[RADIOCARBON, VOL. 34, NO. 1, 1992, P. 83–104]

ILLINOIS STATE GEOLOGICAL SURVEY RADIOCARBON DATES X

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INTRODUCTION

The following is a partial list of samples of archaeological interest processed between February 1981 and October 1985 at the Illinois State Geological Survey (ISGS) Radiocarbon Dating Laboratory. The list contains samples from west-central Illinois that were related to projects conducted by current or former researchers at the Center for American Archeology (CAA) (formerly Foundation for Illinois Archaeology) and Northwestern University, Department of Anthropology, or, as noted, by colleagues from other institutions. Although some of the samples reported here came from non-cultural contexts and are primarily of geological significance, all were from or related to archaeological investigations.

We used the benzene liquid scintillation technique following laboratory procedures previously reported by Coleman (1973, 1974). Ages were calculated on the basis of a ^{14}C half-life of 5568 years, using the NBS oxalic acid standard as reference. Errors (1 σ) reported account only for uncertainties in activity measurements of the sample, standard and backgrounds. If the calculated error is less than 70 years, a minimum value of 70 years is assigned.

Samples submitted by D. L. Asch were precleaned and their contents identified at the CAA Archeobotanical Laboratory. Samples were first processed by a "water flotation" method (Struever 1968; B. W. Styles 1981: 271–273; Wiant 1983), or otherwise washed to remove sediments and to concentrate material to be dated. Most charcoal samples were further cleaned by a "chemical flotation" procedure (Struever 1968; B. W. Styles 1981) in a high-specific-gravity, near-saturated $ZnCl_2$ solution, from which charcoal was separated from denser materials. Identification was performed under the direction of N. B. Asch (see Asch & Asch 1985b: 44–47, for methods). Samples were examined under a dissecting microscope to remove remaining contaminants. Uncarbonized plant material was removed from the charcoal samples to prevent contamination from penetrating rootlets.

Archie series

A Middle Woodland Massey phase habitation site on a hill slope overlooking the valley of Sandy Creek, an Illinois River tributary, in Morgan County, 6 km south of Jacksonville (39°40′50″N, 90°15′50″W). Collected 1976 by J. Gigliotti; submitted by D. L. Asch and K. B. Farnsworth, CAA.

ISGS-966. F 4, Zone 2 — **1900 ± 70**; $\delta^{13}C = -25.5‰$

Dispersed charcoal (90% wood, 10% nutshell) from a refuse pit containing Massey-Fabric-Impressed and Hopewell-series sherds and a Norton point.

ISGS-964. F 5 — **1800 ± 70**; $\delta^{13}C = -25.5‰$

Dispersed charcoal (65% wood, 35% nutshell) from a refuse pit containing a few Massey-Fabric-

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Impressed and Hopewell-series sherds.

General Comment (K.B.F.): The utilitarian ceramics at Archie (Massey series) are similar to the Crab Orchard series. The nearby Massey site (see below) had a closely related ceramic assemblage. See Farnsworth and Koski (1985) for the Archie and Massey site reports and definition of the Massey Phase.

9950 ± 260

ISGS-819. Bonaparte, NPH Cr-79, 6.62 m $\delta^{13}C = -27.6‰$

Partially carbonized woody material, probably bark; a non-cultural sample from the Bonaparte site area of Napoleon Hollow archaeological complex; 0.2 m above the base of a 2.5-m-thick laminated slackwater silt unit (LSU-8), beneath colluvium. In Napoleon Valley, 200 m from the Illinois Valley margin, Pike County, 2 km south-southeast of Valley City (39°41′10″N, 90°38′50″W). Collected 1980 and submitted by T. R. Styles, University of Illinois.

Comment (T.R.S.): The pollen from the sediment includes no cold-climate taxa. LSU-8 probably is equivalent to slackwater deposits under the Keach School terrace in Illinois Valley. See T. Styles (1985) for a discussion of the Holocene and Late Pleistocene geology of this locality.

Campbell Hollow series

An Early/Middle Archaic and Late Woodland habitation site on a Campbell Hollow hill-slope swale; near the Illinois Valley margin in Scott County, 7 km south-southwest of Bluffs (39° 41′10″N, 90°34′00″W). Late Woodland pit features were at the base of the plow zone; an upper Archaic occupation unit was overlain by ~2 m of colluvial sediment; a lower Archaic occupation was 30–40 cm below the upper Archaic unit. Submitted by C. R. Stafford, CAA, and D. L. Asch.

8350 ± 100

ISGS-891. U6 (RC #100) $\delta^{13}C = -26.0‰$

Charcoal fragments (95% wood, 5% nutshell) dispersed across a 14-m-long area of the lower Archaic midden (Squares 20, 21, 23–38, 45; Feature 12); extracted by flotation from 3.5 m^3 of sediment. Collected 1980–1981 by C. R. Stafford.

7670 ± 90

ISGS-936. Square 62, Levels 2–4; F 23 & A/C $\delta^{13}C = -25.8‰$

Carbonized nutshell fragments (mostly *Juglans nigra*) dispersed within a 20-cm-thick unit of a 2 × 2-m excavation area (including midden, a shallow pit and a hearth), within an upper Archaic midden. Collected 1981 by C. R. Stafford.

7600 ± 110

ISGS-753. Square 23, Levels 2A, 3 $\delta^{13}C = -25.4‰$

Charcoal fragments (50% wood, 50% nutshell), probably from a single depositional episode in the upper Archaic midden. Collected 1980 by C. R. Stafford.

7560 ± 80

ISGS-940. Square 30, Levels 4–6; F 13, 16, 19 $\delta^{13}C = -26.4‰$

Charcoal fragments (80% wood, 20% nutshell) scattered across 4 m of the upper Archaic occupation, from a midden and fill of three shallow pits. Collected 1980 by C. R. Stafford.

1250 ± 70

ISGS-947. F 3 $\delta^{13}C = -25.9‰$

Charcoal (>99% wood and bark fragments, mostly *Quercus*) dispersed throughout a Late Woodland refuse pit containing discoidal and grit-tempered pottery decorated with a punctate band around an angular shoulder (Bauer Branch series). Collected 1980 by M. B. Sant, CAA.

1240 ± 70

ISGS-899. F 2, Level 4B $\delta^{13}C = -25.9‰$

Dispersed charcoal (90% wood, 10% nutshell), from a Late Woodland refuse pit. Bauer Branch pottery is represented among the sherds. Collected 1979 by M. B. Sant.

General Comment (C.R.S.): The upper and lower Archaic occupations (see Stafford 1985) were short-term encampments. Expanding-stem forms predominate in the upper Archaic projectile point assemblage; no points were recovered from the older Archaic unit.

Cypress Land series

A multicomponent habitation site located along the margin of the Keach School terrace in the Illinois Valley, Greene County, 8 km north-northwest of Eldred (39°21′30″N, 90°35′00″W). An unstratified midden created by the churning of prehistoric and historic cultural materials into loose sands overlies the cultural features. Collected 1978 by B. Yaegel; submitted by D. L. Asch.

4810 ± 70

ISGS-790. Test Square 7, Level 4A $\delta^{13}C = -25.4‰$

Dispersed charcoal fragments (>99% nutshell) from a midden overlying a pottery-containing pit.

Comment (D.L.A.): The dated nutshell is much older than the Early Woodland pit contents, and most or all the nutshell must have been redeposited.

