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1. Persistent nucleoli at the second pollen grain division.

In making preparations to study non-disjunction of B chromosomes at the 2nd pollen grain nuclear division, it was observed that, when B's were present, the nucleolus persisted through metaphase and disintegrated across the spindle during anaphase. From 3 to 7 quite distinct pieces of nucleolus on the spindle were noted. Non-disjunction of the B's was also observed in this case when 2 B's were present.

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1. New characters.

teosinte branched (recessive)

The character we have been temporarily calling teosinte branched (many tillers plus slender branches at most of the nodes) has been tested with a series of interchanges marked by wx, su or pr. It shows linkage with T1-4a (1L.5-4S.7), using su as the marker. A separate test with su shows no close linkage, hence the gene is probably in chromosome 1.

dwarf S-3

This character is one originally produced by irradiation by Stadler. It shows linkage with T8-9 marked with wx.

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2. New linkage data.

$$\frac{+ \qquad W^c \qquad +}{bk \qquad + \qquad bm_4}$$

A 3-point backcross test gave the following:

0	1	2	1,2	total
65-32	8-30	34-21	6-7	203

25.1% for region 1, and 33.5% for region 2.

This agrees with the order indicated earlier (News Letter #29, p 51).

C. R. Burnham

3. Big ring.

(a) Production of rings with a large number of chromosmes, progress report.

Thus far, the biggest ring induced by a homozygous line is a ⊙10. The homozygous line, referred to as a permanent ring of 10, has five chromosomes involved in interchanges, i.e. 1-5-6-7-8, the successive steps being obtained by X-rays:

5-7 X-ray 1-5-6-7 X-ray 1-5-6-7-8. A second line which will include the other five chromosomes, 3, 2, 4, 9 and 10 is being put together by genetic crossing over. The cross of these two lines will produce 2⊙10.

To develop a line which will induce a ⊙20, Inman's general scheme, of having one interchange in common when two permanent rings of 6 are crossed to produce a ring of 8, two interchanges in common when a ring of 8 is increased to a ring of 10 and so on up is being used.

In addition to the permanent rings of 6 listed (News Letter #32, p. 94), plants heterozygous for the 1-9b + 1-7 (4405), 2-4b + 4-8 (5339), and 4-8 (5339) + 8-9b crossover combinations were identified.

(b) Crossovers in differential segments.

The first results were obtained from tests planned by Dr. Inman to determine the frequency of the complementary crossovers in the differential segments. Progeny of crosses of the two types: T1/T2 x normal and T1/T2 x T1T2 were grown and the frequency of normals determined. There is a possibility that small deficiencies at the break points may be present and yet survive the gametophyte screen. In building rings with more chromosomes by crossing single interchanges, the effect of such deficiencies might be cumulative as more interchanges are added. For T1-7 + 5-7, the values were 20.8 for the T_1T_2 crossover and only 3.7% for the normal complementary type. The results indicate a difference, but appear to be in the opposite direction of what might be expected. Thus far, seed set and pollen fertility appear to be normal on all 10II stocks that are homozygous for two up to four interchanges.

(c) Interdependent rings.

A species with an even-number of pairs and heterozygous for interchanges involving every arm will show 2⊙4 at meiosis. In these the homologous midsegments are not in the same ring (Inman, News Letter #32,