| Sample (22-25°) | Quartet Type: Non-C.O. | C.O. | Total | % C.O. Quartets |
|---|---|---|---|---|
| A | 18 | 36 | 54 | 67 |
| B | 73 | 140 | 213 | 66 |
| C | 94 | 155 | 249 | 62 |
| | 185 | 331 | 516 | 64 |

Oscar L. Miller, Jr.

UNIVERSITY OF MISSOURI
Columbia, Missouri
Department of Field Crops

1. A small telocentric fragment.

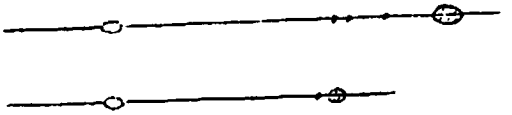
During the course of an attempt to synthesize newer forms of altered abnormal chromosome 10, one B.C.-1 plant was found to possess, in addition to its normal complement, an extremely minute telocentric fragment. This chromosome consists of not more than two discernable chromomeres and thus can easily be mistaken for foreign matter. It is considerably easier to observe at late diakinesis and metaphase I. Unfortunately the origin of this centric fragment is unknown. Inasmuch as the semi-sterile F-1 plant was weak and runty, microsporocytes were not sampled.

A project has been initiated to study the behavior of this fragment chromosome and to determine whether any "major" genes are located in this piece of chromatin.

Gary Y. Kikudome

2. Comparison of two K10 chromosomes.

Cytological examination of plants heterozygous for the Longley-Rhoades type of abnormal chromosome 10 ( K10 ) and for Ting's ( $K_T$ 10 ) type has revealed that the latter is considerably shorter than the former. Furthermore, the knob on $K_T$ 10 is only about a third as large as that in K10. The following diagram should reveal the gross differences between these two forms of abnormal chromosome 10:



In these heterozygotes, the extent of neocentric activity is not unlike that found in K10/k10 plants. Also, preliminary results indicate that $K_T$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.

Gary Y. Kikudome

## 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.

Gary Y. Kikudome

## 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 $bz^m2$-M mutator system and is roughly equivalent to Ac (MNL 29: 59).

The experiment consisted of crossing $bz^m2$ $bz^m2$, no M by $bz^m2$ $bz^m2$, M M to produce $F_1$ seeds carrying 1 dose of M (large sectors indicating early change of $bz^m$ 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 $bz^mbz^m$, 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.