Sample from Level 15 to 16, 81 to 91 cm deep, from Sq. S25W90.
- WIS-463. Brewster site (13CK15)** **950 ± 55**  
**A.D. 1000**  
Sample from Level 15 to 16, Sq. S25W85.
- WIS-473. Brewster site (13CK15)** **1020 ± 55**  
**A.D. 930**  
Sample from Level 16 to 17, 91 to 102 cm deep, Sq. S30W90, and Level 15, 91 to 97 cm deep, Sq. S25W90.
- WIS-482. Brewster site (13CK15)** **950 ± 55**  
**A.D. 1000**  
Sample from Level 19 to 20, 112 to 122 cm deep, Sq. S25W85.
- WIS-511. Brewster site (13CK15)** **1015 ± 55**  
**A.D. 935**  
Charcoal from Level 21 to 22, 122 to 132 cm deep, Sq. S25W85.
- WIS-461. Brewster site (13CK15)** **1010 ± 55**  
**A.D. 940**  
Sample from Level 25 to 26, 142 to 152 cm depth, Sq. S30W85.

**WIS-464. Brewster site (13CK15)** **1000 ± 55**  
**A.D. 950**  
 Sample from Level 25 to 26, Sq. S30W90.

**WIS-505. Brewster site (13CK15)** **910 ± 60**  
**A.D. 1040**  
 Sample from Level 25 to 26, Sq. S25W90.

**WIS-497. Brewster site (13CK15)** **1025 ± 55**  
**A.D. 925**  
 Sample from Level 29 to 30, 160 to 170 cm deep, Sq. S35W90.

**Meehan-Schell site (13BN110)**

Charcoal from Meehan-Schell site, Boone Co., Iowa (Saylorville Reservoir) (42° 2' 0" N Lat, 93° 56' 50" W Long). Coll. 1970 by David Gradwohl, Iowa State Univ.; subm. by D. A. Baerreis. Site is Great Oasis component.

**WIS-501. Meehan-Schell site (13BN110)** **870 ± 60**  
**A.D. 1080**  
 $\delta C^{13} = -28.1\%$   
 Catalogue no. 2714 and 2726 from Feature 35, storage pit.

**WIS-502. Meehan-Schell site (13BN110)** **975 ± 55**  
**A.D. 975**  
 $\delta C^{13} = -27.2\%$   
 Catalogue no. 2677 from Feature 32, storage pit.

**WIS-498. Meehan-Schell site (13BN110)** **950 ± 55**  
**A.D. 1000**  
 Catalogue no. 2849 from Feature 37, storage pit.

**Sparks site (13BN121)**

Charcoal from Sparks site, Boone Co., Iowa (42° 2' 0" N Lat, 93° 56' 30" W Long). Coll. 1970 by David Gradwohl; subm. by D. A. Baerreis.

**WIS-517. Sparks site (13BN121)** **1600 ± 55**  
**A.D. 350**  
 Charcoal from Feature 19 and Feature 13, storage pits or basins.

**Broken Kettle West site (13PM25)**

Charcoal excavated 1969, dir. by D. R. Henning, Univ. Nebraska, from site in Plymouth Co., Iowa (42° 38' N Lat, 96° 36' W Long). Site, of Great Oasis cultural affiliation, is on Broken Kettle Creek, opposite Broken Kettle midden (13PM1) of Mill Creek cultural affiliation. See dates of 13PM1, below, which suggest considerable overlap in the 2 occupations.

**WIS-433. Broken Kettle West site (13PM25)** **1070 ± 55**  
**A.D. 880**  
 Sample 260 from House 3, Pit 16, Area 1.

- WIS-439. Broken Kettle West site (13PM25)** **1090 ± 55**  
**A.D. 860**  
 Sample 89 from entrance of House 2, Area 1.
- WIS-440. Broken Kettle West site (13PM25)** **1100 ± 50**  
**A.D. 850**  
 Sample 396 from House 3, Pit 18, Area 1.
- WIS-451. Broken Kettle West site (13PM25)** **840 ± 55**  
**A.D. 1110**  
 Sample 168 from House 2, Pit 5, Area 1, Feature 5.
- WIS-455. Broken Kettle West site (13PM25)** **940 ± 50**  
**A.D. 1010**  
 Sample 410 from House 3, Pit 19.
- WIS-452. Broken Kettle West site (13PM25)** **880 ± 55**  
**A.D. 1070**  
 Sample 425 from House 3, Pit 25.
- WIS-488. Broken Kettle West site (13PM25)** **890 ± 55**  
**A.D. 1060**  
 $\delta C^{13} = -26.4\%$   
 Sample 425, fresh preparation.
- WIS-481. Broken Kettle West site (13PM25)** **980 ± 55**  
**A.D. 970**  
 $\delta C^{13} = -26.5\%$   
 Sample 132 from House 2 entrance.
- WIS-499. Broken Kettle West site (13PM25)** **965 ± 55**  
**A.D. 985**  
 $\delta C^{13} = -27.7\%$   
 Sample 409 from House 3, Area 1, Pit 25.

