pachytene. This is perhaps due to the fact that teosinte chromosomes pair preferentially with teosinte chromosomes. Since teosinte contributes two homologues to each group of three chromosomes in the triploid, this In9 would frequently occur as a homozygote, in which loops or other figures at pachytene, would not be expected.

At diakinesis, chromosome associations in a total of 101 randomly selected sporocytes were studied. The average numbers of trivalents, bivalents and univalents per sporocyte were 6 III, 4 II, 3.6 I. This type of association was found in 24 sporocytes in a total of 101. Twice in this total all 30 chromosomes associated into 10 regular bivalents. The manner of association of the three homologues in a trivalent ranged from: (1) end-to-end, (2) one chromosome attached to a parallel-paired bivalent, to (3) all three homologues paired in parallel fashion. The occurrence of bivalents was very common and probably most of them are formed by autosyndesis.

Despite the identification of In9 at pachytene, bridges and fragments were not found at either anaphase I or anaphase II in the limited number of sporocytes examined.

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8. Evidence of the interchromosome effect of inversions on crossing over.

Data on the interchromosome effect of inversions on crossing over in plants are lacking, although data on this effect in Drosophila are abundant and show that when inversions exist as heterozygotes, they increase the frequency of crossing over in nonhomologous chromosome pairs (cf. Schultz and Redfield, 1930, 1951, Steinberg, 1936, Steinberg and Fraser, 1944, and Carson, 1953.) The affected nonhomologous chromosome pairs are either with or without any inverted chromosome segment. Last year, in microsporocytes of an F_1 plant (60-1105-1) of Xochimilco teosinte X Wilbur's flint, it was found that In 3 was present in addition to In 8 and In 9. This In 3, on the long arm of chromosome 3, was found to have an interchromosomal effect on both In 8 and In 9. Sporocytes of this hybrid had a high percentage of inversion configurations, practically all loops, of both In 8 and In 9 at pachytene. Among 215 randomly chosen sporocytes, 83, or 39 percent, had loop-configurations of either In 8 or In 9, or both. This frequency is much higher than that in plants which had In 8 and In 9 but not In 3, and which usually had not more than 10 percent of the sporocytes showing loop-configurations. The increase in the frequency of inversion loops, may be a good indication that the crossing-over frequency is likewise increased, since crossing-over within the inverted segments can happen only when the homologues are associated in loop-formations.

The second evidence of this effect was observed at anaphases of the sporocyte division. As shown in Table 1, about 13 percent of the sporocytes possessing In 3, In 8 and In 9, show evidence of crossing over at anaphase I.

In contrast to this among more than 500 sporocytes counted at anaphase I, a sporocyte without In 3 and having a dicentric bridge and an acentric fragment was found only once. At anaphase II about 3 percent of the daughter cells carrying In 3, In 8, and In 9 show evidence of

crossing over (Table 1). This is much higher than the percentage found
in the sporocytes having In 8 and In 9 but not In 3, in which among
about a thousand counted none had chromosome bridges at anaphase II.

It is of interest that the interchromosomal effect of inversions
on crossing over is not apparent in maize-teosinte hybrids carrying
only In 8 and In 9, but as soon as In 3 comes into the karyotype with
these two inversions, the interchromosomal effect becomes distinct.
It is not unlikely that this phenomenon is controlled by position
effect as suggested by Steinberg and Fraser (1944) to explain a
similar situation in Drosophila.

Table 1. Frequency and percentage of bridges and fragments observed at
anaphases I and II in the sporocyte divisions of an F_1 plant of
Wilbur's flint X Xochimilco teosinte in which In 3, In 8 and In 9
are present.

Division	Anaphase I						Anaphase II		
Class	0 B 0 F	1 B 1 F F	1 B 2 F F	2 B 2 F F	0 B 1 F	0 B 2 F	0 B	1 B	1 B 1 F F
Frequency	356	29	1	2	19	1	424	13	1*
Percentage	87.2	7.1	0.2	0.4	4.6	0.2	97.0	2.9	0.1

*unexpected

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9. **Haploidy in the backcrossed progeny of a maize-Huixta teosinte
hybrid.**

Among the progenies of the third backcross to its maize parent
(Wilbur's flint) of a maize-Huixta teosinte hybrid, a haploid plant was
identified. It had 10 chromosomes instead of 20 as found in its sibs
and it originated through gynogenesis. This plant was late in maturity,
small in growth, and tillered profusely. During microsporogenesis,
the sporocytes appeared much smaller than those of the diploid sibs.
At early prophase, synizesis was always present. The identity of each
univalent was then difficult to recognize. At pachytene, univalent
chromosomes were extremely entangled, and they frequently folded back
upon themselves to form nonhomologous associations. Pairing between
heterologous chromosomes was rarely observed.

At metaphase I, practically all of the chromosomes appeared as
univalents. Among a total of 308 randomly selected sporocytes, only
eight had in addition to eight univalents, one bivalent possessing a
chiasma-like appearance. Therefore, exchanges (or translocations)
between two heterologous chromosomes are to be anticipated. At anaphase
I, irregular chromosome distributions of various types were seen. Hence
aneuploidy in the subsequent generation is expected to occur. A further
investigation of this haploid plant is being carried on with the follow-
ing objectives: (1) to study its derivatives by crossing to a standard