

Puneno, Confite Morocho and Morocho still grown in the area. However, at the time it seemed that a majority of the cobs should be classified as hybrid derivatives such as Confite Morocho introgressed by Confite Puneno on a basis of Grobman's data. But when the data on the age of the various levels in the excavations were received from Dr. Barbara Pickersgill, who gathered the plant remains from the dig, the reason for the intermediate nature of most of the cobs became apparent. The intermediate types extended back a thousand years further in this material to 4000 B.P. than the so-called primitive races. Thus it seems that the oldest cobs represent a common ancestor to these primitive races rather than being their hybrid derivative. We propose to name this ancestral race Ayacucho after the archaeological area. Grobman et al. (1961) had proposed an ancestral race, Confite Chavinense, suggested by some ceramic replicas, that led to Confite Puneno but their presumed race was fasciated and, thereby, unlike the oldest cobs from Ayacucho. Previously the race Confite Morocho has been considered as being close to the "wild state." It would now seem that the Ayacucho race was the more primitive and ancestral to several indigenous races in Peru.

W. C. Galinat .

2. A heritable phenotype for two-ranked ears in maize allelic to the same trait in teosinte.

A mutation with a relatively stable phenotype for two-ranked ears was discovered in a single plant in the  $F_3$  from a cross between an old inbred line of Wilburs Flint and Siberian Red Flint. Unlike the depauperate phenocopies for two-ranked ear frequently found in stunted eight-rowed maize, this two-ranked type found in our "Waltham Flint" is relatively stable in phenotype and has been inherited through three generations. Although the trait is 100% heritable, some variations in the time of gene action are shown by a few ears with four-ranked butts immediately changing to the two-ranked phenotype.

The poorly programmed action of genes in maize controlling this and certain other teosinte-like traits (i.e., single female spikelets) indicates an unadapted genetic background. One result of such unstable

phenotypes is to distort the segregation ratios and to obscure the mode of inheritance. The unstable phenotype characterizes both the mutant and teosinte derived traits.

On outcrossing of the two-ranked Waltham Flint to a two-ranked derivative from a maize-teosinte hybrid, all ears (36) in the  $F_1$  and  $F_2$  were two-ranked, indicating allelism of the genes controlling this trait in the maize and teosinte parents.

Segregations from maize-teosinte hybrids usually indicate that the two-ranked trait is controlled by two independently inherited units. The origin of the two-ranked condition in the Waltham Flint may stem in part from the bringing together of the necessary recessives during the recent hybrid origin of this variety and in part from successive mutations. In any case, the recessive alleles for this trait in maize matched off in hybrid combination with the corresponding recessive alleles from teosinte.

W. C. Galinat

### 3. A possible role of condensation in a domestication of teosinte.

Teosinte is highly variable in the development of its lateral branches on which its female spikes are usually borne. In some plants these upper branches are elongate and terminated by a tassel with the female spikes dispersed singly in the axils of its leaves. At the other extreme, a telescoping of the branch aggregates its spikes in tight clusters close to the main culm and all are female. In collecting seed from thousands of teosinte plants on a recent expedition in Mexico, we found that the harvesting of bulk seed was much easier from plants with clustered spikes because of the greater concentration of spikes and resultant accumulation of fruit cases within their overlapping and, thereby, mutually protective husks. This suggests that an important, if not the first, step in a possible domestication of teosinte, if this occurred, could have been selection perhaps unconsciously applied for a condensation of spikes into tight clusters. At first condensation in teosinte would serve something of the same purpose as the rigid rachis character in the domestication of other cereals. Once cultivation