4750 ± 80

ISGS-791. F 6B, Levels 3–4 $\delta^{13}C = -25.3‰$

Dispersed charcoal fragments (>95% nutshell) from the lower levels of a pit feature. A small, side-notched Archaic point was recovered from the basal pit fill; two potsherds and a pig patella were recovered from the top of the feature.

4610 ± 70

ISGS-1167. F 10 $\delta^{13}C = -26.8‰$

Dispersed carbonized *Carya* nutshell fragments from a pit. One potsherd was recovered from the top of the feature.

2270 ± 70

ISGS-1016. F 7 $\delta^{13}C = -25.9‰$

Dispersed charcoal fragments (>99% wood, <1% nutshell) from a Cypress phase (Black Sand) Early Woodland pit containing eight Liverpool cordmarked potsherds.

Comment (D.L.A.): Because the charcoal from the surrounding midden was >90% nutshell, it seemed likely that the charcoal comprising the ^{14}C sample was not redeposited. The date accords with the chronology of the Cypress phase.

General Comment (D.L.A.): Despite somewhat questionable contexts due to the disturbance of the midden and upper levels of pits at the base of the midden, the three nutshell samples had nearly the same ^{14}C age, as did the nutshell sample from the nearby Cypress Land South shell midden (see below). Apparently, most of the nutshell at Cypress Land came from a 5th millennium BP Archaic occupation, an interpretation consistent with the predominance of Matanzas and Matanzas-like forms in the projectile point assemblage. See Conner (1986).

ISGS-792. Cypress Land South, TS-1, Levels 1B, 2, 2NW, 3 **4500 ± 120**

Dispersed charcoal fragments (>95% nutshell) from a shell midden at the Keach School terrace margin in the Illinois Valley, Greene County, 7 km north-northwest of Eldred (39°21′10″N, 90°35′00″W), from 0.2–0.4 m depth (the base of the plow zone to the near-base of the shell pile). Base leach was omitted. Collected 1978 by G. L. Houart; submitted by D. L. Asch.

Comment (D.L.A.): Temporally diagnostic cultural materials have not been recovered from the ~20-m-diameter shell midden. The mussels are river species, suggesting shells were deposited when the active channel of the Illinois River (now 3 km to the west) was adjacent to the terrace.

Deer Track series

A late Woodland habitation site in Bear Creek Valley, a Mississippi River tributary, Adams County, 2 km north of Marcelline (40°08′30″N, 91°22′00″W). Collected from fills of refuse pits at the base of the plow zone (Feature 53 underlying an additional 15 cm of laminated sands). Collected 1978 by C. R. McGimsey and G. L. Houart; submitted by D. L. Asch.

ISGS-785. F 53 **1370 ± 70**
$\delta^{13}C = -25.4‰$

Dispersed charcoal fragments (67% wood, 33% nutshell) from a pit containing a Klunk side-notched arrow point and Sepo-type pottery only. Two fragments of maize were recovered from the pit fill.

Comment (D.L.A.): This is the oldest dated record for maize from a secure context in west-central Illinois (Asch & Asch 1985a).

ISGS-779. F 30 **1220 ± 70**
$\delta^{13}C = -25.8‰$

Dispersed, carbonized *Carya* nutshell fragments from a pit containing 67 Sepo-type sherds. No maize was in the pit.

ISGS-777. F 20, Levels 1, 2 **1220 ± 70**
$\delta^{13}C = -25.8‰$

Dispersed charcoal fragments (90% wood, 10% nutshell) from a pit containing 21 Sepo-series potsherds, 1 Canton-series sherd, and 2 sherds with lenticular punctate decoration. No maize was in the pit.

ISGS-782. F 46, Level 0 **1110 ± 70**
$\delta^{13}C = -26.5‰$

Dispersed wood charcoal fragments from a pit containing 62 Sepo sherds and 3 Canton sherds. Maize fragments were numerous.

General Comment (D.L.A.): McGimsey and Conner (1985) assign the ceramics from the site to the Sepo series, which comprises almost all of the recovered sherds, and to the Canton series ("Maples Mills"), which was uncommon even in the few features containing it. However, revisions of Sepo and Canton ceramic classifications and chronology for the central Illinois Valley, where these series originally were defined, may require reevaluation of Deer Track's cultural affiliation (Esarey 1988; Harn 1986). The dates support the idea that Canton pottery was present only during the later part of occupation. Increasing dependence on maize through time at Deer Track may be reflected by its greater abundance in features containing Canton pottery.

ISGS-872. Dickson Camp, F 5 **2040 ± 90**
$\delta^{13}C = -25.6‰$

Dispersed, carbonized hazelnut shell fragments from Fulton County, 6 km southeast of Lewistown (40°21′00″N, 90°07′00″W) in a prehistoric midden remnant (designated Feature 5) at the base of the plow zone. The site is located on a hill slope at the juncture of the Illinois and Spoon River Valleys. Collected 1965 by J. R. Caldwell; submitted by D. L. Asch and A-M. Cantwell, New York University.

Comment (D.L.A.): Dickson Camp is an early Havana tradition (Morton/Caldwell phase) habitation site, with minor subsequent Mississippian occupations (Cantwell 1980). Other dates from Feature 5 are 1640 ± 90 BP (I-2025) and 270 ± 85 (I-2026), both too recent to date the Morton/Caldwell component. The hazelnut charcoal fraction was selected to make up ISGS-872, because this nutshell is peculiarly common in Havana cultural contexts in the region (Farnsworth & Asch 1986: 423). See also *Comment* for the Pond site, below (ISGS-873).

Hillview Levee and Drainage District series

From Illinois Valley alluvium; submitted by E. R. Hajic and D. L. Asch.

ISGS-1122. LLC 40, 5.82–6.00 m **9300 ± 150**
$\delta^{13}C = -28.1‰$

Uncarbonized, porous wood, bark and much fine, partially decomposed plant matter, 5.82–6.00 m below ground surface from an unnamed silty clay to a silty clay loam unit, 3 km south-southeast of Bedford (39°31′10″N, 90°32′50″W). Collected 1982 by E. R. Hajic.

Comment (E.R.H.): From slackwater sediments filling the Swan Lake paleochannel sediment assemblage (Hajic 1987, 1990b).

ISGS-1095. LLC 55, 9.09–9.15 m **5000 ± 70**
$\delta^{13}C = -28.2‰$

Uncarbonized section of a *Betula* branch, 9.09–9.15 m below ground surface from the base of the Wood Lake paleochannel sediment assemblage from Scott County, 2 km northwest of Bedford (39°32′20″N, 90°33′50″W). Early Woodland cultural materials were found at ground surface. Collected 1982 by E. R. Hajic.

ISGS-1120. LLC 11B, 5.98–6.00 m **2420 ± 70**
$\delta^{13}C = -29.1‰$

Uncarbonized, diffuse porous wood and much fine, partially decomposed plant matter, from a 2-cm-thick bed of organics, 5.98–6.00 m below ground surface, at the middle of a sand-to-silty-

clay gradational sequence infilling a floodbasin slough or yazoo stream channel, which belongs to the submodern channel sediment assemblage, from Greene County, 5 km north of Hillview (39° 29′30″N, 90°32′00″W). Collected 1983 by D. S. Leigh.

