On the remaining ears of this planting, single Sh Bz kernels were observed on a few individuals, but contamination cannot be eliminated as the source of these phenotypes.

The sh-bz-x2 mutant is not affected by the presence of Ac but has not as yet been tested with Spm.

Although the cause of the ratios observed to date is open to speculation, it cannot be denied that sh-bz-x2 is reverting, apparently as a unit.

Experimentation with this double mutant is made difficult by the fact that (1) reversions show no regular pattern except that independent reversions of neither sh nor bz have been observed and (2) reversions which do occur are relatively rare.

Hopefully, data collected in future experiments will shed more light on this puzzling but fascinating situation.

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1. Relative frequencies of meiotic stages.

Relative frequencies of meiotic stages were estimated in microsporocytes of a KYS/Inversion 5083 stock grown under controlled environmental conditions (light cycle: 14 hours light, 10 hours dark; relative humidity 85 percent to 95 percent; temperature 24°C to 25°C at sporocyte level). Samples were collected at 8½ hours into the light cycle, fixed in alcohol-acetic 3:1 mixture, and stored in a freezer until examination. Tassel branches were selected for study which contained a seriation of four stages: either synizesis, pachytene, diplotene-through-telophase II (counted as a single stage in this instance), and quartets, or pachytene, diplotene-through-telophase II, quartets, and spores. In the first type of branch comparisons were made of the relative frequencies of pachytene vs diplotene-through telophase II, in the second of diplotene-through-

telophase II vs quartets. It was considered that such comparisons of stage frequencies might constitute a valid estimate of stage duration only where the stages compared were bracketed within the branch by a preceding and a succeeding stage. All three anthers of each first flower were examined; where differences existed among or within anthers, the flower was classified as at the predominant stage. Twelve suitable branches yielded a mean frequency of pachytene 0.46 vs diplotene-through-telophase II 0.54. (s.d. = .0118), while 17 suitable branches gave a frequency of diplotene-through-telophase II 0.47 vs quartets 0.53 (s.d. = .0130). (Branches were not heterogeneous at the 10 percent level in either case.)

Further comparisons were drawn within the diplotene-through-telophase II category of frequencies of diplotene, diakinesis, metaphase I, anaphase I, telophase I-through-interkinesis, prophase II, metaphase II, anaphase II and telophase II. In this case records were kept of the predominant stage of individual anthers of all first flowers except those which contained sporocytes at anaphase I; in this latter instance actual counts of stages of all sporocytes were recorded in systematically scanned slides. Results of this study gave the following stage frequencies:

stage	frequency	cumulative frequency
diplotene	.082	.082
diakinesis	.391	.473
metaphase I	.139	.612
anaphase I	.069	.681
telophase I-interkinesis	.153	.834
prophase II	.016	.850
metaphase II	.083	.933
anaphase II	.051	.984
telophase II	.097	1.081

All observations were made by the same person. Discrimination between some successive stages was necessarily arbitrary but reasonably consistent (i.e. synizesis, pachytene; diplotene, diakinesis). It is recognized that synizesis may in large part contain completely synapsed chromosomes and to this extent is technically synonymous with pachytene,

but for the purpose of this study cells were counted as pachytene only if they were past synizesis.

Synizesis was apparently of considerably greater duration than any of the stages compared above. It was rarely included within a single branch (bracketed by a preceding and a succeeding stage), but its duration was shorter than the interval which separates first and second flowers. The duration of synizesis is currently under study by other methods.

The long-stemmed spikelet was more advanced than the short on the average by 0.53 of the duration of diplotene-through-telophase II.

It is not known how other environmental conditions would affect the relationships suggested above or how other stocks might differ.

Marjorie P. Maguire

2. Azure A as a staining technique for maize microsporocytes, microspores, and pollen.

The azure A staining procedure (as described by De Lamater, Stain Tech. 26: 199-204) is a relatively simple technique which gives excellent DNA specific stain of maize chromosomes at certain stages. It is especially superior to acetocarmine for pollen grains (where two densely staining sperm nuclei and a diffuse vegetative nucleus are found consistently). It also seems superior to acetocarmine for microspore chromosomes. While it is inferior to or no better than temporary acetocarmine mounts for most meiotic stages, it survives autoradiographic stripping and developing procedures unscathed where carmine stains may be demolished.

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