

In these heterozygotes, the extent of neocentric activity is not unlike that found in K10/k10 plants. Also, preliminary results indicate that K<sub>T</sub>10 is incapable of inducing preferential segregation. Thus far, random segregation ratios have been obtained for the loci on the short arm of chromosome 9 which were followed and for R:r of chromosome 10.

Further study is being made to confirm the above results. Should this endeavor confirm the preliminary results, we may need to re-evaluate the relationship between neocentromere formation and preferential segregation.

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### 3. Test of the heterochromatic nature of Ds.

Results thus far obtained do not give positive evidence that Ds is genetically similar to knobs (heterochromatic) in their preferential segregation response to the presence of the abnormal chromosome 10. Examination of about 1500 kernels was made and this number is admittedly too small. More exhaustive tests need be made to determine whether the Ds element can undergo preferential segregation. There is always the possibility that Ds, though heterochromatic, is qualitatively unlike the heterochromatin of the knobs and therefore immune to the actions of the abnormal chromosome 10.

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### 4. Location of new positions of M.

In order to determine the limits within which M may be transposed to new positions and also for the purpose of obtaining stocks with M on certain chromosomes, large numbers of single seed cases which by their appearance may have a newly transposed M, were tested for linkage. M is the mutator factor of the bz<sup>m</sup><sub>2</sub>-M mutator system and is roughly equivalent to Ac (MNL 29: 59).

The experiment consisted of crossing bz<sup>m</sup><sub>2</sub> bz<sup>m</sup><sub>2</sub>, no M by bz<sup>m</sup><sub>2</sub> bz<sup>m</sup><sub>2</sub>, M M to produce F<sub>1</sub> seeds carrying 1 dose of M (large sectors indicating early change of bz<sup>m</sup><sub>2</sub> to Bz). Among large numbers of these are found occasional cases which appear to have 2 doses (many small colored sectors). These presumably have 2 M's (one at the original position and one at a new position). On backcrossing to bz<sup>m</sup><sub>2</sub> bz<sup>m</sup><sub>2</sub>, no M, they produced a ratio of 1 two dose:2 one dose:1 which is typical of 2 factors instead of a normal one factor 1:1 ratio.

These cases were all planted and the plants selfed and crossed on a series of waxy marked translocations (the standard chromosome 9 series obtained from E. G. Anderson or a colored aleurone series extracted from the originals). The colored non-waxy  $F_1$  seeds from these crosses were planted and backcrossed to a  $\underline{bz}^m$ ,  $\underline{wx}$ , no  $\underline{M}$  stock. The embryos of the  $F_1$  seeds were all  $\underline{Bz}$   $\underline{bz}^m$  and of 4 types with regard to  $\underline{M}$  (1)  $\underline{M}_1$   $\underline{M}_2$  ( $\underline{M}_1$  is the original position,  $\underline{M}_2$  the new one) (2)  $\underline{M}_1$  (3)  $\underline{M}_2$  and (4) no  $\underline{M}$ . These when grown and backcrossed to  $\underline{bz}^m$   $\underline{wx}$  produced ears with  $\underline{Bz}$   $\underline{bz}^m$  and  $\underline{bz}^m$   $\underline{bz}^m$  seeds the latter of which had either a  $\underline{1M} \underline{M}:2\underline{M}:1$  no  $\underline{M}$  ratio, a  $\underline{1M}:1$  no  $\underline{M}$  ratio, or no  $\underline{M}$  at all.

Separation of the  $\underline{bz}^m$   $\underline{bz}^m$  seeds from the 1:1 ears for  $\underline{Wx}$  and  $\underline{M}$  should give evidence for linkage of either  $\underline{M}_1$  or  $\underline{M}_2$  with each translocation. This was done with as many cases as were available. The results are listed below:

Translocation	Number of cases tested	Cases with $\underline{Wx}$ - $\underline{M}$ linkage
1-9c	38	29
1-9(4995)	41	6+1?
2-9b	22	1
3-9c	27	1
4-9g	31	1
5-9c	25	3+2?
6-9b	9	1?
7-9a	45	0
8-9d	23	2+3?
9-10a	7	2
linked to 9	7	1

From the above it may be concluded that the original position of  $\underline{M}$  is on the short arm of chromosome number 1, perhaps at the  $\underline{P}$  locus but not expressed as  $\underline{P}^V$  ( $\underline{M}_p$  according to Brink's designation) since the recessive allele  $\underline{p}$  is present in this stock. It was also found that the translocation stock 4-9g was segregating for another  $\underline{M}$  factor located on chromosome number 4.

The data do not give specific locations of new positions but do show that  $\underline{M}$  may be transposed to all but one of the chromosomes in the complement. The number of cases is too small to provide enough information for accurate comparison between chromosomes but it does appear noteworthy that 45  $F_1$ 's involving translocation 7-9a failed to show a single case of transposition.

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