Comment (E.R.H.): Dates the approximate time of the initial infilling of the slough; ISGS-1084 dates the top of this unit.

1980 ± 80

ISGS-1084. LLC 11A, 3.78–3.98 m $\delta^{13}C = -27.7‰$

Primarily uncarbonized bark, non-woody plant debris and some wood (*Platanus, Ulmus, Carya* and unidentifiable diffuse porous), 3.78–3.98 m below ground surface at the top of a sand-to-silty-clay gradational sequence infilling a floodbasin slough or yazoo stream channel, which belongs to the submodern channel sediment assemblage, 10 m from LLC-11B (ISGS-1120). Collected 1982 by E. R. Hajic.

General Comment (E.R.H.): See Hajic (1987, 1990b) for further description and interpretation.

Koster (North Field) series

A multicomponent, stratified prehistoric habitation site on a colluvial fan and underlying alluvial fan of Koster Creek, Illinois Valley margin, Greene County, 7 km northeast of East Hardin (39°12′30″N, 90°33′00″W). Submitted by J. A. Brown, Northwestern University, and D. L. Asch, except as noted.

13,360 ± 100

ISGS-875. EMC 9, 12.40–12.55 m $\delta^{13}C = -25.8‰$

Uncarbonized conifer (*Picea*?) wood and bark from sandy silt underlying a reddish-brown clay unit, all part of a slackwater/fluvial complex at the Illinois Valley margin, underlying Holocene alluvial fan deposits of Koster Creek and colluvium. The Holocene deposits contain stratified cultural remains. Collected 1979 by E. R. Hajic; submitted by E. R. Hajic and D. L. Asch.

Comment (E.R.H.): A second date, 12,320 ± 80 BP (ISGS-415), pertains to the same fluvial complex (Butzer 1977: 49; Liu, Riley & Coleman 1986a: 81). Red clays are traced laterally across the Illinois Valley, where they occur in Deer Plain (savanna) Terrace sediments (Hajic 1985). See Hajic (1990a, b) for further treatment of Koster geology.

8130 ± 90

ISGS-1065. F 222, Levels B–D $\delta^{13}C = -25.5‰$

Dispersed charcoal (60% wood, 40% nutshell) from a large pit feature containing a dog burial in Horizon 11, 8.45–8.80 m below the primary reference datum. Collected 1970 by S. Struever, Northwestern University.

Comment (J.A.B.): This rerun of F 222 and other cultural evidence suggests that previous dates on material from this feature are anomolous (GX-2102: 7155 ± 220 BP, Levels A–C; GX-2103: 7105 ± 360 BP, Level I). Though slightly more recent than anticipated, the present assay conforms reasonably well with the ISGS chronology.

8230 ± 120

ISGS-783. F 2032 & 2201, Squares 360 & 361 $\delta^{13}C = -26.0‰$

Dispersed charcoal (>95% wood, <5% nutshell) from parts of a hearth and surrounding occu-

pation area (Levels 43 and 45B of Sequence 360, Levles 45, 46A and 46B of Sequence 361) in Horizon 10A, 6.52–6.85 m below the primary reference datum. Collected 1975 by G. L. Houart.

ISGS-923. F 2041, Levels AB, BB, CB; Square 178, Level 56B **7920 ± 150**
$\delta^{13}C = -25.1‰$

Dispersed charcoal (>95% wood, some nutshell) from a hearth and surrounding charcoal scatter, Horizon 9B, 5.49–5.73 m below the site datum. Collected 1974 by G. L. Houart.

ISGS-859. F 1396 & 1397 **7320 ± 70**
$\delta^{13}C = -25.6‰$

Dispersed charcoal (~50% nutshell, 50% wood) from two cultural features (hearths?) located <1 m apart, Horizon 8D, 3.02–3.25 m below the site datum (~5.3 m below ground surface). Collected 1971 by J. W. Mueller and S. Struever.

ISGS-800. Square 46, Levels 31–32 **6970 ± 150**

Dispersed charcoal (~50% nutshell, 50% wood) from a midden level assigned to Horizon 8C, 1.12–1.28 m below the site datum (~4.2 m below ground surface). Collected 1971 by J. W. Mueller and S. Struever.

ISGS-809. Square 46, Level 26 **7000 ± 80**
$\delta^{13}C = -25.7‰$

Dispersed charcoal (~50% nutshell, 50% wood) from a midden level assigned to Horizon 8B, 0.68–0.76 m below the site datum (~3.7 m below ground surface). Collected 1971 by J. W. Mueller and S. Struever.

ISGS-1082. F 1387 **6910 ± 100**
$\delta^{13}C = -25.1‰$

Dispersed charcoal (~50% wood, 50% nutshell) from a feature in Horizon 8B, 1.30–1.45 m below the site datum. Base leach was omitted. Collected 1971 by J. W. Mueller and S. Struever.

Comment (J.A.B.): The date is in excellent agreement with two others run on material from the same archaeological component, Horizon 8B (ISGS-835, -848, below). The result strongly suggests that a previous Geochron assay on charcoal from F 1387 is erroneous (GX-2402: 7730 ± 190 BP, H. W. Kreuger, personal communication 1971).

ISGS-848. Square 254, Levels 14–15 **6960 ± 80**
$\delta^{13}C = -25.2‰$

Dispersed charcoal (~75% nutshell, 25% wood) from Horizon 8B midden, 3.36–3.52 m below the site datum. Collected 1972 by R. B. McMillan.

ISGS-835. Square 254, Levels 11–12 **6860 ± 80**
$\delta^{13}C = -24.7‰$

Dispersed charcoal (>90% nutshell, some wood) from Horizon 8A midden, 3.14–3.28 m below the site datum. Collected 1972 by R. B. McMillan.

6510 ± 310

ISGS-1000. Square 112, Level 27 $\delta^{13}C = -25.8‰$

Dispersed charcoal (~67% nutshell, 33% wood) from Horizon 8B midden, 1.24–1.33 m below the site datum. Base leach was omitted. Collected 1971 by J. W. Mueller and S. Struever.

Comments (J.A.B.): Run as a test of a questionably young Geochron date from the same square and level (GX-2401: 6265 ± 180 BP, H. W. Kreuger, personal communication 1971). (D.D.C.): The date includes a correction factor because carbon was detected in the lithium metal used in the benzene synthesis. The correction factor causes the relatively high standard deviation. Other samples from this date list that were processed with the contaminated lithium are ISGS-989, -1001 and -1003.

6990 ± 70

ISGS-1136. Square 112, Levels 24–26 $\delta^{13}C = -25.6‰$

Dispersed charcoal (55% nutshell, 45% wood) from Horizon 8A/8B midden, 0.86–1.14 m below the site datum. Collected 1971 by J. W. Mueller and S. Struever.

Comment (J.A.B.): The sample was run as a recheck of other samples (ISGS-1000 and GX-2401) from underlying midden Level 27 of Square 112. The present assay agrees well with other dates for Horizons 8A and 8B.

2980 ± 70

ISGS-956. Square 411, Levels 5–8 $\delta^{13}C = -25.3‰$

Dispersed charcoal (80% wood, 20% nutshell) from an aceramic midden unit assigned to Horizon 4A, 0.69–1.00 m below ground surface, north of the "macroblock" excavation area. Collected 1974 by G. L. Houart.

