

## II. REPORTS FROM COOPERATORS

UNIVERSITY OF ARIZONA  
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1. Studies on a stature mutant of maize, petite-one.

Measurements of the embryonic coleoptile length and embryo length of dwarf petite-1 are significantly less than those of the normal sib. Determination of cell number and cell size of the epidermis and cortical regions of the coleoptile and mesocotyl of the dwarf indicate the mutant has shorter cells but an equal number of cells as compared to the normal. The amount of ether extractable and diffusible auxin in four-day old coleoptiles of the dwarf is less than half of the amount obtainable from the normal sib. Differences in auxin content and cell size between the dwarf and normal seedlings can not be related to auxin inactivators, auxin inhibitors, gibberellins, amino acids or vitamins.

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1. Further studies of Guatemalan teosinte chromosomes.

Monajil of northern Guatemala. Microsporocytes of four plants of open-fertilized Monajil teosinte were cytologically examined. At pachytene, the chromosomes were in general well spread. Identifications of the gross structural characteristics of the chromosomes were made practically without any difficulty. The terminal knobs on the short arms of chromosomes 1, 3, and 7 were large in size. The terminal knobs on the short arms of chromosomes 9 and 8 were medium-sized. The long arms of chromosomes 4, 5, and 6 had a large terminal knob, but the short arms of these were knobless. The terminal knobs on the short arm of chromosome 2, and on the long arms of chromosomes 8 and 10 were small. The long arms of chromosomes 1, 2, 3, 7, and 9, and the short arm of chromosome 10 were without any knobs. All of these knobs were homozygous and

none of them were intercalarily located. Furthermore the distal portion of the long arm of bivalent chromosome 3 was several times found to be asynaptic in about one-third of the total length of this arm. Whether this was caused by the presence of an inversion is uncertain, since there was no anaphasic bridge found among a limited number of sporocytes studied. A study of the F<sub>1</sub> hybrids of this teosinte and an inbred maize strain is in progress.

Y. C. Ting

## 2. Effect of x-rays on variegated leaf character.

In the summer of 1963, pollen of plants homozygous for a set of duplicate genes for variegated leaf, (vl<sub>1</sub> vl<sub>1</sub>, vl<sub>2</sub> vl<sub>2</sub>), was irradiated with x-rays. Three doses of x-rays 1000r, 2000r, and 3000r were applied. In about one hour after irradiation the pollen was crossed to the sib plants which were of the same genetic background. Pollen from each treatment was used on five different plants. In general, the seed sets were good for all the crosses. Seeds (kernels) from these crosses were planted in the summer of 1964. There were 527 fully grown plants obtained from treatment-1 (1000r); 555 plants, from treatment-2 (2000r); 362 plants, from treatment-3 (3000r). Frequent examinations of the vegetative characters, with special attention to the vl gene, were conducted during the whole growth period. No single plant was mutated back to the wild type. Leaves of all the plants appeared the same as those of the parental plants. Hence, it seems reasonable to conclude that x-rays are not effective in inducing reversion or inhibition of the vl gene in maize.

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## 3. Additional studies of haploid maize.

Last summer a haploid was found among the progeny of an inbred maize strain, Coe-stock-6, which was provided by Dr. E. H. Coe, Jr., of the University of Missouri. This plant was earlier in tasselling than the sibs, and its stalk was shorter. Since the chromosomes of the sib plants of this haploid were well spread at pachytene, it was anticipated that chromosomes of the haploid would also be well spread at the corresponding stage. Furthermore, much more information concerning the meiotic chromosome behavior, such as pairing between heterologous chromosomes indicative of duplication, in haploid maize is needed. Hence, microsporocyte divisions of this haploid were investigated.

At pachytene, the 10 chromosomes, like those of the other haploid maize previously reported by the author (M. G. Newsletter, 1963), were always entangled and formed