TABLE 1 - Differential fertilization of gametophytes carrying Y (normal chromosome 5 and 6) and y (translocation 5-6) in maize.

Kernel Color	Ear				Total
	1	2	3	4	
Yellow Y	138	92	30	172	432
White y	192	122	27	187	528
Total	330	214	57	359	960

$X^2=9.6$ $P<0.01$

strains of maize raised outside experimental conditions the nucleolus organizer is known to occur regularly at a definite locus close to the kinetochore. Outside experimental conditions any other nucleolus location is apparently selected out. Thus, from the point of view of chromosome organization the translocated chromosome is expected to have a lower survival value.

The easy survival of the translocation under controlled culture conditions is not necessarily to be attributed to the presence of the new chromosome arrangement but to the association of the translocation with one of the many gametophytic factors known in maize.

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1. Defective endosperm factors from maize-teosinte derivatives.

Additional data have been obtained on the defective endosperm types in the derivatives of the controlled introgression of teosinte in the inbred A 158. Other defective factors are turning out to be identical or allelic. Except for allelism not yet having been clearly established for $\underline{de}^{t4}$ and $\underline{de}^{t15}$, all the following factors should be considered allelic:

$\underline{de}^{t4}$, $\underline{de}^{t5}$, $\underline{de}^{t10}$, $\underline{de}^{t11}$, $\underline{de}^{t14}$, $\underline{de}^{t15}$, $\underline{de}^{t17}$, $\underline{de}^{t18}$, $\underline{de}^{t19}$, $\underline{de}^{t20}$, $\underline{de}^{t23}$, and $\underline{de}^{t24}$,

An extensive study has been made of $\underline{de}^{t29}$, which originated in the stock carrying $\underline{de}^{t22}$. Since the latter gave intermediate defectives, with rather special characters, moderate reduction in endosperm development and fairly good germination, the appearance of a segregating ear with extreme defectives reduced to a simple shell, was assumed to be due to a new mutation. Test crosses demonstrated that $\underline{de}^{t29}$, was a stronger allele of $\underline{de}^{t22}$ and that the latter had mutated to $\underline{de}^{t29}$. Moreover $\underline{de}^{t29}$ did not keep the new character of extreme defective. In order to study the instability of the system involved, many self-pollinations have been carried out in plants obtained from normal seeds of ears segregating extreme defectives ($\underline{de}^{t29}$ type, weight mg 0- 20), intermediate defectives ($\underline{de}^{t22}$ type, weight about mg 20-120) or both.

The results are summarized in the Tables 1, 2, 3. The available data confirm the instability both of $\underline{de}^{t22}$ and $\underline{de}^{t29}$: on the average, each of them, in about one case out of ten, mutates to the other type of defective; in both cases also the segregation is not too far from the theoretical 25%. When, however, the ears segregate both types of defectives the behaviour is quite puzzling. Not only, as one could expect, are cases found in which just one type of defective is detectable, but also ears are frequent where the presence of both kinds of defectives is accompanied by an abnormally high cumulative percentage of the defectives themselves.

Another curious behaviour of $\underline{de}^{t22}$ is as follows: when kernels that show endosperm unquestionably $\underline{de}^{t22}/\underline{de}^{t22}/\underline{de}^{t22}$ are germinated and plants are obtained from them, self-pollination produces ears on which is observable monohybrid segregation of normal and $\underline{de}^{t22}$ kernels.

Table 1. Results of self-pollinated ears produced by plants originating from normal seeds of ears segregating extreme defectives.

Row and ear number	Approximate percentage of defectives		Total number of seeds
	extreme type	intermediate type	
58-578- 1	33	0	48
- 7	28	2	215
- 7	12	0	139
- 7 bis	28	5	215
- 7 ter	56	0	193
-10	21	18	140
-14	47	1	159
-16	32	0	126
-21	35	0	129
-30	20	0	122
-36	25	1	198
-40	29	4	232
-40 bis	19	0	194
-44	27	2	168
-50	27	0	227
-54	24	2	175
-57	31	0	217
-61	21	9	287

Table 2. Results of self-pollinated ears produced by plants originating from normal seeds of ears segregating intermediate defectives.

Row and ear number	Approximate percentage of defectives		Total number of seeds
	extreme type	intermediate type	
58-577- 3	1	20	129
- 5	2	23	228
- 6	0	20	203
- 9	7	8	284
-11	28	8	106
-12	0	29	217
-14	0	32	160
-18	2	32	210
-19	1	23	124
-23	15	20	121
-24	5	28	193
-25	3	26	266
-26	3	17	87
-29	4	60	145
-33	0	29	164
-36	6	11	194
-37	1	17	379
-38	3	27	152
-40	0	28	103
-41	1	19	108
-43	0	14	238
-45	2	36	115
-49	0	25	359

Table 3. Results of self-pollinated ears produced by plants originating from normal seeds of ears segregating extreme and intermediate defectives.

Row and ear number	Approximate percentage of defectives		Total number of seeds
	extreme type	intermediate type	
58-579- 1	42	11	207
- 3	22	1	218
- 4	2	24	156
- 5	53	20	132
- 6	20	27	138
- 7	22	32	215
-10	33	0	168
-11	5	24	162
-13	20	20	204
-15	0	0	180
-21	42	18	57
-22	37	1	180
-23	5	25	176
-24	31	20	293
-28	28	4	255
-30	15	18	95
-31	2	26	117
-37	3	29	209
-38	27	16	240
-39	21	22	220
-39 bis	27	23	271
-40	36	32	139
-46	22	2	178
-53	41	27	291