the same age at the same time, but also by means of pollinating with a pollen mixture, which permits excluding the influence of separate female plants on the MHM frequency).

Thus, we are inclined to agree with those students who consider the genetical features of the male parent to influence the MHM frequency. We agree also on the necessity of screening for this feature when creating the marker strains.

M. V. Tchumak

A mutation interfering with the ear formation process — Among 32 J_1 progenies of the line Sg25 TRf in 1972 we have found a family clearly different from all others in having late silking and unusual ear shapes. During the harvest we found that all plants of this family produced mutant ears provisionally classified into three types. (Figure 1). (Ed. note: the expressions can be seen very well in two prints provided by the author; they will be loaned to interested cooperators on request).

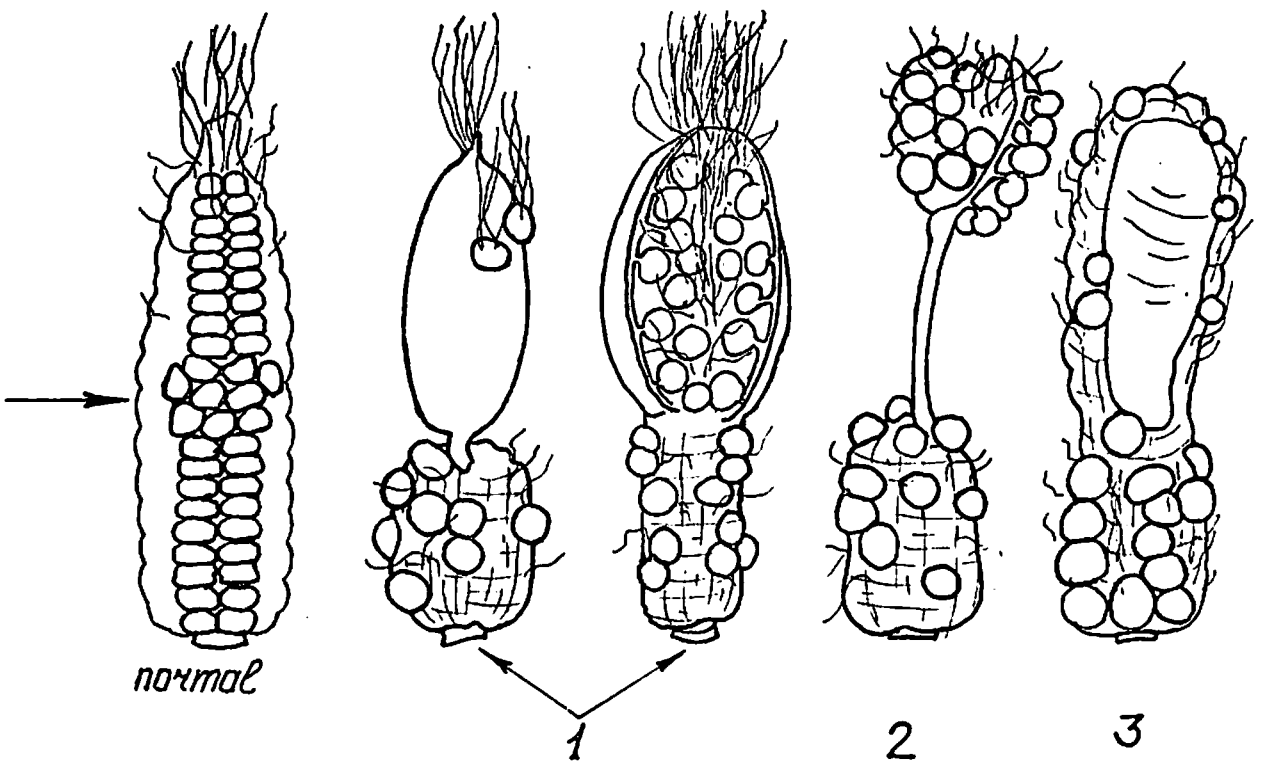

Fig. 1

Type 1. The upper tip of the ear is turned from inside out and resembles a leather tube with an opening on its end from which the silks emerge. The seeds are fixed onto the inner side of the wall, and pairs or paired rows of female spikelets sometimes occur on the external wall of the tube. The bottom part of the ear appears to be normal. We have observed 120 Type 1 ears (50%).