Comment (D.L.A.): An admixture of charcoal from an older Titterington component and a younger Late Woodland/Mississippian occupation is suspected because the site has yielded almost no diagnostic artifacts at the 3000 BP time horizon, and an accelerator mass spectrometric (AMS) age of 600 ± 400 BP (NSRL-296), from the Rochester Nuclear Structure Research Laboratory, was obtained on carbonized maize from Square 411, Level 12, 1.23–1.31 m below ground surface (Conard *et al.* 1984).

970 ± 70

ISGS-1205. F 2008, Levels B–C $\delta^{13}C = -26.1‰$

Dispersed hickory nutshell from a pit 0.15 m beneath the plow zone. The pit contained Jersey Bluff and Mississippian potsherds. Collected 1974 by G. L. Houart.

General Comment (J.A.B.): Other Koster site dates are reported and discussed in Brown and Vierra (1983), Coleman and Liu (1975: 170–171), Liu, Riley and Coleman (1986a: 80–81), Conard *et al.* (1984) and Hajic (1990a).

Koster East series

A multicomponent habitation site with a major occupation by Early Bluff and Late Bluff Late Woodland components; on the margin of a high terrace overlooking the Illinois River floodplain, Greene County, 7 km northeast of East Hardin (39°12′30″N, 90°32′50″W). Collected 1971 by J. P. Nicholas, Northwestern University; submitted by D. L. Asch.

ISGS-1003. F 1100, Level C **980 ± 190**
$\delta^{13}C = -26.5‰$

A concentration of carbonized acorn (*Quercus*) shells, kernels and caps; from a pit containing 255 sherds classified as Early Bluff and 1 Late Bluff sherd. Maize was not recovered from the pit.

Comment (D.D.C.): See *Comment* for ISGS-1000, above.

ISGS-1024. F 1100, Levels D–K **1330 ± 70**
$\delta^{13}C = -26.6‰$

Dispersed charcoal (85% wood, 15% nutshell) from the lower levels of an Early Bluff pit.

Comment (D.L.A.): Submitted as a check for ISGS-1003. This date was expected for an Early Bluff component; ISGS-1003 is too recent.

ISGS-1001. F 1040, Level B & ash concentration **930 ± 200**
$\delta^{13}C = -26.5‰$

Dispersed charcoal (30% nutshell, 70% wood) from a pit containing 108 Late Bluff sherds and 8 Early Bluff sherds. Maize was present.

Comment (D.D.C.): See *Comment* for ISGS-1000, above.

ISGS-1020. F 1040, Levels D–G **1120 ± 70**
$\delta^{13}C = -26.3‰$

Dispersed charcoal (>90% wood, <10% nutshell) from the lower levels of a Late Bluff pit.

Comment (D.L.A.): Submitted as a supplement to contaminated sample, ISGS-1001, from F 1040. The Koster East Late Bluff occupation should be older than "Jersey Bluff" occupation downslope from Koster East at the Koster (North Field) site, where Jersey Bluff and shell-tempered ceramics occur together (Koster North date, ISGS-1207: 1700 ± 70, C. L. Liu, personal communication). ISGS-1020 probably is a better estimate of the age of the Late Bluff occupation at Koster East than the corrected date, ISGS-1001.

General Comment (D.L.A.): Late Bluff pottery at the site shows S-twist cord impressions; Late Bluff pottery shows Z-twist impressions. Other dates obtained on Late Woodland charcoal from the site are 1645 ± 100 BP (GX-2400): F 1070, Level F (too old); and 1330 ± 100 (GX-2399): F 1133, Level A (H. W. Kreuger, personal communication 1971).

Kuhlman Habitation series

A Late Archaic (Titterington phase) and Late Woodland habitation area on a blufftop overlooking the Mississippi Valley, Adams County, 1 km north of Fall Creek (39°47′30″N, 91°18′20″W). See Hassen (1985) and Morgan (1985). Collected by H. Hassen, CAA; submitted by H. Hassen and D. L. Asch.

ISGS-982. F 133, Level 1 **4010 ± 130**
$\delta^{13}C = -25.9‰$

Carbonized nutshell from a Titterington-phase pit containing three Wadlow/Sedalia blades and 8 kg of chert tool manufacturing debris. Base leach was omitted. Collected 1980.

Comment (D.L.A.): The date is consistent with Titterington-phase dates from other sites, despite low-level Late Woodland contamination of F 133 pit fill, indicated by the recovery of a single

maize fragment. The nutshell was used to estimate the age of this feature, because it is very sparsely represented in Late Woodland contexts at the site. *Curcurbita* rind fragments were also recovered from the pit.

ISGS-805. F 51, Levels 2–5 **920 ± 70**
$\delta^{13}C = -25.8‰$

Dispersed charcoal (>95% wood, <5% nutshell) from a Late Woodland pit. Collected 1979.

Comment (H.H.): Ceramics from F 51 included two restorable vessels. One of these is castellated, cordmarked, and has plain dowel impressions along the top of the lip. The second is a bowl with a cordmarked exterior. The pit also contained a partially articulated dog skeleton.

ISGS-864. F 71, Levels 2–4 **1190 ± 70**
$\delta^{13}C = -24.2‰$

Dispersed charcoal (77% wood, 17% maize, 6% nutshell) from a Late Woodland refuse pit. Collected 1979–1980.

Comment (H.H.): The pit contained Late Woodland ceramics, including a single-cord-impressed rimsherd and several rimsherds with a plain dowel, a cord-wrapped stick and jointed grass-stem lip impressions.

Kuhlman Mound Group series

A Late Woodland mound group adjacent to the Kuhlman habitation site on a blufftop overlooking the Mississippi Valley, Adams County, 1 km north of Fall Creek (39°47′20″N, 91°18′20″W). Collected 1980 by K. A. Atwell; submitted by K. A. Atwell and D. L. Asch.

ISGS-874. Mound 4, North lobe, Unit 4/6, Level 2, #39 **1360 ± 70**
$\delta^{13}C = -25.5‰$

A single piece of charcoal (*Quercus* subgenus *Lepidobalanus*), 20 cm below present ground surface, in an earth-capped, limestone-walled, collapsed burial structure, collected between burned limestone rocks forming a "pavement" over human cremations on the original ground surface. Two ceramic elbow pipes were found in the structure; single-cord-impressed pottery was present elsewhere in the mound.

ISGS-833. Mound 4, North lobe, Unit 4/5, Level 2, #37 **1330 ± 70**
$\delta^{13}C = -26.3‰$

A single piece of charcoal (*Quercus* subgenus *Lepidobalanus*), 24 cm below present ground surface, atop "pavement" rocks of the charnel structure, 60 cm from ISGS-874.

General Comment (D.L.A.): ISGS-874 and -833 may be from the same piece of wood. Conner (1984) and Atwell and Conner (1991) reported ^{14}C ages on collagen from human skeletal material in Kuhlman Mound 1 (UCR-1415, 1210 ± 90 BP) and Kuhlman South Ridge Ossuary (UCR-1414, 1300 ± 90 BP, R. E. Taylor, personal communication 1982).

Lagoon series

A Titterington-phase habitation site on alluvium below bluffs at the western margin of the Illinois Valley and mouth of Crawford Hollow, in Calhoun County, 2 km south of Kampsville (39°

16′50″N, 90°36′40″W). The samples were taken from shallow refuse pits. Collected 1978 by L. Bartram; submitted by D. L. Asch and T. G. Cook.

