Stomata measurements suggested that three of these seven shoots were amphidiploid and this was later confirmed in chromosome counts made by Mr. Raju. This amphidiploid is fully female fertile on backcrossing to corn.

W. C. Galinat

6. High female fertility in F_1 hybrids of corn X Tripsacum floridanum and their backcrosses to corn.

Not only is T. floridanum highly crossable with some strains of corn, as I reported in last year's News Letter, but we now know that the F_1 hybrid and its backcross to corn are highly female fertile--seed set in the F_1 was 85% and almost this high in the backcross to corn. This discovery represents an important break through in both theoretical and applied work on the past and potential evolution of corn.

Such high female fertility in the F_1 and backcrosses to corn would make it easy, once a cross had occurred, for Tripsacum introgression into corn to occur in the wild or under conditions of primitive agriculture. It also makes the natural derivation of teosinte from such introgression seem more credible than some suggest. In this connection, we have already hybridized and backcrossed this most primitive species of Tripsacum with one of the most primitive living races of corn, Confite Morocho, in an attempt to synthesize teosinte through controlled crossings. Also we are studying the inheritance of recessive marker genes of corn in corn-Tripsacum hybrids; this should lead to the development of a genetic map of Tripsacum.

A quantity of OP seed from an F_1 hybrid of A158 gl_3 X T. floridanum is available to those who wish to make use of it. This new source of germplasm should be especially valuable to those who are looking for new genes not presently available in corn.

Seed of T. floridanum, T. dactyloides 2n of Kansas and T. dactyloides 4n of Florida is also available.

W. C. Galinat

7. Chromosomes of three Mexican teosintes.

As previously reported, by crossing Mexican teosintes to a standard inbred strain of Wilbur's flint with virtually knobless chromosomes, the characteristics of the teosinte chromosomes can be determined by studies of the microsporocytes of the F_1 hybrid plants. During the past year, the following observations have been made.

Arcelia teosinte. Seed of this teosinte was collected near Arcelia, Guerrero. Of 21 F_1 hybrids of Wilbur's flint and Arcelia teosinte, only a few of the plants had good spreading pachytene chromosomes. As long as the bivalent pachytene chromosomes were clear and isolated, they appeared in close and regular association. With respect to knobs, there were two types of chromosome 1, one having a small internal knob on the short arm, the other having in addition two small internal knobs on the long arm. Chromosome 2 had two medium-sized internal knobs, one on each arm. Two types of chromosome 3 were observed, one knobless, the other with a large internal knob on the long arm. Chromosome 4 also had two types, one with a large knob on the long arm, the other, this knob and a small terminal knob on the short