

tendency to parthenocarpy. Without artificial pollination most of the fruits of the deficient plant and of the deficient tetrasomic were parthenocarpic. On deficient trisomic and primary trisomic plants parthenocarpy was frequent in the basal fruits but gradually less so in fruits that set on later-developed inflorescences. Parthenocarpy was stimulative except in the deficient tetrasomic which set fruit without pollination. Possibly the gene balance in the whole chromosome and especially in the deficient chromosome tends to increase auxin concentration and so favors parthenocarpy and fruitfulness.

MACDOWELL, E. C., POTTER, J. S., TAYLOR, M. J., and WARD, E. N., Carnegie Institution of Washington, Cold Spring Harbor, N. Y.: *A second back-cross test for determiners of spontaneous leukemia*.—The incidence of leukemia in a first back-cross has been reported as approximately $\frac{1}{4}$ that in the inbred leukemic strain. This result does not distinguish between a segregation of determiners and a uniformly transmitted tendency with reduced "penetrance." Fifty mice in this first back-cross generation have been tested by crossing again to the "non-leukemic" strain and observing the incidence of spontaneous leukemia in each family of about 50 mice. This made a total of over 2600 mice, all of which were born in the same season of the same year. The frequency distribution of the 50 first back-cross animals according to the incidence of leukemia in their respective offspring (5 percent classes) presents a symmetrical polygon with the mode in the 15–19 percent class; the individual families range from 0 percent to over 30 percent. The occurrence of leukemia in a first back-cross animal gives slight indication of the incidence actually found in its offspring (range 4–28 percent), although the proportion of back-cross parents that were themselves leukemic is higher for families with high incidence than for families with low incidence.

MAINLAND, GORDON B., University of Texas, Austin, Tex.; *Studies in Drosophila speciation*. III. *The Drosophila macrospina group*.—Crosses have been made between strains of *Drosophila macrospina macrospina* Stalker & Spencer from different regions of Texas and *D. macrospina ohioensis* Spencer. With the exception of strains from one locality in western Texas, no sterility factors or major differences have been found in F_1 or F_2 from inbreeding or backcrossing flies. When females of the exceptional west Texas strain, *D. macrospina limpiensis* new sub-species Patterson ms., are crossed to other strains from Texas or Ohio, all F_1 males are sterile and F_1 females fertile, although both sexes are fertile from the reciprocal cross. All F_1 offspring from backcrosses of these hybrid females to the west Texas strain are fertile. One-half of the male offspring from the backcross of hybrid females to other Texas or Ohio strains are sterile, while all females are fertile. Apparently, a limiting factor (or factors) of a complementary nature in the *limpiensis* Y is necessary for fertility of males which carry the *limpiensis* X. Salivary analyses show that the west Texas strain differs from other strains in having a distal and proximal inversion in the X chromosome. Morphologically, *D. m. limpiensis* is more

like *D. m. ohioensis* than *D. m. macrospina*. Wild flies captured in Texas display all intergrades of phenotype between the described *D. m. macrospina* and *D. m. ohioensis*; others are more extreme than the latter in the same general direction. Autosomal mutants in the progeny of single wild type females parallel those described for the closely related species *D. funebris*, although mutant eye colors are more prevalent.

MARSHAK, A., Radiation Laboratory, University of California, Berkeley, Calif.: *Chromosome abnormalities produced in interphase nuclei with x-rays and neutrons*.—Previous experiments showed the frequency of chromosome abnormalities observed in anaphase at three hours after treatment with x-rays or neutrons to be an exponential function of the dose. Abnormalities observed in *V. faba* root tips at 12 and at 24 hours after neutron bombardment likewise vary exponentially with dose. The slopes of the curves for the 3, 12 and 24 hour intervals are .070, .051, .036 respectively. The slope for the Vicia x-ray curve at 24 hours is .0025. The ratio of the neutron to x-ray slopes (n/x) at 24 hours is 14.3 as compared with the comparable ratio of 6.6 at 3 hours. Thus chromosomes of the same organism at different stages of the nuclear cycle give different n/x although a constant ratio has been obtained with chromosomes of very different species at the same stage of the nuclear cycle. Pisum and Allium also give exponential curves at 24 hours, but data are not yet sufficient for obtaining n/x . However the ratio of about 16 obtained by GILES for chromatid dicentrics in Tradescantia microspores is sufficiently close to the 14.3 for Vicia to suggest that a constancy comparable to the one observed for abnormalities induced at the onset of prophase may be found for similar parts of the interphase in different species.

