Plant No.	Su Gl_3	Su gl_3	su Gl_3	su gl_3	Totals	% Su	% Gl_3	% C.O. Su Gl_3
211-4	76	39	79	136	330	34.8	47.0	35.8
5	39	33	63	95	230	31.3	44.3	41.7
7	106	39	59	147	351	41.3	47.0	27.9
11	38	28	40	69	175	37.7	44.6	38.9
12	77	53	75	103	308	42.2	49.4	41.6
Totals	336	192	316	550	1394	37.9	46.8	36.4

Previous experiments have indicated that this Ga is not transmitted through the pollen. If this is true then the percentage of Su and Gl_3 represent respectively the percentages of crossing over between Ga and Su and between Ga and Gl_3. On this basis the linear sequence must be Ga Su Gl_3 and Ga must be on the short arm of chromosome 4, perhaps fairly near the terminal end.

P. C. Mangelsdorf
S. M. Sehgal

5. The mutagenic effects of homozygous and heterozygous teosinte chromosomes in an isogenic stock.

There has been some indication from previous studies that the mutagenic effects of teosinte chromosomes incorporated into an inbred strain (A158) are greater when the introduced teosinte chromosomes are heterozygous than when they are homozygous. To test this possibility further we conducted the following experiment: Eight different modified strains of A158 each containing one or more introduced teosinte chromosomes in the homozygous condition were scored for seed and seedling abnormalities. These same eight strains were crossed with the original A158 and the F_2 ears were scored for seed and seedling abnormalities. The results are shown in the following table:

Stock	No. ears Scored	Percent with Abnormalities		
		Seed	Seedling	Total
Control, pure A158	100	0.0	0.0	0.0
A158 with homozygous teosinte chromosomes	876	10.0	6.6	16.6
A158 with heterozygous teosinte chromosomes	658	15.2	19.4	34.6

It is probable that some of the abnormalities found are phenocopies rather than inherited mutations. However the fact that the frequency of abnormalities is more than twice as great when the teosinte chromosomes are heterozygous than when they are homozygous is highly significant. It suggests that crossing over between maize and teosinte chromosomes may be involved in the production of abnormalities. Since maize and teosinte chromosomes are probably not completely homologous, crossing over between them may often be unequal. This could result in deficiencies and duplications.

W. C. Galinat

6. Genetic control of phytomer development.

Although different regions of the plant differ greatly in final form, despite their common genom, their initial repetitious design, the so-called "phytomer," is identical. The role of specific genes in modifying development of the phytomeric parts, an internode with attached leaf and an axillary bud with associated prophyll for specialized functions, is revealed by certain genetic variants. In the central region along the plant the leaves are greatly enlarged and widely separated by elongated internodes