

stock of this strain was three rats obtained from Copenhagen in 1920. The known genetic constitution of the strain is *CC PP AA hh*. The first observed blue mutants appeared in the 15th brother  $\times$  sister generation of Line 2331. Prior to this time Feb. 23, 1934 intense hooded coat color had been recorded for each of the observed 6059 rats of this strain of which 187 were direct ancestors and their full sibs and 504 were half-sibs of the direct ancestors of the mutants. Since the appearance of the mutation the collateral families have produced 3565 pure line intense colored progeny and thousands of hybrids none of which have shown the mutant character. The identity of this blue character with the one observed by ROBERTS has been established by CASTLE in crosses of the two stocks. A hooded female mosaic for blue and intense color has recently been observed in an  $F_2$  population of 286 rats from a cross of intense hooded (*Dh*) by blue selfed (*dH*). Her pattern is 26 percent colored with a black area on the right side of the face and left side of the cape equal to about 10 percent while the remainder of the colored area is blue. She has had to date 16 blue progeny by a blue selfed male indicating that the mosaicism is somatic.

DAWSON, W. M., and KATZ, REUBEN, U.S.D.A., Bureau of Animal Industry, Washington, D. C.: *Preliminary report on variation in ability of dogs to master a multiple-choice situation*.—As a basis for later genetic studies an attempt is being made to find types of behavior that will provide a clear-cut discrimination in the intelligence of dogs. A modification of the "Hamilton Multiple-Choice Apparatus" is used in one of the tests. The dog is faced with the problem of finding which one of four doors is unlocked. In these tests many dogs developed a good system of seeking the right door which eliminated the repetitions that would otherwise have been expected. Pulis, Chows, Border Collies and  $F_1$ 's of Puli  $\times$  German Shepherd, Puli  $\times$  Chow, and Puli  $\times$  Border Collie, totaling 44 dogs, were tested. When dogs were scored on avoidance of repetition, a wide distribution of scores was obtained. On the basis of total doors tried in approximately 140 trials by each dog the percent of doors not repeated varied from 39 to 80. The mean for the 44 dogs was  $56.8 \pm 0.9$ . Average scores for the three largest groups were: Pulis,  $54.3 \pm 2.3$ ;  $F_1$  (Puli  $\times$  German Shepherd)  $62.5 \pm 1.3$ , and  $F_1$  (Puli  $\times$  Chow)  $55.2 \pm 1.5$ . While the means of the first two groups appear to differ significantly the magnitude of the reliability coefficient of the test ( $r = .82$ ) and the small number of dogs in each group make it necessary to do further work before drawing final conclusions. One litter (Puli  $\times$   $F_1$  (Puli  $\times$  German Shepherd)) in which the  $F_1$  dam was selected for her very high score on this test (80), has an average score of  $63.9 \pm 2.0$  indicating that the selection may have had some effect.

DEMÈREC, M., Carnegie Institution of Washington, Cold Spring Harbor, N. Y.: *A comparison between the X-ray induced and the spontaneous Notches*.—Salivary gland chromosome study of an unselected series of 27 X-ray induced Notches shows that 3 had the full complement of bands, in 7 cases one

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E. W. LINDSTROM, *Secretary*  
*Department of Genetics*  
*Iowa State College, Ames, Iowa*

ATWOOD, SANFORD S., U. S. Regional Pasture Research Laboratory, State College, Pa.: *Cytogenetics of incompatibility in Trifolium repens*.—Thirteen self-sterile  $F_1$  plants were crossed in all combinations and were backcrossed with their self-sterile parents. The  $F_1$  plants consisted of four intra-sterile, inter-fertile groups of five, four, three, and one plant, respectively, and all were reciprocally fertile with both parents. Using ten flowers in each cross, compatible crosses averaged 44.9 seeds and incompatible 0.26. A second series of diallel crosses were made between 13  $F_1$  plants and their parents. One parent was self-sterile and the other highly "pseudo-self-fertile." Both this latter parent and its progeny were practically self-sterile when individual flowers were self-pollinated in either full flower or the bud, but they set selfed seed when the entire heads were rubbed to effect pollination. The factors conditioning this pseudo-self-fertility are independent of those causing cross-incompatibilities, since four intra-sterile, inter-fertile groups of four, four, three, and two plants, respectively were found in this second set of progeny. Compatible crosses averaged 41.9 seeds and incompatible 0.18. The results in both series of crosses are explained best by the diploid (16 bivalents found regularly) personate type of oppositional factors where the parents differ in both alleles. The 12 groups from the two series were compatible in all combinations, indicating at least seven different allelomorphs in the four parents. Other evidence suggesting a large number of allelomorphs is that all matings (over 200) between unrelated plants were compatible. Few or no seeds were set in incompatible crosses because of poor pollen germination and pollen tube growth within a few hours after pollination.

BANTA, S. M., Brown University, Providence, R. I.: *Possible rôle of amixis in the evolution of organisms*.—Experimental findings from parthenogenetic reproduction in Cladocera and other well authenticated facts suggest that amixis, particularly when alternating with amphimixis, may be a potent factor in evolution. In *Daphnia*, mutation in diploid parthenogenesis is moderately frequent—all of our recognized Cladocera mutations having arisen during parthenogenesis. Most of these mutations are recessives and their effects, almost exclusively physiological, are recognized only in the results of sexual reproduction—inbreeding within the clone involved. The relative frequency of occurrence of these mutations during parthenogenesis together with, in nature, the periodical occurrence of amphimixis suggests that in the amictic-amphimictic cycle abundant genic recombinations occur.