

3. T4-6 (C.H. Li).

This interchange was used in earlier studies (Burnham, Genetics 35:446-481, 1950) of chromosome segregation. Pachytene observations showed the break in 6 was at or near the distal tip of the organizer. Photographs of pachyte configurations from the heterozygote were kindly analyzed by McClintock. She concluded it is a 1-6 interchange. Intercrosses with T4-6 interchange stocks form a Θ 6, confirming the fact that it is not a T4-6 interchange.

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4. "Double interchange" marker method, progress report.

The procedures which might be used to establish stocks in which the 4 arms of two chromosomes are marked with an interchange were described in last year's newsletter (Maize News Letter 41:137-138). F_1 's and backcrosses of Type 1a intercrossoes (breakpoints in opposite arms¹ in both chromosomes) that had relatively long differential segments were grown again the past summer. The F_1 's had higher sterility than that found in either parental heterozygote, about 65% as compared with the usual 50 per cent for a single interchange. High sterile plants were found among the backcross progeny from certain T1-5, T2-6, and T 4-6 intercrossoes. These plants should carry the crossover that combines the two interchanges. Test crosses to the parents were made to test this possibility, and selfs were made for increase. Stocks for establishing a double interchange series with nine stocks that will mark the ten chromosomes with 9 as the common chromosome were received from the Coop and the intercrossoes were made.

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5. Notes on T1-5 interchanges.

The following interchanges listed as T1-5 (Longley, A.E., ARS 34-16, 1961) are T1-2 intercrossoes: 6178, 8347, 018-5, 024-5 and 8388. Number 4331 now has only a 7-10 interchange.

The one listed as 2-6 (4394) is a 4-6 interchange, and the one listed as 2-6 (6671) is a 5-6 interchange. The above identifications are based on examinations at diakinesis of crosses with the chromosome identification set.

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6. Correlation of diakinesis observations with chiasma positions and frequencies.

Crosses between stocks of interchanges that involve the same two chromosomes are being studied with regard to pairing, crossing-over, and disjunction. In one group of crosses the breakpoints of the parents are in opposite arms of both chromosomes. This has been designated the type 1a intercross.