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DEPARTMENT OF ANTHROPOLOGY  
WESTERN MICHIGAN UNIVERSITY

REPORT OF INVESTIGATIONS NO. 49

1982

PREHISTORIC PLANT REMAINS FROM SITE  
21D3-67, A MISSISSIPPIAN FARMSTEAD ON  
WHITE WALNUT CREEK (DEEP STRIP #3) OF  
BURNING STAR MINE #2, PERRY COUNTY, IL

William M. Cremin

The research area of this study lies within the southern portion of the till plains region known as the Mt. Vernon Hill Country, an area of mature topography characterized by gently rolling hills and broad alluvial valleys. Floristically, the White Walnut Creek drainage is part of the Oak-Hickory Forest Region of the Western Mesophytic Forest as defined by Braun (1950).

Site 21D3-67 occupies approximately 7,800 m<sup>2</sup> of a near level ridge top flanking White Walnut Creek on the south in the SE 1/4, SE 1/4, SE 1/4 of Section 4, T5S R2W, Perry County, Illinois. The slope woodland zone within which the site occurs comprises the majority (51%) of the research area. The typical

plant association is one in which white oak and black oak are dominants, with red oak and pignut hickory being important canopy species throughout. An undergrowth of shrub oak and hickory, hazel, grapevines, and briars characterized this community at the time of Euro-American settlement.

The site, identified as a Mississippian farmstead of no fewer than six rectangular/square wall-trench houses, and also evidencing minor Late Archaic and Late Woodland (Dillinger) occupations, was tested by means of 12 1x1 m test squares by American Resources Group, Ltd. in 1979. The presence of a reasonably well developed midden, 40 cm in depth, and floral and faunal remains suggestive of the presence of subsurface features, resulted in a decision to mitigate the site in 1981. On this occasion, a four percent sample of the site area was hand excavated, employing both a stratified, systematic,

unaligned sampling design and some judgement excavation units. Almost all of the 40 2x2 m randomly excavated units were sampled by means of 47 flotation samples of 10 l volume, with the majority being collected from the third (20-30 cm) level. All soil was initially sifted through 1.3 cm mesh before being bagged for floating. In addition, 23 feature floats of variable volume were collected from three Late Woodland and 20 Mississippian features and represent 25x25 cm core samples extending to the base of features and extracted from the fill without prior screening. In total, 494 l of soil from excavation units and 276 l of feature fill were collected for flotation and processed in the field by means of the tub agitation method.

In addition to the plant residues recovered through flotation, 16 samples represent material collected while sifting soil through 1.3 cm mesh screens. Eight of these are from excavation levels, six are from Mississippian features, and the remaining two samples were collected while screening fill from Late Woodland pits.

All samples, whether recovered from the screens or through the flotation process, were initially cleaned and sorted in the laboratories of ARG before being sent to this specialist for study.

The author received a total of 151 vials of plant material (82 containing nutshell and 69 vials of seeds) from 91 different proveniences. These 91 lots and their contents are summarized in Table 1, with uncarbonized and presumably recent contaminants listed in parentheses. The carbonized specimens number 2544+

Table 1: Plant Residues from Site 21D3-67.

<u>Lot no.</u>	<u>ARG no.</u>	<u>Provenience</u>	<u>Sample Volume</u>	<u>Contents wt (g) / ct</u>	<u>Comments</u>
1	1	U-S.1, L-3	4 1	0.21	9 <u>Carya</u> sp.
2	4	U-1, L-3	10 1	0.15	7 <u>Carya</u> sp.
3	5	U-2, L-3	10 1	0.10	5 <u>Carya</u> sp. (7 uncarbonized seeds of poke, wild grape, and <u>Chenopodium</u> sp.)
4	6	U-S.5, L-3	10 1	0.25	17 <u>Carya</u> sp. (13 uncarbonized small fungal nodules)
5	7	U-S.5, L-4	10 1	0.17	12 <u>Carya</u> sp.
6	8	U-3, L-2	8 1	0.28	10 <u>Carya</u> sp. (200+ small fungal nodules and <u>Chenopodium</u> seeds)
7	9	U-S.2, L-5	10 1	0.99	66 <u>Carya</u> sp. (5 uncarbonized <u>Galium</u> and <u>Chenopodium</u> seeds)
8	15	U-S.4, L-4	10 1	0.58 0.88	38 <u>Carya</u> sp. 24 <u>Zea mays</u> kernels and cob fragments (2 small fungal nodules)
9	16	U-4, L-3	10 1	0.11	6 <u>Carya</u> sp.

