6. Chromosome segregation in translocations in relation to crossing over

A. The spore quartet data on the frequency of quartets having one or two of the spores with a diffuse nucleolus are, for two stocks heterozygous for In5a:

	one-diffuse quartets	two-diffuse quartets (%)
T5-6c + / + In 5a	45	16.7
T5-6c In 5a / + +	12.3	35.8

The lower frequency of "one-diffuse" quartets in the second stock is due to the fact that the crossovers cannot be detected in the entire interstitial segment, part of which is in the inversion. The higher frequency of "two diffuse" quartets in the second stock is due to adjacent-1 segregation following single crossing over or 3-strand doubles occurring within the inversion. This is the first evidence for adjacent-1 segregation following crossing over in an interstitial segment in corn translocations.

B. Crosses between translocations are being selected so that crossover frequency in the differential segment may be measured by the spore quartet technique, and compared with the frequency of recovered genetic crossovers in the same region.

Preliminary breeding tests indicate that crossovers occurring in the differential segment are recovered, indicating again that adjacent 1 segregation occurs following such crossing over.

(5-6c x 2-5b) x normal = 22.4% of crossovers (normals and combined T2-5-6)

(1-10(4885-1) x 6-10b) x normal = 4.1% of crossovers (normals and combined T1-10-6)

For the latter, the percentage of crossover type quartets was 4.8% for the [ring of]6 F_1 plants and 4.8% for plants heterozygous for T6-10b alone. These cytologically observed values must be divided by 2 to be comparable with the 4.1% observed in the backcross progeny.

More data from these and several other crosses of the same type will be obtained next summer.