

Absence of the near-colorless, green class of mutants in the heterozygotes involving either paramutagenic or non-paramutagenic Rsc mutants indicates that mutation of Rst to Rsc alters an R component essential for the near-colorless, green phenotype, or alters the pairing relationships of the R components in such a way that a crossover necessary for the isolation of such mutants cannot occur.

The recovery of near-colorless mutants from the heterozygous combinations involving the paramutagenic Rsc mutants, but not from the heterozygous combinations involving the non-paramutagenic Rsc mutants is additional evidence for a close association between the near-colorless phenotype and paramutagenic action.

R. B. Ashman

4. A new dominant mutant.

A dominant mutant, clumped tassel (Ct), has been recovered from inbred M14. This mutant gives a compact, shortened tassel, some dwarfing of the plant and modified ear morphology. The homozygous Ct Ct is not easily recovered. Classification is fair in most backgrounds. Preliminary linkage tests indicate Ct is located on chromosome 8.

L. F. Bauman

UNIVERSITY OF TEXAS
Austin, Texas

1. Further studies on disjunction at anaphase I of the chromosomes of a trivalent configuration.

In 21 chromosome maize plants carrying a normal chromosome 2, a 2^T chromosome and a T^2 chromosome a genetic test of frequency of nondisjunction at anaphase I of the 2^T and T^2 chromosomes is readily available. From plants carrying recessive ws lg and gl only on the T^2 chromosome the test gives frequency of nondisjunction following crossing over; from plants in which only the 2^T chromosome carries dominant alleles the test gives frequency of nondisjunction regardless of chiasma formation. Results of the former type of test have been published (Genetics 49:69-80, 1964). Data have recently been accumulated from the latter type of test with the expectation that differences might be attributable to the pattern of distribution of univalents. From a total of 922 plants it now appears that the frequency of nondisjunction from the second type of test is very much higher (average 38%) than that found in the first (19%). Even if all the univalents were distributed nondisjunctively at first anaphase,

this would leave an average frequency of 31% nondisjunction from trivalents. It is suspected that genetic background may strongly influence frequency of non-disjunction.

In some stocks a substantial deficiency of 21 chromosome progeny (and excess of 20 chromosome progeny) from non-disjunctive distribution were found (total average = 12%). These deficiencies and excesses were not correlated with mortality (although mortality was high and a potential source of error).

It is thought that they may have resulted from a tendency at metaphase I for trivalents destined to have nondisjunctive distribution to orient so that only the 2^T chromosome is directed toward the basal position. Such a tendency would not have been detected in the previous study and would have resulted in a slight underestimation of frequency of nondisjunction and of crossover frequency.

Further tests are underway. B chromosomes, which are similar in length to the T² chromosome, are being added to the stocks for study of their possible effects on disjunction.

M. P. Maguire

2. Recombination studies in maize with segmental substitution from *Tripsacum*.

Although a segment derived from a *Tripsacum* chromosome has been found to carry dominant alleles for markers on the short arm of chromosome 2 of maize (ws, lg, gl), crossing over between this segment and the corresponding region of chromosome 2 rarely occurs. Previous results have suggested that in maize stocks which carry this segment as a heterozygous substitution such crossover inhibition is accompanied by an enhanced frequency of crossing over in adjacent regions. Disomic stocks heterozygous for the substitution were constructed to test the frequency of crossing over in the gl B, B sk, and sk v regions. Unfortunately, only pollen from plants heterozygous for sk was available from the tester stock at the appropriate time, and severe spring weather reduced the testcross progenies to a total of 622 plants. Results suggest that the b locus is very near the proximal end of the *Tripsacum* segment, that the recombination frequency between B and sk is high (13 per cent in these studies) and between sk and v very high (50 per cent). The tests are being repeated with pollen from sk sk plants and hope of low spring mortality,

Similar tests in 21 chromosome plants carrying a normal chromosome 2, a 2^T chromosome and a T² chromosome also suffered from high mortality and the use of an Sk sk tester, but similarly suggested high recombination frequency in the sk v region. These tests are also being