

2. Linkage relations of teosinte branched (News Letter #33, p. 74).

F_2 data from crosses segregating for $br f bm_2$, or for $f bm$ and teosinte branched show this gene is probably between f and bm_2 . The F_2 data for $f bm$ and teosinte branched (tb) are: $F Bm = 215 Tb$, $98 tb$; $F bm = 81 Tb$, $8 tb$; $f Bm = 57 Tb$, $6 tb$; $f bm = 30 Tb$, no tb . Using the product method the $f-tb$ recombination is 28.1 and $bm-tb$ is 27.8. The absence of tb plants which are $f bm$ agrees with the conclusion that tb is between these two genes. Crosses between $bm tb$ and $f tb$ plants were made to produce the triple recessive. The character is easily classified even in the presence of brachytic. It produces pollen, but rarely any seed.

3. Progress in producing multiple interchange stocks.

Tests to establish stocks homozygous for the following new combinations will be grown in 1961: 2-1-7, 3-1-7, 6-1-7, 1-2-6, 3-2-6, 4-2-6, 4-2-9, 3-2-4, 1-3-9, 4-3-9, 3-4-8, 1-6-5, 8-10-9, and 8-9-10. Several multiple interchange stocks for rings of 8 have been produced and more are planned for possible use in studies of their effect on segregation for quantitative characters. Progress continues on the crosses planned to produce eventually the ring with 20 chromosomes.

4. Segregation for quantitative characters in crosses with multiple interchange stocks.

For W23 x A188 (1-5-6-7-8 interchange stock) and P39a (1-5-6-7-8) x A188 each with a ring of 10 chromosomes, and for the crosses of normal inbreds, W23 x A188 and P39A x A188, progeny from selfs and backcrosses to both parents were grown in a replicated trial. Notes on silking date, plant height, number of tassel branches, and various ear characters including degree of sterility were taken. A prolonged dry period affected growth and practically eliminated tillering. Preliminary summaries of the data on the various characters show no instance of a sharp segregation into two groups correlated with the presence or absence of the large ring. For the W23 x A188 (010) cross, there was a slight association between number of tassel branches and segregation for high sterility vs. normal fertility. For the P39 (010) x A188 cross, the average heights to the lowest tassel branch were:

For F_2 :	010 = 108 cm., N = 115
" BC to A188:	" = 121 " N = 119
" BC to P39:	" = 116 " N = 133

The differences in F₂ and backcross to P₃₉ are suggestive of an association. The differences are in the direction expected from such an association. This ring of 10 was produced by successive X-ray treatment. The proportion of the five chromosomes covered by this 010 is not known, but it may be relatively small. The multiple interchange stocks being built up by crossing over should be better suited to this type of study. Tests are being continued.

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5. Notes on the pocket microscope (M.N.L. 34, p. 89).

A few of you may have the "Leitz Taschen Mikroskop" with a magnification of 40X. Our department purchased two in 1935 for \$8 each, but they have not been available from Leitz for many years. The company could not be induced to make them again. A company in Italy which makes many Leitz instruments was skeptical that what I described could exist. Finally, among the catalogs and other descriptive material sent by a microscope manufacturer in Tokyo, was one sheet describing "The Midgard" pocket microscope which resembled the Leitz instrument. This instrument, mentioned in last year's News Letter, is approximately 1" in diameter, 2" long, and similar to the Leitz instrument mechanically, but has a somewhat lower magnification, and does not give an image that is quite as satisfactory. It can be improved somewhat by using a metal reamer to enlarge the opening at the lower end of the instrument to let more light in. All that is needed is a narrow rim wide enough to hold the spring. For checking pollen sterility in the field it is a very convenient instrument. Its cost has been \$3 each plus \$1 postage if by air mail; no duty on shipments received here thus far. The source is:

Nippon Microscope Works Company
35-2 Minamicho
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