These unusual features found at meiotic divisions in the plant heterozygous for this abnormal chromosome 10 were about the same as those previously found in the other materials either heterozygous or homozygous for an abnormal chromosome 10.

In 1957 twelve additional plants of this same cross were studied cytologically with the following results: One plant was heterozygous for an abnormal chromosome 10; it had no B-chromosome. One plant had a trivalent of B-chromosomes, while the other chromosomes were normal. Six plants had a single B-chromosome and the remaining chromosomes in these plants were normal. The remaining four plants had an unusual chromosome 9 and they lacked the B-chromosome. In these four plants one of the chromosomes 9 had an extra piece of heterochromatin, resembling the bulging pycnotic region of the regular B-chromosome, attached to the distal end of its short arm. At pachytene this extra piece of heterochromatin appeared like a large terminal knob. However, unlike the effect of abnormal chromosome 10, precocious movement of dyads and secondary centric regions on the bivalents, dyads, and monads were not observed in the sporocytes possessing the unusual chromosome 9.

The above observations suggest that the extra piece of heterochromatin of the abnormal chromosome 10 came from a B-chromosome by simple translocation, and that the chromosome 9 with a terminal large piece of heterochromatin on the short arm originated in a similar way. This piece of heterochromatin often appeared like a large terminal knob.

Y. C. Ting

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11. The blotching system involving the c locus.

In the previous reports it has been stated that there are four genes involved in the blotching system which causes blotches of color to develop in the aleurone in cc genotypes. This conclusion was based on six ears which appeared to be segregating in a ratio of 243:781 (MNL, 1955) and which were therefore assumed to be heterozygous for four Bh loci as well as the R locus.

In subsequent experiments we have isolated testers for three Bh loci but have not been able to find a stock which is recessive for a fourth Bh gene. It now appears that there are only three Bh genes involved in the system and that the ratios reported earlier which seemed to indicate the existence of four genes resulted either from

misclassification or from some form of preferential segregation affecting the ratios.

Preliminary three-point linkage tests of the Bh gene on chromosome 9 have yielded the following data:

Ears	Genes	Number of Individuals				
		XY	Xy	xY	xy	Totals
297-1&4	Bh wx	411	167	188	49	815
297-1&4	Bh sh	420	158	188	49	815
297-2&3	Bh wx	411	156	394	91	1052
297-2&3	Bh sh	392	175	372	113	1052

In both 3:1 and 9:7 progenies, Bh shows slightly closer linkage with wx than with sh. Since the crossing over between Bh and wx is high (about 45%) the data so far available suggest that the sequence is sh, wx, Bh and that Bh has its locus on the long arm of chromosome 9. Backcross tests with sh and wx and tests with other genes on chromosome 9 are in progress.

12. A new blotching system affecting the r locus.

A very striking piebald color pattern, commonly found in high-altitude Peruvian flour corn, proves to be a blotching system affecting the r locus. At least two Bh genes are involved in the system since the ratio of Bh to bh is 27:37 when the C locus is also heterozygous. One of these genes is probably linked with y on chromosome 6 as the following data indicate:

Row	Number of Individuals				
	Bh Y	Bh y	bh Y	bh y	Total
56-623	215	95	387	115	803

The percentage of y kernels, 30.6%, among the Bh individuals differs significantly from the percentage, 23.3, among the bh individuals. Further tests to determine more precisely the degree of linkage are in progress.

The expression of blotching in this system is inhibited in crosses with the inbred, Indiana P39. In this respect this system differs