

remained uniformly weak through 3 generations of selfing. Outcrosses to intense gave all weak, and have continued to give only weak throughout three generations of outcrossing as male and female to intense, as well as in selfs of these outcrosses. Intense lines of 4 widely different backgrounds (not necessarily different in the source of B) have been used in the crosses; all are consistent.

When weak plants (any of various individuals from selfed or outcrossed progenies) are crossed to b, the  $F_1$  is weak, and segregates normally for weak:green in selfs and backcrosses. Crosses of the  $F_1$  to intense segregate 1 intense:1 weak; these intense plants segregate for green (but not for weak) on selfing, while the weak plants fail to segregate for intense or green, giving only the monotonous weak type. Markers with b segregate normally in these progenies.

Using B' to designate the weak type, the pattern of this system is essentially as follows:

B B selfed gave 140 B + 2 B' exceptions; new B' individuals continue to arise occasionally in this B B line.  
B' x B gives only B'; these selfed, or again crossed to B, give only B', et cetera.  
B' x b gives weak.  
B'/b selfed gives 3 B':lb, backcrossed gives 1:1.  
B'/b x B gives 1 B:1B'; the B here selfed give 3B:lb, the B' give all B' in selfs and in recrosses to B.

Only 3 exceptions to the pattern have been seen so far. One exception was a barren, male-sterile, intense plant in a progeny from B' x B, and was presumably intensified in color through injury or barrenness; another exception, from B x B', had a long, narrow intense sector; the third exception consists of two intense plants out of 41 in a progeny from B x B' which has reduced pollen fertility in some plants, including one of the intense exceptions. The exceptions do not appear to negate the pattern, but rather to support it.

It is tentatively concluded that an allele at the B locus, B', regularly causes B in the same nucleus to be changed to B', at some time or times in the life cycle, and that b is not affected. A paper on this phenomenon is in preparation. I will be happy to send a xerox copy of a complete diagram of the sequence of pollinations, including data, to any cooperater who wants it.

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## 2. High-haploid line.

The capacity of stock 6 for induction of haploids in a gl<sub>1</sub> maternal

parent is heritable. In the following, 2698 ( $a_2$  B P1 R<sup>r</sup>), stock 6, their  $F_1$ , backcrosses to 6 and selfs of backcrosses are compared in maternal haploid frequencies when outcrossed to  $gl_1$ . In the "segregating" progenies only R<sup>r</sup> B P1 plants were tested. Haploids were verified by root-tip chromosome checks.

<u>Male</u>	<u>No. plants Tested</u>	<u>No. Seedlings</u>	<u>No. Haploids</u>	<u>% Haploids</u>
2698	3	1298	2	0.15
6	5	1531	35	2.29
$F_1$	4	3109	13	0.42
$F_1$ x 6	9	3694	44	1.19
( $F_1$ x 6) self	9	3611	46	1.27

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### 3. Chromosome 9 linkage.

The following table includes new data, sums of new data with those reported last year, and one correction, indicated by an asterisk:

<u>Genes X Y</u>	<u>Phase</u>	<u>XY</u>	<u>Xy</u>	<u>xY</u>	<u>xy</u>	<u>Total</u>	<u>Recomb.</u>
Ar Bk <sub>2</sub>	RS	355	200	188	2	745	10
Ar Ms <sub>2</sub>	RS	328	167	144	0	639	< 8
Ar Wx	CS	1214	87	67	310	1678	10
Bf Bk <sub>2</sub>	CS	126	34	22	8	190	46
	RS	288	81	112	17	498	41
Bf Bm <sub>4</sub>	RS	249	120	129	0	498	< 9
Bk <sub>2</sub> Bm <sub>4</sub>	CS	752	196	218	80	1246	45
Bk <sub>2</sub> Gl <sub>15</sub>	CS	209	7	17	41	274	9
Bk <sub>2</sub> V	RB	2	47	37	6	92	9
Bk <sub>2</sub> Wx	RB	6	43	36	7	92	14
	CS	367	39	49	72	527	20
	RS	688	269	316	15	1268	23
Bz Sh	CB	1025	19	21	974	2039	2
Bz V	CB	771	260	240	713	1984	25
Bz Wx	CB	887	157	136	859	2039	14
D <sub>3</sub> Wx	CB	67	7	5	63	142	8
	CS	964	57	125	208	1354	14
Gl <sub>15</sub> Ms <sub>2</sub>	RS	271	128	80	0	479	< 11
Gl <sub>15</sub> Wx	CB	170	12	14	187	383	7*
Ms <sub>2</sub> Pg <sub>12</sub>	RS	359	142	206	0	707	< 8
Ms <sub>2</sub> Wx	RS	1235	488	645	0	2368	< 4
Pg <sub>12</sub> Wx	CS	797	44	31	209	1081	7
V Wx	CB	913	146	146	891	2096	14