

two-thirds of the length of the arm.

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6. Cytological observations on extracted "teosinte" chromosomes from maize varieties.

In last year's News Letter, Mangelsdorf reported the extraction from Latin-American maize varieties through repeated backcrossing to the inbred, A158, of chromosomes having genetic effects similar to those of teosinte chromosomes. Some of these strains of A158 which had been modified by substituting extracted teosinte chromosomes have now been studied cytologically in F_1 hybrids with an inbred strain of Wilbur's Flint which is virtually knobless. The following observations have been made.

Knobs on the long arm of chromosome 1 have been introduced into A158 from Honduras 1639 and Venezuela 1536. A knob on the long arm of chromosome 2 has been introduced from Guatemala 197.

Asynapsis was observed in approximately two-thirds of the short arm of chromosome 3 and in almost the entire length of the short arm of chromosome 7 in a strain of A158 modified by introducing chromosomes from Nicaragua 501. Asynapsis was also observed in a derivative of Honduras 1639 in about one-fifth of the long arm of chromosome 2 and in the long arm of chromosome 4 involving a segment from the regular knob position to the distal end. In the derivative of Venezuela 1536, there occurred an asynaptic loop about four chromomeres in length in the long arm of chromosome 2 adjacent to the centromere.

Nonhomologous association was found in approximately one-third of the long arm near the centromere in chromosome 2 of a derivative of Nicaragua 500. The association was with a chromosome not yet identified.

Chromatid bridges and fragments were present at anaphase 1 in the F_1 hybrid of Wilbur's Flint with a derivative of Cuba 398. The chromosome involved has not been identified, perhaps because the segment is too short to regularly form a loop at pachytene.

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7. Chromosomes in three teosinte varieties.

Florida-type teosinte from Honduras. A collection of teosinte from Honduras resembles Florida teosinte in vegetative characteristics

and photoperiodic response but differs from it quite markedly in its chromosome knobs which are largely internal.

Chromosomes 1 and 4 of the Honduras teosinte each have two large internal knobs, one on each of their arms. Chromosomes 2 and 3 have one large internal knob on the short arm and in addition chromosome 3 also has a medium-size terminal knob on the same arm. There are no knobs on chromosomes 5, 7, and 10. On chromosome 6 three knobs are present; the one on the short arm is terminal and the others on the long arm are internal and occupy the first and the second knob positions. The terminal knob on the short arm of chromosome 8 is very small, while the terminal knob on the short arm of chromosome 9 is prominent.

Mexican teosinte from Chapingo. In a Mexican teosinte from Chapingo pachytene chromosomes 1, 2, 3, 4, 5, and 8 were found to be different from those previously reported in this variety. Chromosomes 1, 3, 4, and 8 are knobless. Chromosomes 2 and 5 each have one internal knob; that of chromosome 2 is on the short arm; that of chromosome 5 is on the long arm. Fusion of chromosome knobs in this variety is common. On the average, chromosome 6 of Chapingo teosinte is shorter than either chromosome 7 or chromosome 9.

Mexican teosinte from Xochimilco. In this variety of teosinte pachytene chromosomes are always well spread in spite of the fact that most of them have one or two knobs. Fusion of chromosome knobs was rarely observed.

Chromosomes 1, 2, and 4 each have two knobs, one on each arm. Chromosomes 3, 5, and 7 each have one knob on the long arm. There are four knobs on chromosome 6; the terminal knob on the short arm and the knob on the first knob position of the long arm are small while the knobs on the second and the third knob positions of the long arm are large. There is a terminal knob on the short arm of chromosome 9. Both chromosomes 8 and 10 are knobless.

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8. Telocentric chromosomes.

Telocentric chromosomes, previously reported by Rhoades for chromosome 5, have been found for chromosome 10 in a cross of our strain carrying a B-chromosome with a strain received from Dr. Rhoades which was homozygous for abnormal chromosome 10.

At pachytene stage these telocentric chromosomes, like the normal bivalent chromosome 10, were always well paired. The size of the terminal centric region was about equal to that of the bivalent chromosome 10. The telocentric bivalent was frequently associated with the bivalent chromosome 10 at the centromere regions. Whenever this hap-