**Broken Kettle site, Iowa (13PM1)**

Charcoal from Broken Kettle site, Plymouth Co., Iowa (42° 38' N Lat, 96° 36' W Long). Coll. 1969 by D. R. Henning; subm. by D. A. Baerreis. Earlier dates from this site were previously reported (R., 1968, v. 10, p. 474).

- WIS-478. Broken Kettle site (13PM1)** **990 ± 45**  
**A.D. 960**  
 Sample from Sq. 10E10S, Level 8, 107 to 122 cm deep, Feature B.
- WIS-484. Broken Kettle site (13PM1)** **900 ± 45**  
**A.D. 1050**  
 Specimen 8 from Sq. 10E10S, Level 10, 137 to 152 cm deep.
- WIS-506. Broken Kettle site (13PM1)** **870 ± 50**  
**A.D. 1080**  
 Specimen 8a from Feature E, Level 10, 137 to 152 cm deep.
- WIS-485. Broken Kettle site (13PM1)** **925 ± 55**  
**A.D. 1025**  
 Sample from Feature H, Sq. 15E5S.

**WIS-476. Broken Kettle site (13PM1)** **950 ± 50**  
**A.D. 1000**  
 $\delta C^{13} = -27.0\%$

Charcoal from Sq. 10E10S, Level 11, 152 to 168 cm below surface,  
 Specimen 40.

**WIS-479. Broken Kettle site (13PM1)** **960 ± 55**  
**A.D. 990**  
 Specimen 113 from Sq. 10E10S, Level 13, 183 to 198 cm deep.

**WIS-531. Broken Kettle site (13PM1)** **785 ± 60**  
**A.D. 1165**  
 Sample 73 from Level 16, Sq. 15E5S, Feature I, 229 to 244 cm  
 deep.

**WIS-477. Broken Kettle site (13PM1)** **940 ± 55**  
**A.D. 1010**  
 Specimen 97 from Sq. 10E5S, Feature K, Level 2, 231 to 279 cm  
 deep.

**WIS-530. Broken Kettle site (13PM1)** **910 ± 60**  
**A.D. 1040**  
 Sample 77 from Level 17, Feature H, Sq. 15E5S, 244 to 259 cm deep.

**WIS-503. Broken Kettle site (13PM1)** **955 ± 60**  
**A.D. 995**  
 Sample 87 from Feature K, Sq. 10E5S, 279 to 287 cm deep.

*C. Minnesota*

**McKinstry Mounds (21KC2)**

Samples from McKinstry Mound 1 at mouth of Little Fork R.,  
 Koochiching Co., Minnesota (48° 31' 30" N Lat, 93° 35' W Long).  
 Coll. 1970 and subm. by J. B. Stoltman, Univ. Wisconsin—Madison.  
 Burial mound is Middle Woodland, assigned to Laurel culture of N  
 Minnesota.

**WIS-471. McKinstry Mounds (21KC2)** **1700 ± 55**  
**A.D. 250**  
 Unburned wood from log floor at base of mound, Level 16 in Sq.  
 T12.

**WIS-486. McKinstry Mounds (21KC2)** **1980 ± 45**  
**30 B.C.**  
 Charcoal from "Basal black" level of mound, the margins of 1st  
 stage of mound construction of Mound 1. Sample from Feature 23, Sq.  
 S11, Level 11b. WIS-471 lay at base of this layer.

**WIS-487. McKinstry Mounds (21KC2)** **1940 ± 60**  
**A.D. 10**  
 Charcoal from 2nd stage of mound construction, Mound A. Sample  
 from Feature 21, Sq. T12, Level 16.

**WIS-489. McKinstry Mounds (21KC2) 1830 ± 55  
A.D. 120**

Charcoal from Mound B, 3rd constructional stage in mound. Combined sample from Feature 24, Sq. S12, Level 10 and Level 11, and Feature 21, Sq. T12, Level 15.

**WIS-490. McKinstry Mounds (21KC2) 1390 ± 55  
A.D. 560**

Charcoal from Mound C, 4th stage of mound construction, from Feature 17, Sq. S10, Level 4.