ISGS-804. F 100, Level B **4030 ± 70**
$\delta^{13}C = -26.0‰$

Dispersed charcoal fragments (>90% wood, <10% carbonized nut and acorn shell) from the lower part of the pit fill, 10–20 cm beneath the plow zone.

ISGS-798. F 104, Level B **4010 ± 150**
$\delta^{13}C = -26.0‰$

Dispersed charcoal fragments (75% wood, 25% nutshell) from the lower part of the pit fill, 16–32 cm beneath the plow zone.

General Comment (T.G.C., D.L.A.): The plow zone contained Late Archaic (Titterington) occupational debris, and a very light Late Woodland and Mississippian scatter. Features 100 and 104 lacked culturally diagnostic debris, but the ages fall within the recognized span of the Titterington phase. A carbonized *Cucurbita* rind from another pit containing a Sedalia point yielded an AMS date of 2300 ± 600 BP (NSRL-303) (Conard *et al.* 1984).

Massey series

A Middle Woodland Massey phase habitation site on a hillside overlooking Sandy Creek Valley, an Illinois River tributary, in Morgan County, 6 km south-southeast of Jacksonville (39°40′50″N, 90°16′30″W). See Farnsworth and Koski (1985). Collected 1976 by J. Gigliotti; submitted by D. L. Asch and K. B. Farnsworth.

ISGS-963. F 11, Levels 2–4 **1930 ± 70**
$\delta^{13}C = -25.5‰$

Dispersed charcoal (90% wood, 10% nutshell) from a refuse pit containing Massey, Hopewell and Baehr series pottery.

ISGS-965. F 1, Levels 1–2 **1750 ± 70**
$\delta^{13}C = -25.5‰$

Dispersed charcoal (90% wood, 10% nutshell) from a refuse pit containing a Massey Fabric-Impressed pottery vessel.

General Comment (K.B.F.): Massey appears to have been occupied by a single household; a lengthy occupation is improbable. Utilitarian Massey series ceramics are similar to those of the Crab Orchard series. The nearby Archie site, above, had a closely related occupation.

ISGS-1264. Mauvaise Terre Creek paleochannel, MVT 1B **9750 ± 70**
$\delta^{13}C = -28.1‰$

Primarily uncarbonized, nonconiferous (diffuse porous and ring porous) wood and bark, some herbaceous plant debris, 4.67–4.80 m below ground surface in the Illinois Valley; near the base of a stratified and laminated silt unit filling an old meander channel of Mauvaise Terre Creek, incised into the Keach School Terrace; from Scott County, 5 km southwest of Oxville (39°40′50″N, 90° 37′00″W). Collected 1983 by D. S. Leigh; submitted by E. R. Hajic, D. S. Leigh and D. L. Asch.

Comment (E.R.H.): This date provides a minimum age for the Keach School Terrace. See Hajic (1987, 1990b).

ISGS-1263. Meredosia Lake Levee and Drainage District, DLC 12A-F **14,300 ± 290** $\delta^{13}C = -26.9‰$

Uncarbonized conifer wood and bark, abundant *Picea* needles and a few *Abies* needles, and herbaceous plant debris, 3.40–3.65 m below ground surface, from the base of slackwater silt in the Bug Island paleochannel sediment assemblage, beneath eolian sand, from Cass County, 8 km north-northeast of Meredosia (39°53′30″N, 90°31′10″W). Base leach was omitted. Collected 1984 by D. S. Leigh; submitted by E. R. Hajic, D. S. Leigh, and D. L. Asch.

Comment (E.R.H.): Bath Terrace and the Bug Island paleochannel cutting it probably developed in response to the Kankakee Torrent. See Hajic (1987, 1990b).

Meredosia Village Levee and Drainage District series

From Illinois Valley alluvial sediments. Collected by D. S. Leigh; submitted by E. R. Hajic, D. S. Leigh and D. L. Asch.

ISGS-1285. MLC 9B–D, 7.10–7.15 m **14,590 ± 240** $\delta^{13}C = -27.3‰$

Uncarbonized wood (mostly coniferous, some diffuse porous), bark, herbaceous plant debris and *Picea* needles, 7.10–7.15 m below ground surface from slackwater silt in the Bug Island paleochannel sediment assemblage, beneath alluvial fan silt, from Morgan County, 4 km east-southeast of Meredosia (39°49′10″N, 90°31′00″W). Base leach was omitted. Collected 1984.

Comment (E.R.H.): See *Comment* for ISGS-1263, above.

ISGS-1283. MLC 9A–C, 6.90–7.05 m **12,360 ± 240** $\delta^{13}C = -28.0‰$

Uncarbonized conifer wood and bark, herbaceous plant debris, seeds (primarily *Polygonum* and *Cyperaceae*) and *Picea* needles; 6.90–7.05 m below ground surface, collected from samples above ISGS-1285, in the same sediment unit.

ISGS-1262. MLC 34, 3.19–3.77 m **13,360 ± 240** $\delta^{13}C = -27.4‰$

Uncarbonized herbaceous plant debris, some conifer wood and bark, abundant *Picea* needles and a few *Abies* needles, 3.19–3.77 m below ground surface from laminated silt interstratified with fine sand in the Bug Island paleochannel sediment assemblage, beneath upland-derived silt, from Morgan County, 4 km east-northeast of Meredosia (39°50′40″N, 90°30′50″W). Collected 1983.

Comment (E.R.H.): The sample was recovered at or near the transition from glaciofluvial to lacustrine sediments of the Bug Island paleochannel sediment assemblage (Hajic 1987, 1990b).

ISGS-1284. MLC 24B–D, 4.40–4.50 m **13,340 ± 180** $\delta^{13}C = -27.5‰$

Uncarbonized herbaceous plant debris, conifer wood, seeds (mostly *Cyperaceae* and *Potamogeton)* and *Picea* needles, 4.40–4.50 m below ground surface from slackwater silt in the

Bug Island paleochannel sediment assemblage, beneath alluvial fan silt, from Morgan County, 4 km southeast of Meredosia (39°48′20″N, 90°31′40″W). Collected 1984.

Comment (E.R.H.): See *Comment* for ISGS-1262, above.

ISGS-1282. MLC 29, 4.50 m **9830 ± 160**
$\delta^{13}C = -27.7‰$

Uncarbonized wood and bark, 4.50 m below ground surface, from fine and medium sand with silt and clay laminae in the Bug Island paleochannel sediment assemblage, underlying laminated slackwater silt and upland-derived silty alluvium, from Morgan County, 2 km northeast of Meredosia (39°50′40″N, 90°32′00″W). Collected 1983.

Comment (E.R.H.): Indicates intermittent fluvial reactivation on the western side of the Bug Island paleochannel system.

ISGS-1286. MLC 57, 1.40–1.45 m **1780 ± 70**
$\delta^{13}C = -28.0‰$

Bulk sample of peaty, silt loam, 1.40–1.45 m below surface in the Bug Island paleochannel sediment assemblage, from Scott County, 3 km north-northwest of Bluffs (39°46′50″N, 90°33′00″W). Base leach was omitted. Collected 1983.

Comment (E.R.H.): Dates marshy conditions in the paleochannel, providing a minimum age that the paleochannel could have been active.