Table 1, cont.

<u>Lot no.</u>	<u>ARG no.</u>	<u>Provenience</u>	<u>Sample Volume</u>	<u>Contents wt(g)/ct</u>	<u>Comments</u>
10	17	U-S.2, L-3	10 1	0.24	9 <u>Carya</u> sp. (500+ poke, cleavers, and small fungal nodules)
11	18	U-S.8, L-3	10 1	0.36	34 <u>Carya</u> sp. (100+ seeds of grass, sedge, and <u>Chenopodium</u> )
12	19	U-5, L-3	10 1	0.20	12 <u>Carya</u> sp. (1 hackberry and 63 grass seeds)
13	21	U-7, L-3	10 1	0.79	31 <u>Carya</u> sp. (100+ seeds of grass, poke and small fungal nodules)
14	26	U-S.3, L-5	10 1	0.17	10 <u>Carya</u> sp. (14 uncarbonized poke and small fungal nodules)
15	27	U-11, L-3	10 1	0.13	14 <u>Carya</u> sp. (70+ small fungal nodules)
16	28	U-12, L-3	10 1	0.28	1 <u>Carya</u> sp. (26 uncarbonized fragments of mockernut hickory; 102 poke, <u>Chenopodium</u> and small fungal nodules)

Table 1, cont.

<u>Lot no.</u>	<u>ARG no.</u>	<u>Provenience</u>	<u>Sample Volume</u>	<u>Contents wt(g)/ct</u>	<u>Comments</u>
17	30	U-15, L-3	20 1	1.06	39 1 <u>Carya</u> sp. <u>Quercus</u> sp.
					(3 uncarbonized seeds of <u>Chenopodium</u> and 40+ small fungal nodules)
18	33	U-16, L-3	10 1	0.60	19 <u>Carya</u> sp.
					(1 uncarbonized grape seed and 13 small fungal nodules)
19	34	U-17, L-3	10 1	0.91	33 <u>Carya</u> sp.
					(6 unidentified uncarbonized seeds)
20	38	U-S.13/15, L-5/6 (Structure 2)	10 1	30.63	578 1 <u>Carya</u> (shagbark and pignut hickory) <u>Juglans nigra</u> (black walnut)
				1.18	9 <u>Zea mays</u> (cob fragments)
				0.42	7 <u>American plum</u> , wild grape, persimmon and viburnum
21	39	U-19, L-3	10 1	0.52	21 <u>Carya</u> sp. (probably shagbark hickory)
					(1 unidentified uncarbonized seed and 21 small fungal nodules)
22	45	U-S.13, L-5/10 (Feature 9A, Structure 2)	3.4 1	1.83 0.30 0.46	73 12 8 <u>Carya</u> (shagbark hickory) <u>Zea mays</u> (kernels) <u>American plum</u> , wild grape, and an unidentified seed

Table 1, cont.

<u>Lot no.</u>	<u>ARG no.</u>	<u>Provenience</u>	<u>Sample Volume</u>	<u>Contents wt (g) / ct</u>	<u>Comments</u>
23	46	U-S.11, L-6 (Feature 10, Structure 2)	2.5 l	0.61 3 0.46 3	<u>Carya</u> sp. <u>Juglans</u> sp. carbonized seed fragments of unidentified species
24	53	U-13, L-3	10 l	0.80	<u>Carya</u> sp.
25	59	U-25, L-3	10 l	1.15	<u>Carya</u> sp.  (200+ small fungal nodules; 21 uncarbonized seeds of poke, wild grape, and <u>Chenopodium</u> sp.)
26	62	U-S.32, L-6	10 l	0.72	<u>Carya</u> sp.
27	63	U-S.35, L-6	10 l	0.45	<u>Carya</u> sp.
28	64	U-S.37, L-6	10 l	0.29	<u>Carya</u> sp.  (1 <u>Polygonum</u> sp. and a wild grape seed)
29	66	U-S.38, L-6	10 l	0.67 1	<u>Carya</u> sp. <u>Polygonum</u> sp.  (200+ small fungal nodules and a <u>Chenopodium</u> seed)
30	73	U-27, L-3	10 l	0.19	<u>Carya</u> sp.  (300+ small fungal nodules, wild grape, and poke seeds)
31	74	U-S.43, L-6	10	0.39 0.03	<u>Carya</u> sp. <u>Zea mays</u> kernels



Table 1, cont.

