of the kernels from crosses of the Black Mexican-high loss F_1 were colorless while 12.5% of the kernels from 5 B plants of the original high loss line were colorless. Since the K3 knob was identical in both types of crosses, the low rate of A loss of the F_1 plants cannot be attributed to a knob difference in susceptibility to loss. The Black Mexican line may have contributed a set of genetic modifiers for low loss rate that were partially dominant to the genome of the high loss line or else the B chromosomes derived from Black Mexican are not very effective in inducing loss of A chromatin even when the number of B's is as high as seven or eight. No distinction can be made as yet between these two explanations of the low loss rate produced by the F_1 individuals. Any confusion arising from the fact that some of the F_1 plants had a single B from the high loss line will be eliminated this summer when F_1 individuals from the cross of Black Mexican with B's by a no-B plant extracted from the high loss line will be tested.

In the experiments described in the preceding paragraphs, the F_1 plants had 50% of their genes from the high loss line and hence would possess modifiers favoring high rate of loss. A further test of the possible existence of genetic modifiers came from testing a plant with 4 B's which arose from the cross of a B-containing plant of Black Mexican with an F_1 heterozygote of Kys and a Nicaraguan strain with high knob number. The tested plant with 4 B's was heterozygous for K3 knobs and might be expected to exhibit loss of the A marker. However, only one A loss was found in a population of 1883 and self contamination has not been excluded. Here again we cannot distinguish between an inhibiting effect of the genetic background and impotency of the B's from Black Mexican to induce loss of the knobbed chromosome 3. It is also true that the K3 knob from the Nicaraguan strain may differ from the K3 knob of the high loss strain in response to induced loss by B chromosomes.

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6. Preliminary studies of the effect on crossing over of the gene ameiotic.

Bianchi (MNL 1959) reported an "asynaptic" condition which, when heterozygous, apparently resulted in a slight increase in crossing over

Table 1

Recombination in Chromosome 9 Heterozygotes

Genotype of C Sh Wx / c sh wx, Male parent	Total	C Sh Wx	c sh wx	C sh wx	c Sh Wx	C Sh wx	c sh Wx	C sh Wx	c Sh wx	% Recombination C-Sh	% Recombination Sh-Wx
Am Am	2755	966	972	69	65	313	346	14	10	5.7	24.8
Am am	3580	1268	1226	102	86	393	471	19	15	6.2	25.1

Table 2

Recombination in Chromosome 2 Heterozygotes

Genotype of Ws Lg Gl / ws lg gl, Male parent	Total	Ws Lg Gl	ws lg gl	Ws lg gl	ws Lg Gl	Ws Lg gl	ws lg Gl	Ws lg Gl	ws Lg gl	% Recombination Ws-Lg	% Recombination Lg-Gl
Am Am	2914	1118	1064	98	96	240	238	34	26	8.7	18.5
Am am	2596	984	947	100	79	222	220	28	16	8.6	18.7

for the yg - sh region on chromosome 9. It was thought that other meiotic mutants might have an influence on crossing over when heterozygous; therefore the gene ameiotic was tested.

Sibling plants of the constitution Am/Am, C Sh Wx/c sh wx or Am/am, C Sh Wx/c sh wx were used as male parents and crossed to c sh wx testers. Similarly the Ws Lg Gl region of chromosome 2 was studied. The male parents were also self-pollinated and the progeny were scored for the presence or absence of ameiotic plants in order to distinguish Am/Am from Am/am.

Tests of individual backcross progenies for a 1:1 segregation of C:c, Sh:sh, Wx:wx and Ws:ws, Lg:lg, Gl:gl within each of the genotypes Am Am and Am am gave small X^2 values for heterogeneity. Therefore they were considered homogeneous. Tests for heterogeneity within the genotypes Am Am and Am am were also made for the eight classes of chromosome 9 markers and for the chromosome 2 markers. The slight differences that were observed are well within the range expected from sampling as was shown by the relatively small X^2 values for heterogeneity. The pooled results are shown in Tables 1 and 2.

A method outlined by Serra (1) was used to determine the significance of the different crossover values obtained. Crossing over in the marked regions of chromosome 2 and chromosome 9 did not differ statistically in Am/Am vs. Am/am plants. Studies are in progress to test the effect of the ameiotic gene on crossing over on the female side.

1. Serra, J.A. 1965. Modern Genetics. Vol. 1, ch. 17. Academic Press. New York.

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7. Biochemical effects of the gene ameiotic.

The gene ameiotic was first reported by Rhoades (MNL 1956) and is inherited as a single Mendelian recessive, which in the homozygous condition results in plants which are male and female sterile. Sinha (MNL 1959, 1960) attempted to find a biochemical basis for the failure of ameiotic plants to undergo meiosis. Using a modification of the Ogur and Rosen method, Sinha examined perchloric acid extracts of plant tissues for their nucleic acid content and nucleic acid precursors. He found that