three of the four better known sets were proved to be intrachromosomal. Apparently those genetic findings support the present cytological observations.

As stated in the foregoing paragraph, the phenomonon of multispindle was seen from metaphase II and anaphase II, the extra spindles being organized where only one or two strayed chromosomes were present. It is conceivable that the centromeres of the chromosomes, instead of the centrosomes of the cytoplasm, are responsible for the organization of the spindle. Therefore, the mitotic spindle is of nuclear origin. The classic theory stating that the mitotic spindle is originated in the centrosomes should be rejected.

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4. Spontaneous reciprocal translocation in a maize tester plant.

An interchange between the long arm of chromosome 6 and the short arm of chromosome 9 was identified in a plant of the progeny of an inbred maize tester strain. The genotype of this strain was Y/y, sh bz/ sh bz. By averaging five separate measurements, it was found that the length of the interchanged segment on the long arm of chromosome 6 occupied about 87 percent of the length of this arm, while that on the short arm of chromosome 9 included about 75 percent of this arm. This translocation was tentatively designated as T6-9a of our material. Since the exact locations of the previously reported translocations between the long arm of chromosome 6 and the short arm of chromosome 9 from other laboratories are not available, it is impossible to ascertain if this interchange has been published. However, it is certain that this did not come from an outcross.

At diakinesis it was observed that in a total of 309 randomly selected cells, 98 percent, or 303 of them formed chain-configurations involving chromosomes 6 and 9. A little more than one percent, or four of them formed ring-configurations, and only less than one percent, or two of them formed separate bivalents of these interchanged chromosomes. This unusually high frequency of the occurrence of chain-configurations might be caused by the frequent formation of non-homologous associations between the interchanged segment from the short arm of chromosome 9 and the long arm of the normal chromosome 6. This was actually observed at pachytene. These non-homologous associations could be a manifestation of duplication including the long arm of chromosome 6 and the short arm of chromosome 9.

Table 2
Percent Of Sterile Ovules And Kernels With Yellow Endosperm Obtained By Selfing And Outcrossing The Plant Having T6-9a (64-14-6).

Selfing and Crosses	% Sterile Ovules	% Yellow Endosperm
64-14-6⊗	40	48
64-14-6 x Wilbur's Flint	7	42.2
Wilbur's Flint x 64-14-6	---	36

Through a study of the percent of seed set after selfing and outcrossing this T6-9a plant the following results were obtained: The average ovule sterility, 23.5 percent, was much less than expected (Table 2). This is probably due to the fact that most of the egg nuclei carrying deficient or duplicate segments could function normally in fertilization and hence could transmit these abnormal segments to the next generation. In addition, it is clear that the Y locus was located in the long arm of chromosome 6, and it was included in the interchanged segment. If it were not so, the segregation for Y and y endosperms should be at a ratio of 1:1 in the two crosses with Wilbur's Flint (y/y). Furthermore, the smaller than expected percentage of Y endosperms recovered in the progenies of the crosses and selfing might be accounted for by the elimination of Y locus due to deficiency or duplication produced by crossovers within the interchanged segment.

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