General Comment (E.R.H.): Dates from Meredosia Village and Meredosia Lake Districts (except ISGS-1286) should approximately span the interval of fluvial activity of the Bug Island paleochannel system. See Hajic (1987, 1990b).

Napoleon Hollow series

A multicomponent, stratified habitation site on the Illinois River floodplain and an adjacent colluvial fan, Pike County, 2 km south-southeast of Valley City (39°41′10″N, 90°38′40″W, except Square 216 and Block IV samples at 39°41′20″N, 90°38′40″W). Collected by M. D. Wiant, CAA; submitted by M. D. Wiant and D. L. Asch.

ISGS-814. Square 54, Level 3NW (RC #33) **7050 ± 140**
$\delta^{13}C = -27.0‰$

An intact, partially decomposed, carbonized log (*Quercus* subgenus *Lepidobalanus*), from the prograding end of the colluvial fan in a stratum containing Middle Archaic and some Early Archaic artifacts, beneath 2.0 m of colluvial and alluvial sediment. Collected 1980.

Comment (D.L.A.): The sample splintered into very fine fragments when washed; the carbon content of the cleaned sample was unusually low (~28%).

ISGS-786. Square 36, Level 46 **6630 ± 100**
$\delta^{13}C = -25.8‰$

Dispersed charcoal (85% wood, the remainder wood and tuber) from the Middle Archaic stratum (Napoleon component) of the colluvial fan, 2.3 m below ground surface (Block II). Collected 1979.

Comment (D.L.A.): *Cucurbita* rind from this provenience yielded an AMS date of 7000 ± 250 (NSRL–299) (Conard *et al.* 1984).

6800 ± 80

ISGS-817. Square 36, Levels 42A, 43A $\delta^{13}C = -25.8‰$

Dispersed charcoal (67% nutshell, the remainder wood and tuber) from the Middle Archaic stratum (Napoleon component) of the colluvial fan, 2.1 m below ground surface (Block II). Collected 1979.

Comment (D.L.A.): Level 42A flotation sample contained a single *Cucurbita* rind fragment.

6730 ± 70

ISGS-937. Square 77, Levels 42B, 43B, 44B $\delta^{13}C = -25.4‰$

Dispersed charcoal (67% nutshell, 33% wood) from the Middle Archaic stratum (Napoleon component) in a colluvial fan, 3.2 m below ground surface (Block II). Collected 1980.

6710 ± 170

ISGS-949. Square 1007, Levels 20A, 21A, 22A $\delta^{13}C = -26.2‰$

Dispersed charcoal (85% wood, 15% nutshell) in a shallow basin or natural depression on the floodplain, buried by 2.0 m of colluvium and alluvium. Base leach was omitted.

Comment (M.D.W.): The sample was associated with scatter of Archaic cultural debris, mainly Middle Archaic, but including a few Early Archaic projectile points. Collected 1979.

6130 ± 110

ISGS-909. F 36, Levels 2P, 3 $\delta^{13}C = -28.3‰$

Dispersed charcoal (85% nutshell, 15% wood) from a shallow pit in colluvium, 1.6 m below ground surface, excavated from the surface of a limestone "pavement," marking the uppermost, eroded surface of the Helton Middle Archaic cultural stratum (Block II). Collected 1980.

6080 ± 90

ISGS-972. F 116 (Square 84, Level 36C) $\delta^{13}C = -25.8‰$

Dispersed charcoal (90% nutshell, 10% wood) from a hearth in colluvium, at the base of the Helton Middle Archaic midden, 2.0 m below ground surface (Block II). Collected 1980.

5670 ± 90

ISGS-806. Square 77, Level 24B $\delta^{13}C = -26.2‰$

Dispersed carbonized nutshell fragments from the Middle Archaic stratum (Helton component) of the colluvial fan, 0.7 m below ground surface (Block II). Collected 1980.

5350 ± 70

ISGS-938. F 38, Level 1 $\delta^{13}C = -24.6‰$

Dispersed charcoal (>99% nutshell) from the Middle Archaic stratum (Helton component) of the colluvial fan, 2.3 m below ground surface (Block II). Collected 1980.

Comment (D.L.A.): A flotation sample from the feature contained *Cucurbita* rind.

5280 ± 70

ISGS-1038. F 122 (Square 36, Level 25A) $\delta^{13}C = -25.7‰$

Dispersed carbonized nutshell fragments from a shallow pit overlying the limestone "pavement"

in the colluvial fan, near the top of the eroded Middle Archaic stratum (Helton component), 1.5 m below ground surface (Block II). Collected 1979.

ISGS-1036. F 31, Level 9B **5140 ± 70**
$\delta^{13}C = -25.4‰$

Dispersed carbonized nutshell fragments (>90% *Carya*) from a pit at the same elevation as a limestone "pavement," marking one surface in the Helton Middle Archaic midden in the colluvial fan 1.2 m below ground surface. Collected 1980.

ISGS-823. F 23, Level 1 **4060 ± 70**
$\delta^{13}C = -25.7‰$

Dispersed charcoal (50% wood, 50% nutshell) from a shallow pit extending from buried A horizon soil that contained Late Archaic (Titterington phase) cultural materials, in colluvium 0.4 m below ground surface (Block II). Collected 1980.

Comment (D.L.A.): A flotation sample from the pit contained *Cucurbita* rind.

ISGS-933. F 20 **3920 ± 90**
$\delta^{13}C = -25.9‰$

Dispersed charcoal (mostly wood, 10%–15% nutshell, 1% tuber) from a pit extending from buried A horizon that contained Late Archaic (Titterington phase) cultural materials, in colluvium 0.9 m below ground surface (Block II). Collected 1980.

Comment (D.L.A.): F 20 contained *Iva annua* achenes showing morphological evidence of domestication; AMS dating of one achene yielded 4500 ± 500 (NSRL-297) (Conard *et al.* 1984).

ISGS-920. Square 216, Levels 11–12 **2590 ± 70**
$\delta^{13}C = -25.3‰$

Dispersed charcoal (80% wood, 20% nutshell) from a cultural deposit 2.0–2.1 m below ground surface in a prehistoric natural levee of the Illinois River, stratigraphically below a Middle Woodland occupation. Collected 1980.

Comment (M.D.W.): A rim of an unidentified sand-tempered vessel was recovered from the stratum; Marion Thick is the only Early Woodland ceramic type recovered from the floodplain.

ISGS-890. Square 196, Level 8B (RC #29) **2530 ± 80**
$\delta^{13}C = -26.4‰$

A concentration of wood charcoal representing at least three taxa, 1.8–1.95 m below ground surface in the Illinois River floodplain, from a cultural stratum lacking time-diagnostic artifacts in the small area that was excavated, underlying a Middle Woodland cultural stratum (Block IV). Collected 1980.

ISGS-822. NPH Cr-60, 4.95 m **2060 ± 110**
$\delta^{13}C = -26.0‰$

Uncarbonized stems and leaves of trees, grasses, sedges and moss, from a noncultural context in the lower half of a cut-and-fill deposit, 25 m west of the modern course of the Illinois River and 75 m north of the mouth of Napoleon Creek, Pike County, 2 km south-southeast of Valley City (39°41′10″N, 90°38′30″W). Collected 1980 and submitted by T. R. Styles.