<u>Lot no.</u>	<u>ARG no.</u>	<u>Provenience</u>	<u>Sample Volume</u>	<u>Contents wt (g) / ct</u>	<u>Comments</u>
32	75	U-S.37, L-7	10 1	0.38 22	<u>Carya</u> sp. <u>Juglans</u> sp. black cherry stone
				1 1	
				1 1	(3 unidentified seeds)
33	76	U-S.39, L-7	10 1	0.10 22	<u>Carya</u> sp. <u>Polygonum</u> sp.
				1 1	
34	77	U-22, L-4/6 (Postmold 2, Structure 4)	2 1	0.03 4 0.08 1	<u>Carya</u> sp. <u>Zea mays</u> kernel
35	78	U-22, L-4/6 (Postmold 3, Structure 4)	?	0.13 11 1 1	<u>Carya</u> sp. <u>Juglans</u> sp. (2 uncarbonized <u>Gallium</u> )
36	79	U-22, L-4/7 (Postmold 4, Structure 4)	2 1	0.05 5	<u>Carya</u> sp.
37	81	U-S.32, L-7	10 1	0.50 29	<u>Carya</u> sp.
38	82	U-23B, L-7 (Feature 12, Structure 4)	2 1	0.06 4	<u>Carya</u> sp. (2 uncarbonized seeds of <u>Polygonum</u> sp.)
39	83	U-23B, L-7 (Feature 12, Structure 4)	screened		This sample contained many lumps of clay and a very few particles of modern acorn shell

Table I, cont.

<u>Lot no.</u>	<u>ARG no.</u>	<u>Provenience</u>	<u>Sample Volume</u>	<u>Contents wt(g)/ct</u>	<u>Comments</u>
40/41	85/86	U-23F, L-5/10 (Feature 13, Structure 4)	30 1	1.02 45	<u>Carya</u> sp.
42	88	U-28, L-3	10 1	1.34 57	<u>Carya</u> sp. (probably pig- nut or bitternut hickory)
43	89	U-13, L-6/8 (Feature 14, Structure 3)	6 1	0.51 13	<u>Carya</u> sp. (probably pig- nut hickory)
44	92	U-29, L-3	10 1	0.62 28	<u>Carya</u> sp.
45	93	U-30, L-3	10 1	0.18 6	(7 uncarbonized seeds of <u>Chenopodium</u> , hackberry, and small fungal nodules)
46	96	U-32, L-3	10 1	0.01 5	(14 small fungal nodules) <u>Carya</u> sp.
47	97	U-33, L-2	20 1	0.01 1	(40+ small fungal nodules and seeds of wild grape, <u>Polygonum</u> and <u>Chenopodium</u> ) <u>Carya</u> sp?
48	98	U-35, L-3	10 1	0.12 6	(1000+ uncarbonized seeds of <u>Chenopodium</u> , <u>Polygonum</u> and <u>Amaranthus</u> ) <u>Carya</u> sp. (6 seeds of wild plum? wild grape, <u>Chenopodium</u> )

Table 1, cont.

<u>Lot no.</u>	<u>ARG no.</u>	<u>Provenience</u>	<u>Sample Volume</u>	<u>Contents wt (g) / ct</u>	<u>Comments</u>
49	99	U-31, L-3	10 1	0.18	11 <u>Carya</u> sp.  (14 uncarbonized seeds of poke and <u>Chenopodium</u> )
50	102	U-38, L-3	10 1	0.51	15 <u>Carya</u> sp.
51	103	U-35, L-4/5 (Feature 15)	0.4 1	0.03	4 <u>Carya</u> sp.
52	105	U-31, L-4/5 (Feature 16, Structure 5)	5 1	0.15	9 <u>Carya</u> sp. 1 wild grape ( <u>V. riparia</u> ) 1 badly distorted carbonized seed
53	112	U-S.44, L-7/11 (Feature 18, Structure 1)	3.4 1	2.00	100 <u>Carya ovata</u> (shagbark hickory)
54	114	U-S.44, L-7/11 (Feature 18, Structure 1)	screened	2.11	21 <u>Carya</u> sp. (probably pig-nut hickory)
55	117	U-S.38, L-7/9 (Feature 29, Structure 1)	10 1	0.01	7 <u>Carya</u> sp.  (1 uncarbonized grape seed)
56	121	U-49, L-3/7 (Feature 27)	44 1	2.55	132 <u>Carya</u> sp.
57	122	? , L-3/7 (Wall of Trench 1, Feature 30)	10 1	1.73	63 <u>Carya</u> sp.  (30+ small fungal nodules)

Table 1, cont.

