includes both trisomics and Wx-Gl crossovers. Additional evidence of trisomics comes from a comparison of the c Wx gl and C wx Gl classes from these translocations. The c Wx gl class could arise as a tertiary trisomic following a single crossover between C and Wx. This would account for the greater size of this class as compared to the C wx Gl class which comes from double crossovers. Progeny tests were made on a few suspected trisomics. In the T 5-9c backcross, 10 C Wx gl plants with pollen classified as normal or low sterile proved to be trisomic. When these plants were used as pollen parents on c wx silks, the transmission of C was 13.0% and of Wx, 3.4%. A few c wx Gl plants with intermediate pollen sterility from both the T 5-9c and T $1\text{-}9_{4995\text{-}5}$ populations also were trisomic. Three c wx Gl plants from the T 1-9 backcross progeny were self-pollinated and gave 63 Gl: 46 gl, indicating a Gl/gl/gl constitution. Thus, two of the four possible kinds of trisomics have been identified. The genetic data indicate that gametes with $5 + 9 + 9^5$ are more frequent than those with $5 + 9 + 5^9$, and $1 + 9 + 1^9$ more frequent than $1 + 9 + 9^1$.

The identification of trisomics of C Wx gl phenotype in the T 5-9c backcross indicates that Wx and Gl are in different arms of the translocation and that Gl must lie beyond 9L .1. Thus, the order in chromosome 9 is Wx-centromere-Gl.

Ellen Dempsey
Victor Smirnov

2. Linkage of du and oy.

A backcross of plants heterozygous for the du and oy mutants on chromosome 10 gave 488 individuals distributed as follows:

Du Oy	Du oy	du Oy	du oy
48	219	165	56

The du-oy recombination value is 21.3%, which agrees well with the value of 18-19% obtained from F_2 data (MNL 37). Since oy does not show linkage with R and R-du is about 20% (Kramer), oy is probably located in the short arm of chromosome 10.

Ellen Dempsey

3. Linkage studies with the Ms factor of KYS sterility.

An attempt was made to locate the Ms factor of KYS sterility. The F_1 of Mangelsdorf tester (ms ms S S) and a pale green stock (Ms Ms S S) was crossed with a KYS male parent (ms ms s s). The progeny consisted of 39 plants with normal pollen (ms ms S s) and 22 plants with partly filled pollen grains (Ms ms S s) and no completely male sterile plants. All were selfed and tested for segregation of bm_2, lg_1, su, y, gl_1, wx, and g. If ms is linked with one of the genes in the Mangelsdorf tester, most of the plants with normal pollen should segregate for that particular factor, while most of the plants with partially filled grains should

not segregate. No indication of linkage was found between Ms and any of the above markers.

Ellen Dempsey

4. Recovery of a chromosome which fails to enter the telophase I nucleus.

Plants heterozygous for T6-9b, in which the 6^9 chromosome consists of 6S, a small portion of 6L and the distal .6 of 9S, were studied cytologically in order to follow the behavior of the 6^9 chromosome through microsporogenesis. This chromosome was marked with wd and Wx and gave normal transmission of these alleles through the male gametes. However, at metaphase I it occurs as a univalent in about 30% of the cells and it is frequently excluded from the interphase nuclei altogether. Examination of anaphase I, telophase I, and interphase stages showed that the 6^9 chromosome seldom divides equationally in the first meiotic division; it is generally found on the plate at early telophase I and when the daughter nuclei are about to be formed, it moves slightly toward one pole. At interphase it is found lying in the cytoplasm as a round vesicle with chromatin somewhat dispersed. Droplets resembling nucleolar material often collect around the 6^9 chromosome. Condensation of the 6^9 chromosome occurs as the prophase II chromosomes become shorter and more distinct. After the nuclear membrane disappears, the 6^9 chromosome rejoins the other chromosomes and there is no evidence of discarded chromatin in the cytoplasm at metaphase or anaphase II or in the quartets. In a few metaphase II cells it was possible to identify the 6^9 chromosome; it was slightly apart from the other chromosomes and was a little more condensed and shortened. The 6^9 chromosome is apparently unaffected by its exclusion from the nucleus.

A similar behavior has been postulated for a univalent chromosome in monosomic wheat (Sears, Chromosoma 1952 and Sanchez-Monge and MacKey, Hereditas 1948), but their results were complicated by the occurrence of misdivision and the frequency of male transmission could not be ascertained because male gametophytes lacking this chromosome are usually non functional.

In MNL 37 it was suggested that the low transmission of translocated 6^9 chromosomes through the ovules was caused by a loss of the 6^9 chromosome in the inner two megaspores following an equational division at anaphase I. It now appears more likely that the 6^9 chromosome fails to be included in any of the megaspore nuclei and is permanently discarded in the cytoplasm. The difference in behavior in male and female flowers may be due to the orientation of the second division spindles at right angles to the first division spindle in microsporogenesis. A cytoplasmic fragment at telophase I is thus strategically located near the future site of the equatorial plate, whereas in megasporogenesis it occupies the future position of one of the poles and is less likely to move onto the plate.

Ellen Dempsey