2000 ± 70

ISGS-916. F 45, Levels 1, 1P, 2, 3, 3BP $\delta^{13}C = -25.7‰$

Dispersed charcoal (>90% wood, <10% nutshell) from a pit excavated in the floor of Middle Woodland Structure 1 in the Illinois River floodplain (Block IV). Collected 1980.

Comment (M.D.W.): The pit intersected a more deeply buried cultural deposit, from which ISGS-890 was obtained; minor contamination of F 45 fill with older charcoal cannot be excluded.

1810 ± 70

ISGS-929. F 42, Levels 1, 2 $\delta^{13}C = -26.5‰$

Dispersed charcoal (>75% bark, <25% wood, <1% *Quercus* shell) from a shallow pit containing only charcoal, in Middle Woodland Structure 1, in the Illinois River floodplain (Block IV). Collected 1980.

Comment (M.D.W.): The predominance of bark in the feature suggests the sample is refuse from a single, specific prehistoric activity.

1880 ± 70

ISGS-931. Square 237, Level 5 $\delta^{13}C = -25.6‰$

Dispersed charcoal (95% wood, 5% nutshell) from a Middle Woodland trash deposit (Block IV), buried in a small gully in a prehistoric natural levee of the Illinois River, 2.0–2.1 m below ground surface; below ISGS-834. Collected 1980.

1840 ± 70

ISGS-834. Square 237, Levels 2B, 3A, 3B $\delta^{13}C = -25.7‰$

Dispersed charcoal (90% wood, 10% nutshell) from a Middle Woodland trash dump, 1.8–1.9 m below ground surface, above ISGS-931. Collected 1980.

1970 ± 70

ISGS-935. Square 73, Levels 8A, 9A $\delta^{13}C = -26.8‰$

Dispersed charcoal (85% wood, 15% nutshell) collected at the base of a shallow gully in a surface Middle Woodland trash deposit extending over a 4 × 6-m area, on the valley-margin hill slope (Block I). Collected 1980.

1800 ± 70

ISGS-904. Square 73, Levels 3–6; Square 92, Level 2; Square 93, Level 1 $\delta^{13}C = -25.7‰$

Dispersed carbonized nutshell from the trash deposit dated by ISGS-935 (Block I); collected from the unplowed A horizon, within 0.3 m of ground surface. Collected 1980.

Comment (D.L.A.): The date agrees with the expected age. However, a carbonized maize cupule in Square 73, Level 1 yielded a date of 0 ± 300 BP (NSRL-301), indicating some recent contamination of the midden (Conard *et al.* 1984).

General Comment (M.D.W.): For further information, see Wiant and McGimsey (1986) on Woodland components, T. R. Styles (1985) on geology and Wiant, Hajic and Styles (1983) on Archaic occupations.

9480 ± 130

ISGS-1135. Nutwood Levee and Drainage District, NLC BR11U-56 $\delta^{13}C = -27.0‰$

An uncarbonized piece of *Fraxinus* wood, 11.6 m below the original ground surface, beneath an artificial levee in the Illinois Valley, Jersey County, 4 km northwest of Nutwood (39°06′00″N, 90°35′40″W), from the top of olive gray clay, overlain successively by sand-to-sandy silt, and by silty clay with organics and shell fragments. Collected 1978 by J. Bohnert, U. S. Army Corps of Engineers; submitted by E. R. Hajic and D. L. Asch.

Comment (E.R.H.): This is a minimum age for Holocene downcutting to a relatively low elevation (115.8 m asl). For other dates from the Nutwood Levee project, see Liu, Riley and Coleman (1986b: 121–122); see also Hajic (1987, 1990b).

2100 ± 70

ISGS-873. Pond, F 7 $\delta^{13}C = -26.0‰$

Dispersed charcoal fragments (80% wood, 20% nutshell) in a pit feature that contained nearly complete Havana Utility and Neteler Crescent pottery vessels. The site is located at the base of a hill slope at the juncture of the Illinois and Spoon River Valleys, Fulton County, 6 km southeast of Lewistown (40°21′00″N, 90°07′00″W). Collected 1961 by J. R. Caldwell; submitted by D. L. Asch and A. M. Cantwell, New York University.

Comment (D.L.A.): The Pond Site is an early Havana tradition (Fulton phase) habitation site (Cantwell 1980). The Dickson Camp site (120 m upslope) and Pond are believed to be sequent occupations, with Pond the later of the two. However, the Pond sample gave the older date. See *Comment* for Dickson Camp (ISGS-872), above.

Scenic Vista series

A Late Archaic (Titterington phase) and Late Woodland habitation site on a blufftop overlooking the Mississippi Valley, Adams County, 1 km northeast of Fall Creek (39°47′00″N, 91°17′50″W). Collected 1980 by H. Hassen; submitted by H. Hassen and D. L. Asch.

3880 ± 70

ISGS-1422. F 57 $\delta^{13}C = -26.1‰$

Dispersed charcoal (90% wood, 10% nutshell) from a Titterington-component pit, containing a large quantity of chert tool manufacturing debris and several broken and complete Sedalia blades.

1270 ± 70

ISGS-882. F 42 $\delta^{13}C = -24.8‰$

Dispersed charcoal (85% nutshell, 15% wood, <1% maize) from a Late Woodland refuse pit.

Comments (H.H.): The pit contained a partially smoothed-over, cordmarked ceramic vessel. (D.L.A.): This age, together with others, establishes the presence of maize in west-central Illinois by 1450–1350 BP (Asch & Asch 1985b). See Hassan (1985) and Morgan (1985) for description of the Late Woodland occupation.

Smiling Dan series

A Middle Woodland habitation site, with an earlier minor Middle Archaic occupation and a more recent minor Late Woodland habitation, in Campbell Hollow near the Illinois Valley margin, Scott

County, 7 km south-southwest of Bluffs (39°41′10″N, 90°33′30–40″W). Collected by M. B. Sant; submitted by M. B. Sant, B. D. Stafford and D. L. Asch, except where noted.

ISGS-851. SMD 73–1, 3.20–3.63 m; SMD 73–2, 3.20–3.60 m **23,380 ± 500** $\delta^{13}C = -26.6‰$

Uncarbonized wood, bark, seeds and needles from a small tributary valley of Campbell Hollow in Wisconsinan laminated organic silt, directly overlying eroded Illinoian diamiction. Collected 1981 and submitted by E. R. Hajic.

ISGS-989. SMD 18, 4.30–5.40 m; SMD 74, 5.20–5.50 m **10,460 ± 220** $\delta^{13}C = -29.4‰$

Non-coniferous wood and twigs (mostly diffuse porous, some carbonized) and herbaceous plant parts, from Unit Ia, overlying conifer wood and needles from the same sedimentological unit. Collected 1980–1981 by E. R. Hajic; submitted by E. R. Hajic and D. L. Asch.

Comments: (D.D.C.): See *Comment* about lithium contamination for ISGS-1000, above. (E.R.H.): This sample dates the lower portion of a silty, valley-filling, slackwater deposit that grades to the Keach School Terrace in the Illinois Valley. See Hajic (1990b).

ISGS-852. Trench D (RC #104) **8340 ± 130** $\delta^{13}C = -24.9‰$

Diffuse porous wood charcoal, part of one log; 2.8 m below ground surface, from the base of Campbell Hollow Creek paleochannel fill (base of depositional Unit IIa). Overlying the sample was a very light aceramic scatter of cultural materials. Collected 1979.

