Institute, U. S. Public Health Service, and grant # 2930 of the Damon Runyon Memorial Fund for Cancer Research, Inc.)

MARTIN, ALBERT JR., Veterans Administration Neuropsychiatric Hospital, Pittsburgh 6, Pa.: *Geographic endemicism in relation to antibiotic therapy.*—Endemic strains of bacteria resistant to many or all currently employed antibiotic and chemotherapeutic agents are the end result of persistent attack *in vivo* of such drug therapy where the agent employed does not rapidly and readily destroy the invading organism. The transition from sensitive to resistant seems to be genetic selection for it is not rapid but fluctuates in a natural selection sequence over a relatively long period of time; three years in this study, utilizing 200 cultures of genito-urinary origin, involving 30 different patients and over 2,000 antibiotic sensitivity evaluations. Inhibition and/or stimulation of growth and multiplication have been observed in the following genera: Proteus, Pseudomonas, Escherichia, Paracolobactrum, Klebsiella and Alkoligenes; species strains of the latter two genera are stimulated in growth and multiplication in the presence of Furadantin and Penicillin respectively, while species strains of the other genera studied exhibit a shift in inhibition from one group of antibiotic to another. Once strain endemicism of a genetic order has obtained, it is possible, in diagnostic bacteriology, to employ developed inhibition and/or stimulation as an aid in species identification. Sensitivity testing provides a means, tenuous to be sure, for observing evolution in action through the *in vitro* and thereby *in vitro* development of bacterial strains whose resistant reactions change as the degree of endemicism increases. This dynamic process points up the concept, based on intelligent interpretation, that genotypic adaptation as a dynamic force must be entertained in the total attack on those organisms pathogenic to man.

MEYER, HELEN U., Indiana University, Bloomington, Ind.: *Frequencies of lethals and chromosome losses after irradiation of Drosphila pole cells with ultraviolet and X-rays.*—Posterior ends of Drosophila embryos at polar cap stage were exposed to 2537 Å ultraviolet (300 ergs/mm^2), or 200 KVP X-rays (1500–2000r), while the major (somatic) portions were shielded. The female embryos had attached-X chromosomes and either a ring-Y (Y^{Lc}) or a V-shaped Y (*sc*.Y^L), both types being irradiated simultaneously. Sons of female imagines developing from these embryos were tested for presence of the maternal Y, while sons of males were tested for lethals in chromosome 2. Survival of treated zygotes to adulthood was lower for X-ray (6.1%) than ultraviolet groups (9.2%), probably because of less effective X-ray shielding. That at these doses ultraviolet affected somewhat more pole cells than X-rays is indicated by the larger size of "clusters" presumably of common origin (reciprocally related to germ cell survival) after ultraviolet than after X-rays. Further indication of this is given by losses of *sc*.Y^L: ultraviolet (17/1640) 1.0 ± .4%, X-rays (4/731) .55 ± .3% controls (9/4209) .21 ± .07%, where errors allow for clustering. However, with Y^{Lc} the high control rate and low productivity obscure the relations: ultraviolet (20/462) 4.3 ± 1.5%, X-ray (13/232) 5.6 ± 3.6%, control (90/2767) 3.2 ± .5%. Pooled lethal frequencies were: ultraviolet (73/1321) 5.5 ± 1.7%, X-rays (20/883) 2.3 ± 1.0%, controls (12/2507) .41 ± .14%. Thus for this stage ultraviolet is the more practicable chromosome and gene mutagen. Cluster sizes for lethals (ultraviolet 17.9%, X-rays 10.2%, controls 4.9%) exceeded those from losses (respectively 5.8%, 4.4%, 2.7%), despite male embryos (source of lethals) having more germ cells than females (source of losses). This indicates that losses were effectuated after more delay. (This work was supported by a grant to H. J. MULLER and associates from the American Cancer Society.)

