of soil approximately 10-12 inches in diameter, were enclosed in a plastic fertilizer bag 19 inches wide and 28 inches deep. The inside of the plastic bag and the soil were sprinkled with water before tying the bag securely with a string.

Five plants treated in this manner were transported in the trunk of an automobile 202 miles to Douglas, Georgia, and placed in the hot July sun during a demonstration at a corn clinic. Holes were dug in the soil at the site of the meeting for placing the bags and roots underneath the soil. Consequently, the bags were not visible to the audience.

The plants were still alive and in good condition for the demonstration, although one of the plants was dug two days prior to the meeting and the other four plants one day prior to the meeting. Three of the plants were transported back to Athens and placed in a grove of trees on the University campus. Water was sprinkled occasionally into the plastic bags. Two of the three plants lived until 17 days later. The third plant was still alive 22 days after the meeting but not in an entirely satisfactory condition for demonstrational use.

In addition to demonstrations, this method apparently has other possibilities such as transferring plants from greenhouse to the field and vice versa, and crossing plants from different locations.

A. A. Fleming

2. Effect of stand on yield and other agronomic characters in double-cross corn performance tests.

Genes controlling some characters in double crosses were affected more by variations in stand than genes controlling other characters. Under the conditions of this experiment, plant height, ear height, root lodging, and stalk lodging were not affected as greatly by deficiencies in stand as maturity, yield per plant, number of ears per plant, and size of ear.

When allowed the same amount of additional space in which to develop, plants of a two-eared hybrid had a greater increase in yield than plants of a one-eared hybrid.

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1. The blotching system involving the C locus.

In last year's News Letter it was concluded that the blotching system which causes blotches of color to develop in the aleurone in A c R genotypes involves at least four genes. This conclusion was based in part on the fact that the inbred strain, Oh45, which is not itself blotched, proved in test crosses to be homozygous for the Bh factors on chromosomes 4, 6, and 9. This suggested that there must be at least one additional factor in the system and that this factor is absent in Oh45. Ratios in crosses of Oh45 with testers for the known Bh genes also indicated that an additional factor is involved.

Test crosses made in 1959 show that this additional gene is A_2 rather than a gene specific for blotching. Oh45 has the genotype $a_2\ a_2$. Our present conclusion is that three different Bh genes on chromo-

somes 4, 6, and 9 act upon the genotype $\underline{A}_1 \underline{A}_2 \underline{c} \underline{R}$ to produce blotches of color.

P. C. Mangelsdorf

2. The blotching system involving the R locus.

The previous data have indicated that there might be as many as six loci in this blotching system. Test crosses made in 1959 show that the 81:175 ratios repeatedly encountered involved segregation for both $\underline{A}_2$ and $\underline{C}$ as well as for two blotching genes. Ratios suggesting segregation for five or more loci are now known, from studies made in 1959, to involve preferential segregation. Thus only two Bh factors are now identified for this system. One of these is known from data previously reported to be located on chromosome 4; the other appears to be on chromosome 2. Previous data had shown linkage between Bh and floury endosperm; recent data show that the floury endosperm gene involved is that on chromosome 2. The data available, since they involve an F_2, are not satisfactory for determining a linear sequence but, since Bh appears to be strongly linked with Fl and $\underline{V}_4$ and only weakly linked with Lg, $\underline{Gl}_2$, and B, it is tentatively assumed that this Bh lies between Fl and $\underline{V}_4$.

P. C. Mangelsdorf

3. The gene for tunicate a compound locus?

Because the allele, $\underline{tu}^h$ which originated in our cultures as a mutant of Tu, has almost exactly half of the effect on various characters which Tu exhibits, we have for some years suspected that the Tu locus may be a compound one, similar to bar eye in Drosophila, resulting from the duplication through unequal crossing over of a more simple locus. We have for some years been developing stocks to test this possibility. A uniform inbred strain of the genotype Su Tu Gl was crossed with a uniform inbred strain of the genotype $\underline{su}\ \underline{tu}\ \underline{gl}_3$. The F_1 was backcrossed on a second uniform inbred of the genotype $\underline{su}\ \underline{tu}\ \underline{gl}_3$. In the population resulting from this backcross, approximately half of the plants should be Tu tu. Mutations to $\underline{tu}^h$ in the previous generation would result in plants of the genotype $\underline{tu}^h$ tu which should be distinguishable from Tu tu. In a population of 8134 plants, 4129 were tunicate. Of these two appeared phenotypically to be heterozygous half tunicate ($\underline{tu}^h$ tu). Both of these are crossovers between Su and Gl: one being the genotype Su gl, the other su Gl.

Progeny tests to determine whether these plants are mutants or phenocopies are being made in the Florida winter planting. If these prove to be mutants and are identical then it is possible that the Tu locus is a compound one which has originated during domestication. But if the mutants are different it is probable that the compound locus is an ancient one characteristic of the genotype of wild corn.

P. C. Mangelsdorf
W. C. Galinat

4. Linkage relations of an unstable gametophyte mutant.

The position on chromosome 4 of an unstable mutant originating in a maize-teosinte cross and affecting preferential segregation with respect to the Su-su locus has now been determined by a three-point test. The data from the back cross $\underline{ga\ su\ gl}_3$ X $\underline{Ga\ Su\ Gl}_3$ follows:

ga su gl_3 ga su gl_3