**Great Oasis culture, Minnesota**

Specimens coll. 1971 by Univ. Minnesota field school, supervised by D. R. Henning. Study involved a reinvestigation of Great Oasis components previously reported by L. A. Wilford, Univ. Minnesota (Wilford, 1945; 1955). Subm. by D. A. Baerreis.

**WIS-522. Thompson site (21MU17) 1050 ± 60  
A.D. 900**

$\delta C^{13} = -26.5\%$

Charcoal coll. 1971 from Murray Co., Minnesota (44° 5' N Lat, 95° 55' 30" W Long). Sample 53 from Feature 2, Sq. 3, 61 cm deep.

**WIS-532. Low Village site (21MU2) 975 ± 65  
A.D. 975**

Samples 17 and 18 from Feature C, Sq. 1, 38 to 51 cm deep, in Murray Co., Minnesota (44° 5' N Lat, 95° 53' W Long).

*D. South Dakota*

**Over focus series**

Dating of samples from Mitchell site (39DV2), the type site of the Over focus in South Dakota, during July-August, 1971, are combined with an examination of samples from earlier work in order to clarify the temporal position of this cultural unit. The long-rectangular house assemblage is considered one of earliest sedentary village complexes of this region.

**Mitchell site (39DV2), South Dakota**

Excavations were made in 1971 by a Univ. Wisconsin field party, supervised by R. A. Alex at Mitchell site (43° 43' N Lat, 98° 02' W Long), Davison Co., South Dakota. The site contains only single cultural component and was previously tested by E. E. Meleen in 1938 (Meleen, 1938). Samples subm. by D. A. Baerreis.

**WIS-509. Mitchell site (39DV2) 825 ± 55  
A.D. 1125**

Charcoal from Feature 6, Sq. J, 30 to 46 cm deep.

**WIS-510. Mitchell site (39DV2)** **960 ± 55**  
**A.D. 990**  
 $\delta C^{13} = -25.5\text{‰}$

Charcoal from Feature 5, Level 9, 122 to 142 cm deep.

**WIS-512. Mitchell site (39DV2)** **965 ± 50**  
**A.D. 985**  
 $\delta C^{13} = -25.7\text{‰}$

Charcoal from House 3, Sq. I.

**WIS-514. Mitchell site (39DV2)** **890 ± 55**  
**A.D. 1060**  
 $\delta C^{13} = -25.6\text{‰}$

Charcoal from House 4, Sq. U, E half, 46 to 55 cm below surface.

**WIS-518. Mitchell site (39DV2)** **910 ± 55**  
**A.D. 1040**  
 $\delta C^{13} = -25.4\text{‰}$

Charcoal from House 4, Sq. W, E half, wall daub layer, 55 to 70 cm below surface.

**WIS-521. Mitchell site (39DV2)** **950 ± 55**  
**A.D. 1000**

Charcoal from Sq. U, SE corner, wall post, 46 cm deep.

#### **Swanson site (39BR16), South Dakota**

The Swanson site (43° 54' N Lat, 99° 20' W Long), Brule Co., South Dakota is an Over focus component excavated 1950 by W. R. Hurt, Jr. (1951). A single date, A.D. 850 ± 250, M-839, was obtained from wood from Post C, House 2 (Crane and Griffin, 1960). A series of additional posts from the site, preserved at the W. H. Over Mus. in Vermillion, South Dakota, were obtained for dating through the courtesy of J. S. Sigstad, Univ. South Dakota and W. R. Wood, Univ. Missouri; subm. by D. A. Baerreis.

**WIS-524. Swanson site (39BR16)** **1090 ± 60**  
**A.D. 860**  
 $\delta C^{13} = -22.8\text{‰}$

Wood from outer rings of Post D, House 2.

**WIS-526. Swanson site (39BR16)** **925 ± 55**  
**A.D. 1025**  
 $\delta C^{13} = -23.2\text{‰}$

Wood from outer rings of Post C, House 2.

**WIS-523. Swanson site (39BR16)** **1450 ± 60**  
**A.D. 500**  
 $\delta C^{13} = -21.9\text{‰}$

Wood from outer rings of Post 2, House 1. Date is inconsistent and



suggests sample was contaminated, perhaps by preservative, in museum storage. See WIS-529.

**WIS-529. Swanson site (39BR16)** **1190 ± 70**  
**A.D. 760**  
 $\delta C^{13} = -22.8\text{‰}$

Sample from inner rings of Post 2, House 1.

**WIS-513. Breeden site (39ST16)** **730 ± 55**  
**A.D. 1220**  
 $\delta C^{13} = -12.1\text{‰}$

Charred grass from the Breeden site (44° 25' N Lat, 100° 23' 33" W Long) Stanley Co., South Dakota. Coll. 1955 by R. P. Wheeler; subm. by D. A. Baerreis. Date, A.D. 710 ± 150, M-608, (Crane and Griffin, 1960) was previously reported from this site.