MILLER, DWIGHT D., University of Rochester, N. Y.: *Interspecific hybrids involving Drosophila athabasca*.—*Drosophila athabasca* hybridizes with *D. azteca* (STURTEVANT and DOBZHANSKY, 1936). It has also been found to form interspecific hybrids with two other members of the affinis group:—*D. algonquin* and *D. affinis*. Hybrids have been obtained between *algonquin* females and *athabasca* males. The frequency of insemination is low, but a good number of apparently quite viable offspring are produced in cases of mating. Female hybrids are fertile and have been backcrossed to *algonquin* males. Male hybrids produce no sperm. The salivary gland chromosomes of hybrid larvae show few cases of synapsis, but certain definite homologies have been found. These involve regions in both arms of the B chromosome, both arms of C, and the entire dot-like D chromosome. The frequency of insemination of *Drosophila affinis* females by *D. athabasca* males is quite high, but hybrid production is low. The nature of the mechanism whereby such interspecifically inseminated females fail to produce offspring is being studied. The *athabasca-affinis* hybrids seem to be well viable. Neither sex has been shown to be fertile. Spermatogenesis appears to be grossly abnormal, involving the production of large, multinuclear masses within the testes.

ABSTRACTS OF PAPERS PRESENTED AT THE 1940 MEETINGS OF THE GENETICS SOCIETY OF AMERICA

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ATWOOD, SANFORD S., U. S. Regional Pasture Research Laboratory, State College, Pa.: *Cytogenetic basis of self-compatibility in Trifolium repens*.—When 615 plants, selected at random from approximately 10,000, were self-pollinated under bags in the field in 1938, only one plant set seeds averaging over 100 per head. Except for descendants from this plant, no other has since shown a similar self-compatibility, whereas this high seed-set was duplicated on clones from the original plant by (1) different techniques of selfing in the greenhouse, (2) rubbing under bags in the field, and (3) bee pollination under a cage in the field. This plant was crossed with a self-incompatible individual, and 14 selected F_1 plants were diallely intercrossed and backcrossed to both parents in the greenhouse. Two intra-sterile, inter-fertile groups of five and six F_1 plants, respectively, were found, and these 11 plants were reciprocally compatible with both parents. The other three F_1 plants were cross-compatible with both of these groups, with both parents, and with each other. When the entire F_1 of 21 plants was selfed in the field, 16 ranged from almost complete self-incompatibility to moderate pseudo-self-compatibility, while the other five were highly self-compatible. Among these latter were the three which were cross-compatible with all others in the greenhouse. Also there have been selfed in the field 112 first-generation inbreds from the self-compatible parent; most of them were highly self-compatible, but a few were self-incompatible, and several had low pseudo-self-compatibility. It is postulated that both the self-compatible parent and F_1 plants were heterozygous for a self-compatibility factor which is a member of the multiple-allelic series conditioning self- and cross-incompatibility.

BARROWS, FLORENCE L., Stafford Springs, Conn.: *Inheritance in Cucurbita pollen*.—Pure lines of *Cucurbita Pepo* L. have constant and inherited differences in pollen pattern. Sharp spined types are dominant to blunt surface spines. Surface and cap spines seem to be inherited independently. Incomplete F_2 data suggest more than a single factor difference.

BERGER, C. A., Fordham University, New York, N. Y.: *A new criterion of the degree of polyploidy of "resting" nuclei*.—In the periblem of the root tips of *Spinacia*, diploid, tetraploid and octoploid cells are regularly found. One of the six haploid chromosomes of *Spinacia* has an heteropycnotic satellite. In diploid resting cells the satellites can be seen as two small chromatic bodies in contact with the nucleolus. From each satellite a single or double chromatic thread passes through the clear perinucleolar region and joins the chromatic