The wall of the microsporocyte very early starts going through a morphogenetic development similar to that of the pollen grains. Thus frequently one comes across cells looking like pollen grains but containing degenerating meiotic figures from pachytene to metaphase.

A fourth type of aberration observed was translocation. So far two plants were observed which were heterozygous for a reciprocal translocation each in the maize chromosomes.

These effects resemble abnormalities of meiosis due to genetic causes (eg. asynapsis) and due to the action of chemical and physical agencies. It appears that the Tripsacum chromosomes act in disrupting the balance of genetic and physico-chemical factors at several points which together make meiosis and the subsequent events in the microspore an integrated system.

Further studies are in progress along these lines for a fuller understanding of these phenomena.

Raju S. K. Chaganti

9. Northern flint-like characters derived from Tripsacum.

Certain plants in our maize populations segregating T. dactyloides and T. floridanum chromosomes had acquired from Tripsacum several characteristics which resemble those of the northern flints including the early flowering habit, tillering habit, flag leaf development, and long internodes above the ear position. The genes for earliness from Tripsacum may be hidden by the perennial character in this grass. But once the perennial plants are well established, these genes may serve to speed early flowering in the spring. The identification of northern flint-like characters with Tripsacum germplasm agrees with other evidence that the northern flints are tripsacoid.

W. C. Galinat

10. Teosinte introgression and fasciation.

Origin of fasciation. Fasciation, a sort of incipient branching which flattens the ear while it increases the number of kernel rows, has an ancient history in maize, perhaps as a mechanism to concentrate the grain under short protective husks. Although obvious fasciation is rare in modern maize, it does occur in extreme form in certain relic races, which are now restricted to high elevations, such as Palomero Toluqueño in Mexico and Confite Puneño in Peru as well as in a race which is maintained as a novelty type in the United States, Strawberry popcorn. Experimental evidence now indicates that genetic factors for

fasciation are common in modern maize but their expression is controlled or modified by teosinte introgression.

Effect of teosinte germplasm on fasciation. Our teosinte chromosome 9 stock causes a complete submersion of any phenotypic effects of heterozygous fasciation in its hybrids with Strawberry popcorn and with a fasciated sweet corn inbred, Iowa 5125. All teosinte chromosomes tested (1, 3, 4) caused some reduction in both fasciation and kernel row number as well as an increase in ear length in such hybrids. The teosinte chromosomes entered the hybrids from an isogenic background (A158). The data for the Strawberry popcorn hybrid follow:

Strawberry pop crossed by	Aver. Kernel Row No.	Aver. Ear Length Cm.	Type of Fasciation
A158 (control)	21.0	15.0	medium at butt
A158-Fla. 1	20.6	16.0	slight at butt
A158-Fla. 3	20.5	15.3	medium at butt
A158-Fla. 4	20.0	15.4	slight at butt
A158-Fla. 9	18.0	17.5	none

Inheritance of fasciation. In the absence of teosinte introgression, fasciation segregates as a single factor showing incomplete dominance as found in the F_2 generation from a cross between strawberry popcorn (fasciated) and Argentine popcorn (non-fasciated). In 200 plants, 23% showed the extreme "bears paw" type of fasciation derived from the strawberry popcorn parent; 55%, the apparent heterozygotes, had butt fasciation in which there is much drop-rowing as the ear tapers sharply to the tip; the remaining 22% had the cylindrical non-fasciated type of ear originating from the Argentine popcorn grandparent.

W. C. Galinat

11. Morphological and heterotic components of teosinte and "Tripsacum" introgression in maize.

Morphological components. On the basis of morphological effects described in a previous News Letter (35), it has been possible to identify four components of introgressed germplasm in teosinte derivative stocks of A158. For convenience, these are designated by numbers 1,3,4 and 9 which are probably the chromosomes responsible in whole or part for the various tripsacoid features.

The information obtained from the study of teosinte derivatives was applied to gain insight of the "Tripsacum" derivatives which were developed by introducing into A158, chromosomes or chromosomal segments extracted from tripsacoid races of maize which are not in sympatric