<u>Lot no.</u>	<u>ARG. no.</u>	<u>Provenience</u>	<u>Sample Volume</u>	<u>Contents wt (g) / ct</u>	<u>Comments</u>
58	128	?, L-2/5 (Wall Trench 1, Feature 31)	10 1	0.51	23 <u>Carya</u> sp. <u>Chenopodium bushianum</u>
59	125	?, L-2/5 (Wall Trench 1, Feature 32)	10 1	1.78	111 1 <u>Carya</u> sp. American plum seed
60	128	U-S.58, L-7/8 (Feature 22, Structure 1)	2 1	0.57	23 2 <u>Carya</u> sp. <u>Polygonum</u> sp.
61	129	U-49, L-3/6 (Feature 28)	22 1	2.29	93 1 <u>Carya</u> sp. <u>Juglans</u> sp.
62	130	U-S.59, L-7/8 (Feature 19, Structure 1)	10 1	0.95	13 3 <u>Carya</u> sp. <u>Juglans nigra</u> <u>Prunus</u> sp. (choke cherry?) and <u>Polygonum</u> sp.
63	131	U-40, L-1 (Midden Area)	10 1	0.13	3 <u>Carya</u> sp.
64	132	U-40, L-2 (Midden Area)	10 1	0.13	5 <u>Carya</u> sp. (possibly pig- nut hickory)
65	133	U-40, L-3 (Midden Area)	10 1	0.13	10 <u>Carya</u> sp.

Table 1, cont.

<u>Lot no.</u>	<u>ARG no.</u>	<u>Provenience</u>	<u>Sample Volume</u>	<u>Contents wt(g) / ct</u>	<u>Comments</u>
66	134	U-40, L-4 (Midden Area)	10 l	0.18 (0.03)	9 (1) <u>Carya</u> sp. (a chert flake)
67	135	U-40, L-5 (Midden Area)	10 l	0.34	18 4 <u>Carya</u> sp. unidentified carbonized seed coat fragments
68	136	U-45, L-4/5 (Feature 35)	25 l	2.63	90 <u>Carya</u> sp.
69	217	U-S.27, L-6 (Feature 11, Structure 2)	screened	0.95	9 <u>Carya</u> sp.
70	353	U-40, L-2 (Midden Area)	screened	0.18	2 <u>Carya</u> sp.
71	356	U-40, L-4	screened		(uncarbonized fragments of pignut hickory and acorn shell)
72	359/360	U-35, L-1 (Feature 15)	screened	0.18	5 unidentified carbonized plant material
73	370	U-40, L-6 (Midden Area)	screened		(recent nutshell of the bitternut hickory)
74	387/388	U-S.44, L-7/11 (Feature 18, Structure 1)	screened	0.24	33 <u>Carya</u> sp.
75	396	U-49, L-3/7 (Feature 27)	screened	1.10 0.50	11 1 <u>Carya</u> sp. unidentified carbonized plant part

Table 1, cont.

<u>Lot no.</u>	<u>ARG no.</u>	<u>Provenience</u>	<u>Sample Volume</u>	<u>Contents wt(g)/ct</u>	<u>Comments</u>
76	403	U-49, L-3/6 (Feature 28)	screened	0.56	2 <u>Carya</u> sp. 1 <u>Juglans</u> sp. 1 particle of wood charcoal
77	407	U-S.59, L-7/8 (Feature 10, Structure 1)	screened	1.03	6 <u>Juglans</u> sp.
78	87	U-40, surface			(recent acorn shell)
79	?	Depression 2 (Feature 3)		6.95	19 <u>Carya</u> sp. (probably shag- bark hickory)
80	91	U-13, ? (Feature 4, Structure 3)	?	3.50	30+ <u>Zea mays</u> cob fragments
81	24	U-S.7, L-5 (Feature 2, Structure 2)	10 1		(7 unidentified and uncarbonized seeds)
82	40	U-S.9, L-5/7 (Feature 4, Structure 2)	10 1	0.14	1 <u>P. americana</u> (American plum)
83	44	U-21, L-3	10 1		(100+ small fungal nod- ules and unidentified seed fragments)
84	56	U-23, L-4 (Structure 4)	12 1		(17 uncarbonized seeds of <u>Rubus</u> sp. and sedge)
85	58	U-22, L-3 (Structure 2)	10 1		(3 unidentified and un- carbonized seeds)
86	71	U-22, L-4	24 1	0.23	9 <u>Carya</u> sp.

