

Burla, H. University of Oregon, Eugene, Oregon. Induction of mutations in homo-karyotypic *D. subobscura*.

In an attempt to obtain marker genes for the U chromosome in *D. subobscura*, flies of separate sexes from 2 homokaryotypic stocks, one containing U_{St} , the other U_{1+2} , were submitted to EMS treatment. For each

series anew, the substance was dissolved in 5% sucrose and offered to flies after they had been starved during the first 24 hours of their imaginal life. Upon feeding on EMS, they were kept on normal food for 48 hours to complete maturation, and then mated individually to homo-karyotypic partners, which were either treated themselves, or left untreated. A sample of 35 males, 20 of which were kept for 24 hours on EMS, the others for 48 hours, left no offspring. A dosage of .03 molar, offered to several later series for 30 hours, did not reduce fertility much below normal. Judging from a lack of daughters and grandsons, EMS was effective in inducing sex linked dominant and recessive lethals, and was consequently trusted to induce visible mutations as well. In previous experiments, DES had failed in this respect, and EMS was used thereafter, following a suggestion by Dr. E. B. Lewis.

By repeated pair matings between full sibs, treated chromosomes were expected to become homozygous in the 3rd filial generation at reasonable frequencies. A total of 620 F3 sibships were scanned for mutants. Actually a variety of mutant phenotypes showed up, 46 of which could be maintained in stocks and transferred to Zurich, Switzerland. They will be included in the stock list as soon as the autosomal mutants are assigned to their respective linkage group, and as the possible identity, or allelomorphism, of the new mutants with those obtained by former workers are tested. To mention some of the mutants gained, there are phenotypes suggesting identity with bubble, Beadex, cut, Net, rotund, tuck, thin, shaven, vermilion, white, antennapedia, aristapedia, dachs and many-jointed. Probably some mutants were present in the stocks before treatment, especially abnormalities like scute, broken-bristle, thin short vein, and spot.

Okada, T. Tokyo Metropolitan University, Japan. Character continuities in the caenogenetic organs of *Drosophilidae*.

Although the caenogenetic organs do not indicate the ancestral adult forms, they frequently undergo ontogenetic development parallel to the sequences of the adult phylogeny. This kind of onto-

genetic development, which was named 'general caenogenesis' by the present author, can be distinguished from 'special caenogenesis' which is a caenogenetic development of an organ adaptive to the specific environment, not reflecting at all the adult phylogeny.

The anterior spiracles of the larvae and puparia of *Drosophilidae* are likely to follow a general caenogenetic trend in the shape, size and the number and arrangement of the branches. The posterior spiracles tend, on the contrary, to show a special caenogenetic change, their size and shape being adaptive to the specific habitats in which the larvae live and breathe. At the stage of puparium formation, the anterior spiracles are connected to the pupal mesothoracic spiracles by means of a temporarily produced tracheal system (Bodenstein, 1950), while the posterior spiracles lose respiratory function after that time.

The character continuities from the larvae to the adults seem to be higher in degree in the organs of general caenogenesis such as anterior spiracles than in that of special caenogenetic organs such as posterior spiracles.

The caenogenetic sequences and the character continuities of the larval mouth hooks are intermediate in degrees. This organ is general-caenogenetic in the earlier larval stages and specific-caenogenetic in the later larval stages, and it has indirect continuities from the larval to the adult stages, the homology between this organ and the adult mouth parts being recognizable.

Although the egg filaments of *Drosophilidae* are known to have systematically important morphological features reflecting the adult phylogeny to a great extent, they are developmentally not continuous to the larvae and adults. They continue, however, to the adults of the parent generation. For such an organ the term 'pseudocaenogenesis' is proposed here. Finally, the true palaeogenetic organs, such as the Malpighian tubules, which do not undergo metamorphic changes, are directly and completely continuous from the larvae to the adults.