(4) In some mixtures differences in the speed of pollen tube growth were of major importance. For example, the results indicated that the average speed of growth of K64r is higher than that of C217, while there is no significant difference between K64r and C23 in this respect.

(5) Pollen antagonism was observed in some cases. The pollen of the single cross C217 x C56 exhibited a pronounced antagonistic effect on 33-16 pollen. This effect is probably more on the germination than on the growth of the 33-16 pollen.

(6) Exposure to cold and direct sunlight altered the competition in some mixtures. In the case of 33-16 + C217 x C56 both treatments favored the 33-16 pollen, probably by reducing the antagonistic effect. The cold treatment favored K64r in both mixture K64r + C217 and mixture K64r + C23. These two treatments did not alter the competition between 33-16 and A413 significantly.

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4. Secondary transpositions of Modulator.

As noted in the M.G.C.N.L. 31:144, limited data suggested that the positional stability of transposed-Modulator might be dependent on its proximity to the P locus.

A study has been undertaken to see if this is in fact the case.

A number of heterozygous light variegated ears were grown and the resulting plants pollinated by a South African inbred, T2, with colorless pericarp. The linkage of tr-Mp and P was determined by observing the proportions of light and medium variegated plants which resulted from the kernels of each ear (a family). A number of pollinated ears from each family was planted the following season and again the linkage relations of P and tr-Mp determined in each case. The crossover value between P and tr-Mp for each family was compared with that of the family from which the parental ear was taken to determine if a secondary transposition of Mp had occurred. A move was considered to have occurred if the new crossover value did not fall within the 95% confidence limits about the parental value, or in cases where this test could not be applied, where P according to the Chi-square distribution was less than .05.

The results obtained for the first groups of families available are as follows:

c.o. between P and tr-Mp in parental family.	% of progeny families showing no moves	moves	no. of families
0	73	27	55
0-5%	72	28	68
5-10%	58	42	33
10-30%	38	62	34

In the case of the families showing 5-10% and 10-30% crossing over, 43% and 39% of the moves, respectively, were to positions closer to the P locus.

Thus, it would appear from the data that transposed-Modulators located at positions close to P on the first chromosome are less likely to undergo further transposition than ones located at a greater distance from P. The data are still too limited to indicate clearly if the direction of move (closer to or farther from P) is also dependent on proximity to P.

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5. Uneven development of maize seedlings.

Symptoms very similar to those described by Koehler (Pericarp injuries in seed corn. Bulletin 617, University of Ill. Agric. Exp. Sta.) on maize plants originating from pericarp injured seed, also occur on young maize plants in the main maize growing areas of the Union of South Africa.

During the 1960-61 season three different experiments were planted with seed having different classes of pericarp injuries. These seeds were selected from commercial SA4 (a yellow hybrid) seed, by using the staining technique described by Koehler. Two of these experiments were planted on ground which had been planted with maize many times before and was known to be infected with certain root rotting fungi. The other experiment was done in a greenhouse in unsterilized soil from a maize field where 100% root rot infection had occurred during the previous season.

In all three experiments the plants grew well and plants originating from the different classes of pericarp injured seeds could not be distinguished from plants in the control plots. Thus it was impossible to correlate the Koehler symptoms with pericarp injury.