Comment (E.R.H.): The sample dates the resumption of valley aggradation in Campbell Hollow after an episode of downcutting.

ISGS-751. Square 956, Level 9 **6100 ± 140** $\delta^{13}C = -25.6‰$

Dispersed charcoal fragments (98% nutshell, 2% wood) from the lower portion of colluvial/alluvial lithostratigraphic Unit IIb, 1.5–1.6 m below ground surface, associated with light non-ceramic chert scatter below the Middle Woodland occupation. Collected 1980.

Comment (E.R.H.): Another date from the lower portion of Unit IIb, 6180 ± 100 (Beta-4535) (Stafford & Sant 1985), was obtained from a piece of wood charcoal (*Quercus* subgenus *Erythrobalanus*), from the top of a possible A horizon of a paleosol weakly developed in the colluvium. A thin lithic scatter occurrred in the A horizon.

ISGS-854. Square 39, Levels 17B, 18B, 19B **2020 ± 70** $\delta^{13}C = -25.9‰$

Dispersed charcoal fragments (80% wood, 20% nutshell) from the base of a Middle Woodland trash deposit, from gully-filling lithostratigraphic Unit III in a small side-valley to Campbell Creek, 2.2–2.6 m below ground surface. Collected 1980.

ISGS-1094. Squares 15, 40, 402, 417, 900, 901 **1910 ± 70** $\delta^{13}C = -25.3‰$

Dispersed carbonized fragments of thick-shelled *Carya* nutshell and thick-shelled Juglandaceae

(*Carya* or *Juglans*), collected across a horizontal distance of 30 m within a Middle Woodland midden, 0.2–0.4 m below ground surface. Collected 1981.

Comment (D.L.A.): Middle Woodland midden east of a site-bisecting gully showed stratification in its nutshell composition, with *Carya*-predominating levels (yielding this sample) underlying *Corylus*-rich levels. This is the oldest Middle-Woodland-associated date at Smiling Dan, except for questionable early ISGS-854.

ISGS-1027. F 231, Level 1P **1790 ± 80**
$\delta^{13}C = -26.3‰$

Dispersed wood charcoal fragments (70% wood, 30% nutshell) from a shallow Middle Woodland pit. Base leach was omitted. Collected 1981.

Comment (D.L.A.): The charcoal composition of F 231 was characteristic for Middle Woodland pits at Smiling Dan. The pit contained a tobacco seed (*Nicotiana* sp.), 1 of 5 recovered from apparent Middle Woodland contexts at the site. The age determination verifies that tobacco had been introduced to eastern North America by Middle Woodland times.

ISGS-841. Trench F (RC #5) **1780 ± 70**
$\delta^{13}C = -25.6‰$

Dispersed charcoal fragments (>99% wood) from the base of a Middle Woodland trash deposit, from gully-filling lithostratigraphic Unit III, in a small side-valley to Campbell Creek, 2.0 m below ground surface. Collected 1980.

ISGS-958. F 61, Level 1P **1700 ± 70**
$\delta^{13}C = -25.6‰$

Dispersed charcoal fragments (10% nutshell, 90% wood, of which 90% is *Sassafras*), from a pit excavated in the top of Level IIb terrace. Collected 1980.

Comment (B.D.S., D.L.A.): Sherds from F 61 included Havana fabric-impressed type (Farnsworth & Koski 1985: 128–131). The date suggests that the pit was used late in the site's Middle Woodland occupation. Charcoal from the pit feature (primarily *Sassafras* wood and several thousand *Phalaris caroliniana* caryopses) differed from the surrounding midden, indicating that the dated charcoal was not redeposited.

ISGS-856. F 87, Level 1 **1110 ± 70**
$\delta^{13}C = -26.0‰$

Dispersed wood and bark charcoal fragments from the lower 10 cm of a shallow pit excavated into a side slope of the valley; the pit was discovered at the base of the surface A horizon. Collected 1981.

Comments (B.D.S.): F 87, one pit in a small Late Woodland pit cluster, lacked culturally diagnostic artifacts. The date establishes its Late Woodland cultural affiliation. (D.L.A.): Late Woodland pits at the site contained little nutshell, which suggests that the dated charcoal from them was not redeposited from the nutshell-rich Middle Woodland midden.

ISGS-1207. F 115, Level 3 **1100 ± 70**
$\delta^{13}C = -25.5‰$

Dispersed carbonized wood and bark fragments from a pit containing grit-tempered, smoothed-

over-cordmarked Late Woodland pottery decorated with a punctate band around an angular shoulder (Bauer Branch ceramic series). Base leach was omitted. Collected 1981.

Comment (B.D.S.): F 115 was in the pit cluster containing F 87.

ISGS-843. F 28, Level 3P — **1050 ± 70**, $\delta^{13}C = -25.8‰$

Dispersed charcoal fragments (99% wood, 1% tuber) from a trash concentration at the base of a Late Woodland pit. Collected 1980.

General Comment (B.D.S.): The site report (Stafford & Sant 1985) describes contexts for other Middle Woodland ^{14}C dates from the site: 1830 ± 50 BP (Beta-4534), 1805 ± 95 BP (Beta–4980) and 1630 ± 80 BP (Beta-4981).

Titus series

A stratified multicomponent Early Archaic, Terminal Archaic and Late Woodland habitation site on a colluvial fan near the mouth of Macoupin Creek Valley, Greene County, 7 km northeast of East Hardin (39°11′30″N, 90°32′30″W). Collected 1973 by S. Noble; submitted by D. L. Asch.

ISGS-826. Test Square 1, Level 10 — **3240 ± 70**, $\delta^{13}C = -25.5‰$

Dispersed charcoal (75% nutshell, 25% wood) 1.4–1.5 m below ground surface and 0.8–0.9 m below the top of cultural Horizon 2.

ISGS-990. Test Square 1, Levels 5–6 — **2860 ± 80**, $\delta^{13}C = -25.6‰$

Dispersed charcoal (85% nutshell, 15% wood) 0.65–0.85 m below ground surface, in Horizon 2 near its eroded upper surface.

General Comment (D.L.A.): Cultural Horizon 2 is a terminal Archaic Kampsville phase midden (Prairie Lake culture), perhaps with minor occupation occurring as early as the Titterington phase (Farnsworth & Asch 1986: 344). The date provides evidence of stratification within Horizon 2. Early Archaic/early Holocene dates from Titus were reported in Liu, Riley and Coleman (1986a: 79–80).

Vasconellos Sand Pit series

From the Illinois Valley, Scott County, 6 km east of Florence (39°38′00″N, 90°32′20″W). Collected by D. S. Leigh; submitted by E. R. Hajic, D. S. Leigh and D. L. Asch.

ISGS-1169. Vascon 1A, B, D — **10,900 ± 80**, $\delta^{13}C = -28.7‰$

Uncarbonized wood (the microscopic structure was mostly collapsed, but some fragments were recognizable as diffuse porous); from 8 to 10-cm-thick soil O horizon containing twigs and peat developed in a depression on a Bath Terrace remnant(?), below eolian sand. Collected 1983.

ISGS-1277. Vascon 2 — **11,070 ± 190**, $\delta^{13}C = -26.4‰$

Uncarbonized pieces of *Fraxinus* wood underlying the soil O horizon from which ISGS-1169

was collected, in fine sandy loam. Collected 1984.

General Comment (E.R.H.): See Hajic (1990b).

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