Table 1, cont.

<u>Lot no.</u>	<u>ARG no.</u>	<u>Provenience</u>	<u>Sample Volume</u>	<u>Contents wt.(g)/ct</u>	<u>Comments</u>
87	84	?	screened		nothing observed in the sample
88	101	U-37, L-3	10 1		(1 uncarbonized seed of <u>Chenopodium</u> sp.)
89	107	U-31, L-4/5 (Feature 17, Structure 5)	4 1		(1 small fungal nodule)
90	118	U-S.37, L-8/12 (Feature 25, Structure 1)	10 1		(1 uncarbonized seed of <u>Polygonum</u> sp. and a small fungal nodule)
91	126	U-49, L-5/9 (Wall Trench 1, Feature 33)	10 1		(11 uncarbonized small fungal nodules)
92	205	U-S.13, L-6 (Feature 9, Structure 2)	screened	1.14 2.00	14 11+ <u>Zea mays</u> kernels and cob fragments stones of <u>P. americana</u> (American plum)

and aggregate 92.5 g by weight. Minimally, the residues represent 10 genera of food plants, including three nuts, two weedy annuals, four fleshy fruits, and the tropical cuttigen, corn.

Carbonized nutshell was observed in 74 of 91 lots and consisted of 2383 shell fragments aggregating 81.4 g. Briefly, these nuts are (together with their frequency of occurrence in the sample): hickory nut - 73; walnut - 8; and acorn - 1. The ubiquity and abundance of the oil and fat-rich nuts attests to considerable reliance on this resource on the part of the site's inhabitants. The three late woodland features defined on the site produced nutshell and nothing else. Twenty-two of 26 lots from 22 Mississippiian features also contained nut residues, but in seven instances nutshell was associated with the seeds of fleshy fruits (four associations), commensal seeds (three associations), and corn (a single co-occurrence). Moreover, on two occasions nuts were found in association with unidentified carbonized seeds.

A total of 41+ seeds aggregating 3.99 g by weight were recovered from 12 lots and are indicative of species which were surely available in the immediate site environs. These include both fleshy fruits and commensals. In descending frequency of occurrence in the sample, these are: American plum - 5; knotweed - 4; wild grape - 3; and single occurrences of goosefoot, persimmon, viburnum, black cherry, and choke cherry(?).

Like the nuts, these foods could have been harvested in late summer-early fall. While caution must be urged with respect to using plant remains alone in drawing inferences of seasonality, given the storability of most of these edible plant parts, it



is noteworthy that at least one of these autumn ripening fruits, wild grape, is not only subject to very considerable competition at the time of availability, but is also noted by Yarnell (1969: 49) to be especially perishable and difficult to store, probably necessitating almost immediate consumption upon collection. Finally, it is not unanticipated that a site evidencing a strong Mississippian component radiocarbon dating to A.D. 1010-1330 should yield the remains of corn or maize. A total of 92+ kernels and cob fragments of this tropical cultigen, aggregating 7.11 g by weight, were observed in lots from seven proveniences. Five lots are clearly associated with three of the excavated domiciles (Structures 2, 3, and 4), while the remaining two are from excavation unit levels. Moreover, on five occasions, corn occurs with the residues of nuts and in three lots it is associated with the seeds of fleshy fruits. Corn was not observed to co-occur with the seeds of either Chenopodium or Polygonum. The botanical data collected during the excavation of 21D3-67 by AR6 personnel and summarized herein argue for a subsistence fact on the part of Late Woodland Dillinger people that focused exclusively on the autumn nut crop. However, with respect to the substantial Mississippian occupation of the site, the interpretation that it functioned as a farmstead is certainly not contradicted by this data set. Be that as it may, it is also very apparent that the economic strategy of these Mississippian farmers also included secondary wild plant resources--edible foods which were abundantly available on a seasonal basis in the immediate site environs and provided important nutritional supplementation in a diet based on corn agriculture.

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