## II. GEOLOGIC SAMPLES

### A. Iowa

#### Willard Cave

Bone from Willard Cave, 8.4 km E of Edgewood, Delaware Co., Iowa (42° 38' 15" N Lat, 91° 17' 30" W Long). Coll. 1970 by R. E. Eshelman, Univ. Iowa, Iowa City; subm. by D. A. Baerreis. Present area of sympatry of 2 id. taxa from this cave is 483 km to NW of Delaware Co., based on presence of *Clethrionomys gapperi*, the boreal red-backed vole and *Onychomys leucogaster*, the N grasshopper mouse.

**WIS-483. Willard Cave** **3500 ± 60**  
**1550 B.C.**  
 $\delta C^{13} = -20.3\text{‰}$

Bone of small animals from 168 cm below surface of S talus from Level 6, 76 to 91 cm level.

**WIS-491. Willard Cave** **1255 ± 55**  
**A.D. 695**  
 $\delta C^{13} = -24.1\text{‰}$

Bones (*Odocoileus virginianus*) from small cavity 259 cm below surface of S talus slope, but slumping of talus deposits may have covered younger material derived from different cave entrance.

### B. Wisconsin

**WIS-508. Green Bay Campus Wood** **11,940 ± 110**  
**9990 B.C.**

Small branch from trench excavated 1971, Univ. Wisconsin-Green Bay campus, Brown Co., Wisconsin (44° 32' N Lat, 87° 55' W Long) by Frank Byrne and Harry Guilford, Univ. Wisconsin-Green Bay. Wood, Two Creeks deposit, was 5.8 m below surface, lying beneath 4.6 m till (Valders) and above 30.5 cm brown and reddish clay above sand.

*C. Canada***Southwest Keewatin series**

- 1265 ± 55**
- WIS-466. Kasmere Lake** **A.D. 685**  
Charcoal from buried soil 15 cm below surface near base of esker. Coll. 1970 from Kasmere Lake, Manitoba, Canada (59° 40' N Lat, 101° 14' W Long) and subm. by C. J. Sorenson, Univ. Wisconsin-Madison.
- 1085 ± 45**
- WIS-470. Birch Bay** **A.D. 865**  
Charcoal from buried charcoal 30.5 cm below surface in matrix of fine sand near crest of esker near Birch Bay, N.W.T., Canada (60° 41' N Lat, 101° 47' W Long). Coll. 1970 and subm. by C. J. Sorenson.
- 1520 ± 55**
- WIS-472. Northwest Arm Ennadai** **A.D. 430**  
Charcoal from surface horizon of buried paleosol overlain by 5 to 10 cm more recent soil on S facing slope of esker on NW arm of Ennadai Lake, N.W.T., Canada (61° 05' N Lat, 101° 37' W Long). Coll. 1970 and subm. by C. J. Sorenson.
- Roundrock Lake, N.W.T.**  
Samples from 3 buried charcoal horizons overlying a stone line near top of an esker at Roundrock Lake, Mackenzie Dist., N.W.T. (64° 23' N Lat, 113° 20' W Long). Site is in present forest/tundra ecotone and provides information on latitudinal migration of forest border during Holocene. Coll. 1971 and subm. by C. J. Sorenson and J. C. Knox, Univ. Wisconsin-Madison.
- 575 ± 55**
- WIS-519. Roundrock Lake, N.W.T.** **A.D. 1375**  
Wood from surface of buried paleosol, depth 102 cm. Sample denotes climatic change toward more arctic conditions with attendant Sward depression of treeline.
- 1885 ± 55**
- WIS-515. Roundrock Lake, N.W.T.** **A.D. 65**  
Charcoal from buried layer of forest litter, depth 119 cm. Date identifies an early period of climatic and vegetative change.
- 6910 ± 85**
- WIS-516. Roundrock Lake, N.W.T.** **4960 B.C.**  
Charcoal, 152 cm deep, from buried forest remnant. Provides date for destruction by fire of a very early postglacial forest.
- 1580 ± 55**
- WIS-520. Esker near Eileen Lake, N.W.T.** **A.D. 370**  
Charcoal from upper horizon of buried podzol paleosol, depth 18

cm, NNW of Eileen Lake, Mackenzie Dist., N.W.T. (62° 20' N Lat, 107° 47' W Long). Indicates period of climatic fluctuation in which forest gave way to mixed forest and tundra. Coll. 1971 and subm. by C. J. Sorenson and J. C. Knox.

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