Type 2. The normal bottom part of the ear abruptly forms a thin stalk like a male panicle stem, ending with a short tube or a labiate sheet. Female spikelets and seeds are fixed inside the tube or from one or both sides of the sheet. We have observed 70 Type 2 ears (30%).

Type 3. The ear is almost normal except that its upper part has an area without spikelets. We have observed 49 Type 3 ears (20%).

The typical ears of the line Sg25 produce "uneven" rows in the middle part of the ear and tend to assume a fasciate shape; the ear tip has a reduced number of seeds, and the male panicles have spikeless spots on the central stem. The panicles of the mutant form are like the original ones but have no spikeless spots.

The F_1 progeny from crosses with unrelated forms showed normal ears. The F_1 progeny from the cross Sg25TRf mutant X Sg25TRf normal showed ears, not typical for the original line, that were greatly fasciated or very much cone-shaped.

Among 129 F_2 plants from the cross W64-1 X Sg25TRf mutant 10% of the plants had mutant ears; another 10% of the ears were non-typical, impossible to classify into any mutant type. The F_2 progeny from the cross W64-2 X Sg25TRf mutant gave only normal ears.

In F_2 of the cross Sg25TRf mutant X Sg25TRf normal, 67 plants out of a total of 243 (27.6%) showed mutant ears but the three types were less obvious than in the 1972 progenies.

J_2 and J_3 progeny of the mutant plants have also been studied. In J_3 some families showed mutant ears of the three types separately. However, no ear strictly reproduced the ear shape observed in 1972.

Having studied F_1, F_2, J_2 and J_3 we may conclude that the above described mutation interfering with the ear formation process is controlled by a single recessive gene; its clear development depends on the genetic background and on the growing conditions. We have named this mutation "cob turned out" (cto). It slightly resembles the mutation described by P. Sarvella and C. O. Grogan (J. Hered. 57:211-212, 1966) and designated by them as inverted ear; however, the ie mutation showed some deviation not only in the ear but in the panicle as well.

The cto mutation shows a high degree of polymorphism and thus may be of interest for embryologists. Further studies of this mutation are in progress.

E. I. Vahrusheva

A mutation causing the absence of the first division in meiosis — After treating the seeds of line W23 with a 0.012% solution of N-nitroso N-methylurea for 24 hours at 20-22° C, we have obtained in F_3 a recessive monogenic mutation showing total male and female sterility.

While studying meiosis in homozygous mutants the following pecularities of chromosome behavior have been found:

(a) Premature spiralization of the chromosomes. A dense chromatin layer forms around the nucleolus and later divides into 20 strongly reduced univalents.

(b) Absence of all prophase I stages (leptotene, zygotene, pachytene, diplotene and diakinesis).

(c) Absence of chromosome conjugation.

(d) Division of the centromeres of sister chromatids in metaphase I and the strict separation of 20 chromosomes in anaphase I towards each pole.

(e) Random distribution of the chromosomes during division II, resulting in sterility.

We have designated this mutation as the absence of the first division (afd-W23).

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Possible sporophytic expression of the waxy gene — It is widely understood that the phenotypic influences of the waxy genotype are limited to the pollen and the endosperm. Ericksson (Hereditas 63:187, 1969), however, has presented the following summary of several studies:

Cross	Total kernels	Waxy kernels
wx wx x Wx wx	79,381	39,173
Wx wx x Wx wx	152,871	36,523

The expected ratio of non-waxy to waxy should be 2:2 in the first cross and 3:1 in the second. If the totals were equal in the two crosses, the numbers of waxy kernels in the first and second crosses would then be in the ratio 2:1. The totals are not equal, however, and this ratio should be corrected to 2:(152,871/79,381) or 2:1.9257, if we assume that the disadvantage of the wx pollen is equal whether the genotype of the maternal parent is wx wx or Wx wx.