MILLER, W. J., and C. STORMONT, University of California, Davis, California: *Parentage exclusions by blood grouping in dairy cattle.*—Mating is rarely random in cattle. Consequently, theroretical estimates of the likelihood of settling parentage problems by blood grouping tend to exaggerate success. Nevertheless, it was found in this laboratory that 95 percent of the problems submitted by member organizations of the Purebred Dairy Cattle Association during the past two years were solved. This value is based on 250 parentage cases. The usual problem was that of determining which one of two or more bulls qualified as the sire of a calf by a known dam. Such a case was considered solved when only one bull was shown to qualify. The blood type of the calf was examined

for those phenogroups in each of 11 blood-group systems which must have been transmitted by the paternal parent alone.—The B system, controlled by well over 100 known alleles, was critically involved in the solution of more than 50 percent of the cases solved; the C system in 25 percent; each of the six systems F-V, Z, S-U, A-H, L and J between 5 and 10 percent; and the H′ and Z′ systems in less than 2 percent. The highly frequent phenogroup D of the D system was not critically involved in these cases. Only one system was critically involved in the solution of half of the cases although the qualifying bull usually had to qualify in one or more additional systems in which the excluded bull or bulls qualified.—Ten percent of the cases submitted would not have been solved by the factor method alone, but were solved by the method of phenogrouping.

MOREE, RAY, VERNE F. NEWHOUSE, and JAMES R. KING, State College of Washington, Pullman, Wash.: *Studies on the relative viability of the mutant ebony^{11} of Drosophila melanogaster.*—When parents and progeny of the cross $+/e^{11} \times +/e^{11}$ are maintained under crowded conditions, the number of mutant progeny surviving decreases as the degree of crowding increases. With minimum crowding, viability is 99.9%, with maximum, 25.8%. This decrease in viability of the mutant progeny occurs in spite of the fact that crowding has lowered parental fecundity. Such lowering of parental fecundity evidently is not sufficient to prevent crowding of the progeny. Testcrosses show that the frequency of $+/e^{11}$ does not vary with crowding. Its frequency from pooled data being 68.5%, $+/e^{11}$ is slightly but significantly heterotic. Results of the crowding experiments demonstrate that the major component of inviability is environmental and that it increases with population density. To test whether such inviability results from crowding among the larvae themselves, or from the effect of the crowded parents upon the larvae, experiments were devised in which the density of adult and larval populations were varied with respect to each other. Such experiments permit the division of the environmental component into two parts, one due to larval crowding, the other to parental adult crowding. Results show the larval effect to about 40 times greater that the adult. In some experiments adult crowding actually causes a slight, though not always significant, increase in viability. Inviability of the mutant, therefore, is chiefly a consequence of larval crowding and a resulting competition for food. (Work supported by funds from the State of Washington Initiative Measure No. 171 for the support of biological and medical research, and by grant RG-4174 of the National Institutes of Health, Public Health Service.)

NEWCOMER, EARL H., University of Connecticut, Storrs, Conn.: *The status of the micro-chromosomes in the domestic fowl.*—A study of mitosis in the fowl with and without chromosomal pretreatments revealed the so-called microchromosomes to be not chromosomes but what are here defined as chromatoid bodies. They apparently arise in early prophase from chromocentric heterochromatin; they are variably allocyclic throughout mitosis and disappear prior to the eu-chromosomes in each succeeding telophase. Analogous behavior is shown for them in meiosis and it is suggested that they function as reserves of nucleoproteins for the chromosomes, and if genetic, only in a quantitative or modifying capacity.

OAKBERG, E. F., and R. L. DIMINNO, Biology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee: *X-ray sensitivity of different stages of primary spermatocytes of the mouse.*—Since irradiated primary spermatocytes frequently degenerate during meiotic division, quantitative estimates of the survival of these cells are essential for adequate interpretation of genetic effects observed in the offspring from successive weeks of mating during the presterile period of irradiated male mice. Two hundred and twenty-four hybrid (101 × C3H) male mice were evenly distributed among partial-body exposures of 0, 100, 200, 300, 400, 600, 800, and 1000r of 250-kv X-rays. Sufficient time was allowed for completion of meiosis and degeneration of damaged spermatocytes before newly formed spermatids were counted. Intervals at which mice were killed were selected to indicate survival of cells irradiated in preleptotene, leptotene, zygotene, early pachytene, middle pachytene, late pachytene, diplotene, and diakinesis to metaphase I. Comparison of experimental/control ratios indicate a significant effect of meiotic prophase stage on survival. Frequency of anisocytosis among spermatids also was dependent upon stage irradiated. Since differences in nuclear size prob-