From pachytene analysis the translocation was shown to involve chromosomes 1 and 3 with the break in chromosome 1L at approximately .95 and the break in 3L at approximately .35. The detection of a break at .95 is in agreement with the open configuration (chain-of-four) observed in diakinesis. An extremely long chromosome (1^3) results from the translocation described, and a medium-sized knob is present in 1S while a large knob is carried by the segment of chromosome 3L translocated to 1L. The markers, $\underline{A_1}\underline{Sh_2}$, are located in the knobbed 3L segment. It is suggested that the abnormal length and structure of chromosome 1^3 interfere with its normal replication and are therefore the cause of correlated phenotypic changes ($\underline{A_1}\underline{Sh_2}$ losses) observed in the endosperm.

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2. Evidence for instability of a tetrasomic condition.

In last year's Maize News Letter, data were reported on the transmission of the chromosome B^4 when it is present as a single supernumerary chromosome in the plant. This chromosome, which carries the dominant marker Su, was originally extracted from TB-4a and transferred into normal stocks ($\underline{su_1}$ testers) where its transmission can be observed by the Su marker.

Plants with two B^4 chromosomes were obtained in the field (summer 1967) and in the greenhouse (spring 1968) after selfing plants with the genotype: 4su, 4su, B^4Su. The question then was raised as to whether the transmission of the chromosome B^4 would be affected by the presence of two such chromosomes, since a more regular pairing and disjunction is expected to result when the B^4 has an identical partner as in the genotype: 4su, 4su, B^4Su, B^4Su.

Reciprocal crosses as well as selfings of the given genotype were then made to a $\underline{su_1}$ tester. The results are reported in Table 1. Nine ears only were obtained in one series of crosses (top row), because most of these short plants (due to the tetrasomic condition of 75% of the short arm of chromosome 4) were destroyed by muskrats during the milk-stage.

Table 1

Genotypes	No. of ears examined	Su	su	Total
(4su, 4su, B^4Su, B^4Su) ♀ x su ♂	9	585	224	809
su ♀ x (4su, 4su, B^4Su, B^4Su) ♂	25	3,721	1,979	5,700
(4su, 4su, B^4Su, B^4Su) selfed	28	1,752	171	1,923

From an examination of the su class, it appears that the chromosome B^4 is lost during meiosis in a number of cells. This means that the tetrasomic condition is unstable and that the supernumerary chromosome would tend to be eliminated very rapidly from the population if it were not selected for. These data show that there is practically no possibility of fixing this supernumerary chromosome. The following points could be discussed as possible explanations of the data given above:

1. The two B^4 chromosomes do not always pair as a bivalent. Irregular pairing between B^4 and chromosome 4 may result in tetravalents, loose pairing and irregular disjunction of the B^4.

2. The two B^4 chromosomes do pair with each other most of the time, but these chromosomes are by themselves unstable (as far as co-orientation is concerned) having a sub-telocentric structure derived from the B-chromosome. Their length and structure may be responsible for the absence of regular crossing over.

Obviously, a cytological analysis of PMC's will be of substantial help.

The comparison of the data given above (from plants with two B^4's) with those obtained last year (from plants with one B^4) has led to some observations, emerging from Table 2:

1. The average percent of Su recovered is quite typical of each of the crosses made with one or two B^4's present in the plants.

Table 2

Genotypes	% Su	Ratio Su:su	Gamete recovery of B^4 (%)	Loss of B^4 (%)	Differential loss of B^4 (%)
(1967) One B^4 present:					
(4su,4su,B^4Su) ♀ x su ♂	28.7	0.4 : 1	57.4	42.6	25.4
su ♀ x (4su,4su,B^4Su) ♂	16.0	0.2 : 1	32.0	68.0	
(4su,4su,B^4Su) selfed	42.1	0.7 : 1			
(1968) Two B^4's present:					
(4su,4su,B^4Su,B^4Su) ♀ x su ♂	72.0	2.6 : 1	72.0	28.0	7.0
su ♀ x (4su,4su,B^4Su,B^4Su) ♂	65.0	1.9 : 1	65.0	35.0	
(4su,4su,B^4Su,B^4Su) selfed	91.0	10.0 : 1			

2. Because of the presence of two B^4's in the plant, the meiotic loss of this chromosome is cut down from 42.6% to 28.0% through the female. The loss through the pollen is cut down from 68.0% to 35.0%. It therefore appears that the B^4 suffered heavier losses when present in the univalent condition.

3. The difference between the results obtained in reciprocal crosses is less striking when two B^4's are present in the plant. Gametophyte competition (of normal pollen grains versus B^4-hyperploid ones), is therefore less important, as a loss factor, when the majority of spores in the pollen pool is carrying one B^4.

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1. New albino alleles and a mutable allele at the w_3 locus.

Two alleles have been reported for the w_3 locus located in the long arm of chromosome two. The original mutant, w_3, is a viviparous white-albino mutant (white endosperm-albino seedling). A second allele pas_{8686} (white endosperm-pale green seedlings) has also been described. Four additional viviparous white-albino alleles have been found, three of these among stocks of albino mutants sent to Iowa State University for testing and one was found in a Tama flint line grown here. The alleles have been given the temporary symbols $w_{Everett\#1}$, $w_{Illinois}$, $w_{Chase\#8}$ and w_{Tama}.

More interesting alleles of w_3 were found in a stock supplied by Dr. J. L. Kermicle. Some years ago he sent me a pale yellow endosperm mutant that produced pale green zebra plants which could be grown to maturity. This mutant was given the symbol $w_{Kermicle\ \#3}$ and has been placed on chromosome ten.

One of the pale yellow seeds from the original ear supplied by Dr. Kermicle was planted and the resulting plant selfpollinated. The ear from this plant was homozygous for pale yellow seeds, but no seedling test was made of it. Progeny of this selfed ear was grown and one plant