

POLLEN STUDIES IN THE APPLE CREEK AREA

James Schoenwetter, May, 1966

In December of 1962 a suite of sixteen sediment samples from the Apple Creek Site was submitted to the then-functioning palynological laboratory of the Southern Illinois University Museum. Seven of the samples contained sufficient pollen for analysis. All of the analyzed samples were from cultural contexts yielding "Greene ware" pottery as the only or major ceramic style. They are thus dated to the Apple Creek II occupation.

The palynological laboratory was then investigating sediment samples associated with Mississippian occupation on the American Bottoms near Cahokia (Schoenwetter, 1962). It was hoped that the Apple Creek records would provide the perspective of an earlier time horizon. The pollen spectra from Apple Creek, however, turned out to be quite unlike those from the American Bottoms in that fewer pollen types were recovered. In an attempt to determine the cause of the difference, surface samples of sediment were collected in the Apple Creek area under known conditions of vegetation in 1963. The pollen spectra of the surface samples were compared with the pollen spectra from the archaeological horizon at Apple Creek. This comparison resolves the matter of discrepancy, and points to the methodological value of surface sample controls in archaeological pollen analysis.

Surface Sample Records (Fig. 1)

The surface pollen spectra fall into two categories: those containing high frequencies of aboreal pollen, and those containing low aboreal pollen frequencies. The former category is expressed in samples BB, CC, DD, EE and FF. Samples CC and DD were collected beneath the climax oak-hickory forest so high values of arboreal pollen are hardly surprising in those cases. Samples EE and FF were collected from recent silt deposits on the floors of a small lake and a slough, respectively. The vegetation of these sample areas is also arboreal, with dense stands of cottonwood, maple, willow, and pin oak at both locales. Sample BB has high arboreal pollen values, but is distinct from other samples of this group in that the predominant arboreal pollen type is not Quercus (oak) pollen. The large quantity of Ulmus (elm) pollen in this sample seems likely to be the effect of local over representation (see Faegri and Iverson, 1964:115). Sample BB was not collected from a wooded area; it came from the floodplain only 100 feet from sample AA.

Samples AA and GG, which contain low arboreal pollen frequencies were collected where few trees occur. Sample AA was recovered from the oft-flooded floodplain of Apple Creek; sample GG was taken from the surface of an abandoned agricultural field covered by a dense growth of Chenopodium (goose foot), Amaranthus (pigweed), Polygonum (dock), etc. Sample HH is from waterlaid fill deposited in a storage pit between completion of its exca-

vation on July 2, 1962 and March 21, 1963. This sample thus principally represents the pollen rain of the fall and winter seasons. This sample has 20 to 50% fewer pollen taxa than the other samples.

These samples indicate that, unless overrepresentation of local pollen occurs, the pollen rain of forested and non-forested areas is highly differentiated, though the floristic composition of the sample area is not well expressed in a 200-grain pollen count. The samples from the oak-hickory forest do not contain significantly more oak or hickory (*Carya*) pollen than those from densely wooded vegetation of distinctive composition; alternatively, the samples from the mixed forest do not contain significantly more arboreal pollen types than those from the climax forest (compare DD and EE). The same principle holds true for the samples from non-forested habitats. The floristic composition at the locales of samples AA and GG is quite distinctive but this is not evident in the pollen rain.

The sample representing only part of the year's pollen rain (HH) is much like that expectable from a non-forested locale. However, it contains fewer pollen taxa than the others from this type of situation.

Fossil Sample Records (Fig. 2)

The most immediate contrast between the surface pollen records and the fossil ones is the great uniformity amongst the latter. The plow zone sample contains more Chenopodiaceae

pollen than the others, but that sample may be granted a disturbed status and is probably not representative of the same conditions as the others. Considering the distinctive cultural contexts of the samples, their similarity is remarkable. Clearly, the pollen content of the sediments was either uniformly affected by human activity at the site or not at all affected by that activity. Since house, midden, and pit are artifacts of distinctive use and function, it seems most probable that these pollen records are uninfluenced by man's affairs.

The evident similarity between the fossil pollen records and the surface pollen records is in the low arboreal pollen values. Judging by present-day pollen rain in the area, these samples were deposited in ^a non-forested situation. Beyond this, there is a remarkable similarity between the House Floor and Pit records with that of sample HH, which represents the pollen rain of only a part of the calendar year. The pit sample from Feature 193d is, indeed, statistically indistinguishable from surface sample HH. The fossil records like sample HH contain far fewer pollen taxa than surface samples representative of the yearly pollen rain. The midden sample, which contains twice as many pollen taxa as the average fossil sample, is an exception; it contains as many pollen taxa as the average surface sample.

If the present is the key to interpretation of the past, we are drawn to the conclusion that the pits and the house floor sampled at the Apple Creek Site were only exposed to the atmosphere for part of the calendar year, though the trash midden was exposed throughout the year. The pits and the house were in use, apparently, from some time after the beginning of July, until some time before spring pollination in April and May - probably during the fall and winter months. This conclusion might appear an overinterpretation of the limited available data, though it is in complete accord with the palynological record. The conclusion is independently justified, however, by the faunal record from the Apple Creek Site. All deer from the site used for food had been killed during the fall and winter seasons, and all migratory waterfowl had also been taken during that period.

References Cited

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