The results suggest that K10 not only enhances chiasma formation but also causes a shift in chiasmata to more proximal positions. An increase in proximal exchanges would not be unexpected with the increase in total chiasmata, since any additional exchange would be more proximally located. However, the data indicate that the distal chiasmata are decreased under the influence of K10, demonstrating that normally distal exchanges have become proximal. Thus, these data confirm that K10 enhances chiasma frequency and causes a redistribution of chiasmata to more proximal positions.

These results do not indicate with certainty that all chromosomes are affected in the same way, because the chromosomes were not identifiable. However, they add substance to that interpretation.

Edward Ward

UNIVERSITY OF WISCONSIN
Laboratory of Genetics, Madison, Wisconsin

Enhanced phosphate content of amylose-extender starch — In 1928 R. A. Brink (Biochemical J. 22:1349-1361) reported that maize starch contained only one-twelfth as much organic phosphate (0.0015%) as did the starch from non-waxy seeds (0.0194%). This report prompted an examination of the phosphate content of the starches produced by seeds of several different genotypes.

The starches were prepared by the method of McGuire and Erlander (Die Staerke 18:337-341, 1966). The phosphate content was measured by the method of Ames (Methods in Enzymology 8:115), and the amylose content of the starches was measured by the method of Ulmann and Augustat (Z. Anal. Chem. 162:337-344, 1953). The results of the analyses are presented in Table 1.

Our results do not support the previous observation of a lower phosphate content in amylose-extender starch that is appreciably higher than that found in non-mutant starch or in the starch from other mutants with the possible exception of sugary. The ae mutants assayed here are derived from independent mutational events at the locus; neither is the reference ae allele.

It is not clear what this elevated phosphate content indicates since the starch components have not been separated to ascertain whether the increased phosphate content is confined to the amylose or amylopectin fraction or is characteristic of both. It may, however, provide a clue to those who are interested in the effect of the ae mutation on starch synthesis.

Table 1. The amylose and phosphate content of starch preparations from seeds of various genotypes.

	% Amylose	% Phosphate
+/+ (W64A x 182E)	25	0.007
wx-C/wx-C	0	0.006
du-6902/du-6902	33	0.010
du-6901/du-6901	31	0.012
ae-6901/ae-6901	49	0.019
ae-6902/ae-6902[a]	36	0.022
ae-6902/ae-6902[a]	32	0.022
de*-Kg/de*-Kg	22	0.006
de*-X-91/de*-X-91	25	0.003
de*-Ki/de*-Ki	19	0.006
su2-R/su2-R	36	0.009
cp/cp	27	0.005
o5/o5[b]	23	0.008
o5/o5[b]	22	0.009
su-R/su-R	24	0.017

[a]Separate isolations of starch from the same plant.

[b]Separate isolations of starch from two sib plants.

Oliver E. Nelson, Jr.

Sucrose synthetase in Sh and sh endosperms — A survey of starch biosynthesis enzymes from developing endosperms of Sh Sh and sh sh genotypes (chromosome #9) revealed that one enzyme, sucrose synthetase (sucrose-UDP glucosyltransferase), was considerably reduced in the latter but not in the former (Table 1). The possible influence of genetic background on the enzyme activity, if any, was considered minimal because both genotypes were in a W22 inbred background. Three additional sh sh mutants of independent and spontaneous origin have also shown reductions of similar magnitudes in sucrose synthetase activity in the endosperm. No such differences were observed in the embryos of 22-day-old kernels of normal and mutant genotypes. Although the enzyme assays reported here were made in the direction of sucrose synthesis (Tsai et al., Plant Phys. 46:299, 1970), assays in the direction of sucrose breakdown revealed similar differences between these two genotypes.