

POLLEN SPECTRA ASSOCIATED WITH THE ORLETON
FARMS MASTODON SITE

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Because the pollen from adjacent vegetation is embalmed in lake and swamp sediments, pollen analysis is a valuable aid to Pleistocene and recent paleontology. Through this technique we may obtain, not only a notion of the environment of the living animal, but a good approximation of its place in the climatic sequence.

The Madison County site was visited twice in order to collect material for pollen analysis—unfortunately not until after the remains had been lifted. The first visit was by John Hopkins, Graduate Assistant at Oberlin College, the second by the senior author of this paper. Table 1 is based upon Mr. Hopkin's notes.

TABLE 1
Profile at Mastodon site.

Depth in centimeters	Material
0	present surface
25	lower limit of plowed soil
55	lower limit of soil—pollen scanty, ill-preserved
65	mollusc shells and pollen—upper limit of bones
75	yellow clay, molluscs and pollen—bones present
85	yellow to blue clay, pollen, below bones.

In all, seven samples have been studied. As indicated in table 1, the upper three had been so affected by soil-forming processes as to yield little or no fossil pollen. Of the remaining four, three are from known depths, while the fourth consists of material obtained from the jaw-bone after it had been removed to the

Museum. The position of this last specimen in the sequence is quite clear, however, as table 2 reveals.

The sequence in table 2 represents a shift from fir-spruce forest with some pine to a forest predominantly pine, with no fir, some spruce and some deciduous trees—principally oak and hickory. The climate, while remaining cool, was becoming warmer and dryer—an assumption supported by the appearance of considerable amaranth and composite pollen at the 75 cm level.

This shift is well-known and was general throughout the North-Central States (Sears, 1948). It was certainly subsequent to the Cary stage of Wisconsin glaciation, probably subsequent to a later readvance of the ice, since the warming-drying conditions indicate a time of glacial retreat.

TABLE 2
Pollen analysis of sediments

Depth cms.	Forest Pollen %							Non-forest per 100 F. P.						
	F	Sp	Pn	B	Al	O	H	Sx	Gr	Sg	Wl	Cp	Am	?
65	00	27	62	01	01	02	09	01	02	01	10	00	02	07
75	03	39	45	00	00	10	02	01	04	00	00	16	03	12
*	04	48	42	01	01	04	00	01	07	00	00	01	00	05
85	07	52	41	00	00	00	00	01	00	00	00	01	00	00

*Sediment scraped from jaw-bone.

KEY TO ABBREVIATIONS

F—fir
Sp—spruce
Pn—pine
B—beech
Al—alder

O—Oak
H—hickory
Sx—willow
Gr—grass
Sg—sedge

Wl—water lily
Cp—composite
Am—amaranth
?—unknown

With the aid of Carbon 14 analysis and the ultimate untangling of the minor glacial episodes following the Cary, it should be possible to date the fossil, both geologically and chronologically, with considerable precision.

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REFERENCE

Sears, Paul B. 1948. Forest sequence and climatic change in northeastern North America since Early Wisconsin time. *Ecology*, 29: 326-333.