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and  
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1. Two new B-type translocations.

A B-type translocation with breakpoint proximal to  $d_1$  on the short arm of chromosome 3 has been isolated. Cytological observations confirm the presence of the translocation, but further observations are required to determine the exact position. One known hyperploid ( $3 \text{ } 3B \text{ } B^3 \text{ } B^3$ ) and three probable hyperploids gave the following progenies when crossed as males onto  $\pm/d_1$ :

<u>Male</u>	<u>Seedlings</u>			<u>Per cent hypoploids</u>
	<u>D</u>	<u>d</u>	<u>Total</u>	
1060-3	85	16	101	31.7
1060-6	88	15	103	29.1
1060-23	81	14	95	29.5
1060-63	89	14	103	27.2

Because the female tester was heterozygous for  $d_1$ , the frequency of hypoploids was obtained by doubling the frequency of dwarf plants.

The long arm of chromosome 5 appears to be involved in another B-type translocation. The translocation appears to be proximal to  $pr$ , but genetic and cytological confirmation is still required.

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2. Pollen selection experiments.

The pollination media reported last year (News Letter 40:108) permit tests of selection techniques parallel to the enrichment procedures that are used in microorganisms. An extensive series of trials was made this year; the most interesting of the results are presented below.

Selection for "resistance" to the media was tested on a pilot scale. Following self-pollination with a given medium, seed sets on controls (no previous selection) were compared with seed sets on plants derived from pollinations made with the medium in the previous generation. Out of 12 pairs of comparisons (differing in medium or dilution or exposure

time), 4 showed slightly higher average seed set in the once-selected group, 5 equal (no seeds in either), and 3 lower set in the selected than in the control group. However, of 11 ears with high set (over 15 kernels), 7 were in the once-selected class. Among aqueous-medium trials, 5 ears with high set were found out of 49 tests in the once-selected group, as compared with 0 out of 50 in the controls. Indications are strong that resistance to exposure to the aqueous medium and to dilution (as high as 100 ml aqueous medium to 1 ml pollen) can be selected.

Tests for selection involving mutants with known biochemical effects (o<sub>2</sub>, fl<sub>2</sub>, sh<sub>2</sub>, sh<sub>1</sub>, su, wx) were carried out with a series of agents chosen for their relations to the biochemical effects. An emulsion medium (aqueous medium: Tween: paraffin oil, 30 : 0.1 : 30) was used to dissolve the agents; 6 ml of the solution was mixed with 1 ml of pollen and used to pollinate 3 or more ears. In retrospect, the emulsion was a poor choice, since the pollen grains would be exposed variably, rather than uniformly, to the dissolved agents. For fl<sub>2</sub>, pollen from +/fl<sub>2</sub> was suspended and used to pollinate +/+, as suggested by O. E. Nelson, because the dominant floury expression of fl<sub>2</sub> is classified more clearly in a single dose. The other 5 mutants were testcrossed onto recessive females. The results were highly variable, but they do suggest that the method may be successful with solutions in uniform media (i. e., oil or aqueous). The most promising indications (though requiring confirmation) for each mutant were as follows (numbers following agents are ppm):

Mutant	Favors wild type	Favors mutant
<u>o<sub>2</sub></u>	DL methionine 1000 anthranilic acid 100	DL tryptophan 10000 DL 5-fluorotryptophan 1000
<u>fl<sub>2</sub></u>	DL 5-fluorotryptophan 10	L arginine 10000 DL ethionine 1000
<u>sh<sub>2</sub></u>	2, 4-dinitrophenol 10	
<u>sh<sub>1</sub></u> <u>wx</u>	5-hydroxy-DL-tryptophan 100	DL 5-fluorotryptophan 1000 oligomycin 10
<u>su</u>	pyridine-3-sulfonic acid 1000, oligomycin 10	gibberellic acid 5000 DL 5-fluorotryptophan 1000

In a broader series of tests, pollen from a multiple heterozygote for bz<sub>2</sub>, a<sub>1</sub>, c<sub>2</sub>, a<sub>2</sub>pr, c<sub>1</sub>bz<sub>1</sub>, and r was suspended and used on testers for each marker. Either the known marker or unknowns (linked, heterozygous) could result in deviant ratios due to selection. The most striking deviations for one or more markers were found with L arginine 10000, acridine orange 100, gibberellic acid 5000, lysine 10000, and quercitrin 5000.

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