There are several possible uses for hybrids with such a stock: (1) in tests of exotic stocks or mixtures for genes that may induce apomixis. (2) The absence of seeds on the ears should result in an increase of sugars and carbohydrates in stalks and leaves (J. Amer. Soc. Agron. 28:85-91, 1936). Since female and male sterility are very high, this would be more effective than male sterility against stray wind pollination. Under open pollination in the genetics field, plants with two rings of 10 had 0 to six seeds.

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2. Tests for non-random segregation in unequal chromatid pairs in interchange heterozygotes.

Data presented by Zimmering (Genetics 40:809-825, 1955) show that in *Drosophila* there is non-random disjunction when crossing over in an interstitial segment produces unequal chromatid pairs. The shorter chromatid is the one preferentially recovered.

If the shorter chromatid is the normal one, fertile progeny will be in excess; if the shorter one is the interchange chromosome, interchange heterozgotes will be in excess.

In corn, data from T2-3a (an interchange from Dr. R. A. Emerson's cultures) with breaks at about 2S.9 and 3L.6 and from T1-5 (8041) with breaks at 1L.80 and 5L.10 furnish information on this point.

For T2-3a, the interchange arm of the 2^3 chromosome would be about 50% longer than the normal short arm of 2, and the interchange arm of the 3^2 chromosome would be about 50% shorter than the normal long arm of chromosome 3. Crossing over in either interstitial segment would produce a pair of unequal chromatids, but it is probable that most of such cross-overs would have been in the interstitial segment in chromosome 2. The shorter chromatid in that case would be the normal one from chromosome 2.

For T1-5 (8041), the new interchange chromosome 1^5 is 44% longer than the normal long arm of 1. Again, the shorter of the two chromatids resulting from crossing over in the interstitial segment would be the normal chromatid of chromosome 1. Preferential recovery of the shorter chromatid would lead to an excess of fertile plants among the progeny from interchange heterozygotes crossed with normal stocks. The data from backcrosses are as follows:

	S.S.	F	Lg	lg
+ 2-3a/lg + ♀ X lg/lg (group 1)	149	109	178	186
" X " (group 2)	259	252	301	265
lg/lg X + 2-3a/lg +	388	346	324	294
			Bm_1	bm_1
Bm 1-5 (8041)/bm + X bm/bm	446	409	314	323

In no case, was there an excess of fertile progeny. Certain of the differences in the other direction were significant, but were not consistent, either in different tests or for similar deviations in the segregation for closely linked alleles.

It is obvious that in corn in this type of material, segregation of unequal chromatid pairs at anaphase 2 is at random in the female parent. In species in which this segregation is not random, segregation ratios for alleles linked with the breakpoints would be different in reciprocal backcrosses.

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3. Recombination in single and multiple interchange heterozygotes in maize.

The single interchanges used were: T1-7 (4405) = 1S.43, 7S.46; T1-9b = 1L.50, 9L.60; T5-7 (5179) = 5L.55, 7L.73; and T9-10b = 9S.13, 10S.40. The multiple interchange stocks that had been synthesized from these stocks were: T1-7-5, T7-1-9, T1-9-10, T5-7-1-9, and T5-7-1-9-10. The order of genes and breakpoints and recombination values with genes nearest the single interchange breakpoints were:

Chromosome 1: Sr-10-(T1-7)-4-P- ad-1-(T1-9)-35-bm_2

Chromosome 5: Pr-2-(T5-7)-4-ys

Chromosome 7: O_2-2-(T1-7)-1-v_5--ra gl-23-(T5-7)

Chromosome 9: wx-6-(T9-10)-6-gl_{15} bk_2-6-(T1-9)

Chromosome 10: nl-1-(T9-10)-11-g_1

Recombination values in regions adjacent to the breakpoints were reduced in single and multiple interchange heterozygotes. There was no consistent change in recombination in the other regions of the chromosomes