

spots.

Frequency of spots: Variable in different experiments from one spot on fractions of a percent to one spot on ten and more percent of all individuals. The frequency is increased considerably if the individuals carry an autosomal Minute (use stocks like Rochester #68, DIS-5).

Size of spots: From one seta to whole imaginal disk, very rarely larger.

Location of spots: Variable. The smaller spots, which in most experiments are the frequent ones, occur preferably on the abdominal tergites. Careful inspection under about 30x magnification is necessary for detection. (See note in DIS-5 on "foot-focusing device").

Harnly, Morris H. Wing measurements.

The following method has been found satisfactory for making wing measurements.

The Spencer Drawing Apparatus No. 345 MS (list price \$62.00) on which a compound microscope can be mounted is used to project the wings. A 16 mm. objective and 10 X ocular are used. The size of the projected wing is determined by the distance of the microscope above the drawing board. When first setting up the apparatus it is advisable to project a wing and determine a height that will place the entire wild-type wing on the drawing paper. Ordinary 8 x 11 paper can be used for the drawings.

Having established the proper height of the microscope above the drawing board, a ruled 2 mm. slide is placed on the microscope stage and projected. This distance of 2 mm. can be marked off on a straight line on a permanent record sheet. Thereafter, whenever the apparatus is set up exactly the same magnification can be obtained by a proper adjustment of the height of the microscope above the drawing board (a slight movement of the draw tube may aid in this) using the 2 mm. slide and the record sheet as checks. The wing is removed from the fly with a McClure's angular-or-flat Iridectomy Scissors #c991 figure 2 (list price \$9.00, Standard Scientific Supply Co.), mounted in 95% alcohol, projected and drawn. The length can be determined directly by projecting the 2 mm. ruled slide onto the drawings. An area equivalent to 4 sq. mm. can be obtained at the same magnification by projecting the ruled 2 mm. slide and measuring the square drawn with a Keuffel and Esser Compensating Polar Planimeter No. 4242. This will give by division the value in sq. mm. of one unit on the vernier. Measurements with the planimeter of the area of the wing drawings can then be converted into sq. mm.

Timofeeff-Hessovsky, N.W. and K.G. Zimmer. On the technique of radiation-genetic experiments.

From both the genetic and physical points of view we want to lay stress on the following

rules, the observation of which will be of great help for comparing and analysing the results of radiation-genetic experi-

ments in *Drosophila* species obtained by different authors.

1. The biological genetic conditions and methods of the experiment must be taken into consideration, and, if specifically deviating from the generally known and used standard (in respect to age and stage of irradiated flies, developmental stage of germ-cells at the time of treatment, methods and accuracy of detection of mutations, etc.), should be mentioned.

2. In experiments upon mutation rates of single genes uniform and selected material should be used.

3. When using X-rays, ionometric measurements of the tube output and its steadiness ought to be carried out before irradiating the flies. The conditions of measurement and irradiation must be exactly the same in respect to tube current, voltage, presence or absence of scattering substances in the neighborhood, and distance.

4. It is preferable to use the international r-units of X-radiation instead of other units not generally adopted.

5. It is necessary to state, besides the dosage applied, also: a) the time and intensity of irradiation (i.e. whole time of exposure, r/min, and whether fractioned or not), b) kilovoltage, c) filtration, and, if possible, d) halve-value-layer of the X-ray beam. For very soft X-rays (so-called Grenzrays) collophane is the best material for halve-value-layer determinations; for all other qualities of X- and gamma radiations copper ought to be used rather than aluminium.

6. For soft radiations absorption within the flies becomes very important, and proper allowance for dosage reduction in deeper layers of the flies has to be made; this point, which can easily introduce errors as great as 100 per cent, has frequently been overlooked in the past. Thus, in the case of soft rays, beta- and cathode- radiations, the absorption in fly-tissues must be measured, and the mean depth of gonads during irradiation must be determined.

7. When planning experiments under special conditions (e.g. with extra soft or extra hard radiation, very high or very low intensities, in combination with other physical or chemical factors or stimuli, etc.) advice of a competent physicist, preferably one who is interested in such problems, ought to be asked for and followed.

8. Experiments with gamma-rays from radium require considerable amounts of radium or Radon. Such work is, therefore, rather dangerous if special measures of protection are not arranged and followed. During the last few years it has been shown that gamma-rays can be measured in r-units ionometrically. It is of course desirable to use these units in the future. If exact determination of the dosage output in r-units of the radium applicator used cannot be carried out, the following must be stated: a) the number of mgrs. of radium element, b) filtration (thickness and material), c) time of exposure, and d) distance. The radium (in needles, tubes, or other form) must be so arranged in the applicator as to give a large enough homogeneous field of gamma-rays. All details of the experimental set up and of the radium applicator (preferably with

diagrams giving all lengths, distances, etc. in mm's) have to be described.

9. During irradiation the flies ought to be kept in a container of light-atomic material, such as cellophane, gelatine, or bakelite, which has a wall-thickness equivalent to that of the ionisation chamber of the dosimeter.

Dobzhansky, Th. Collecting, transporting, and shipping wild species of Drosophila.

Usual Drosophila culture bottles can serve as traps. A sturdy string is tied around the bot-

tle neck to facilitate its hanging in a convenient position on branches of trees, bushes etc. A layer of bait a few centimeters thick is placed on the bottom of the bottle, and covered with a piece of a paper towel or filter paper to absorb excess moisture. Fermenting banana mush is most satisfactory as bait. Ripe bananas are mashed with the aid of a spoon or a fork; some drops of fresh yeast solution is added, and the bottle is left standing for about 24 hours before use (if dry yeast is used this time is considerably lengthened). The bait remains good for at least four or five days after first used. The traps are exposed in such a way as to be readily accessible, and left undisturbed for a few hours; no useful purpose whatever is accomplished by leaving them exposed for days. In the case of some species, notably *pseudobscura* and its relatives, it is important to expose the traps in the late afternoon, since these flies do not come into traps on hot days before sunset. On cloudy days they may be caught any time. The above bait attracts quite a number of species of *Drosophila*, including some, though probably not all, feeding on fungi. When a sufficient number of flies are in a trap, it is closed by the usual cotton stopper, and transported to camp (if properly packed such bottles can be transported for miles even on pack saddles without harm to the flies). For further transportation and shipping the flies should be placed in shell vials containing solid banana-agar food. Banana agar is prepared in the laboratory, poured into the vials, sterilized in an autoclave under pressure, and cooled in a slanting position. The openings of the vials are stoppered with sterilized cotton and wrapped in wax paper to prevent excess evaporation. Vials so prepared can be then carried for a month before use. Before the flies are put in them, a drop of yeast suspension is placed on the food, and a piece of filter paper inserted. Then the flies are transferred from the traps to the vials (a glass funnel of a proper size facilitates this operation greatly). Some wild species are exceedingly sensitive to heat. If they have to be carried around for any length of time in hot weather, vials with the flies are placed between layers of cotton in a metallic box, and this box is placed into a larger one, the space between the two being filled with cracked ice; changing the ice in this improvised ice box once a day is sufficient in any summer heat. If no ice is obtainable, the box with the flies should be wrapped in a moist towel and exposed to the wind. It a