9. New collections of prehistoric Maize.

Preliminary studies have been made on two collections of archaeological maize.

The first of these, excavated by Mr. Reynold J. Ruppe of the Peabody Museum of Harvard University, comes from Cebollita Cave in New Mexico. It is regarded on the basis of pottery and other cultural traits as comparatively recent. The earliest maize, comprising carbonized ears with kernels intact, is a small-seeded flint corn, probably a pop corn, showing affinities with the primitive pop-corn races of Mexico, Chapalote and Nal-Tel, recently described by Wellhausen et al. It is definitely non-Tripsacoid. The later corn is strongly Tripsacoid and includes some specimens which are almost exact counterparts of segregates of maize-teosinte hybrids.

The second collection representing the LaPerra culture comes from a cave in Taumalipas, Mexico, excavated by Dr. Richard MacNeish of the National Museum of Canada. The earliest of this maize is dated by Carbon 14 determinations of other associated remains at 4445 ± 280 years. This maize is closely related to the Nal-Tel race of Yucatan and Campeche in Mexico. Some of it is, however, more primitive than modern Nal-Tel, having longer glumes and more slender rachises. The smallest cob in this collection is almost an exact counterpart, in both size and botanical characteristics, to the smallest cob of the corn from Bat Cave described earlier by Mangelsdorf and Smith.

There is some evidence of evolution in the LaPerra maize. The larger cobs with larger rachises and shorter glumes were all found in the upper strata. No strongly Tripsacoid cobs were found in any strata.

Since the LaPerra culture represents a transition from food gathering to food growing, the earliest maize found in this site may be not far removed from wild maize. Indeed, in the light of the fossil maize pollen found in the Valley of Mexico and mentioned earlier, it is even possible, though perhaps not highly probable, that the most primitive LaPerra maize is wild maize. Students of maize, including the present writer, have supposed that maize as we know it could not have existed in the wild because it lacks a means of dispersal. But if the ears of wild maize were small and numerous, and not completely enclosed in husks, the means of dispersal may have been adequate.

Neither of these collections of prehistoric maize lends any support to Randolph's suggestion that Tripsacoid characters are relict characters stemming from corn's ancestor. No strongly Tripsacoid cobs occur in the LaPerra maize at any stage, while in the material from Cebollita Cave the earliest maize is definitely non-Tripsacoid and the more recent maize is highly Tripsacoid. A similar situation occurred in the Bat Cave maize reported several years ago.

Incidentally, a study of prehistoric maize combined with studies of pod corn and derivatives of maize-teosinte hybrids has produced several criteria for distinguishing weak forms of pod corn from Tripsacoid maize. In the former the upper and lower glumes are similar in length and texture and the lemmas and paleas of both the fertile and sterile florets are well developed. As the cobs deteriorate the lemmas and paleas disappear first leaving both glumes. In the final stages of deterioration the entire spikelets are lost leaving only the rachis. In Tripsacoid maize (as in both Tripsacum and teosinte to an even greater degree) the lower glumes are thicker and more indurated than the upper and the lemmas and paleas of the sterile floret are not strongly developed. As the cobs of Tripsacoid maize deteriorate the upper glumes disappear with the lemmas and paleas leaving the rachis with the lower glumes still projecting. Cobs of Tripsacoid maize are not at all suitable for one of the homely uses to which corn cobs are traditionally put.

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