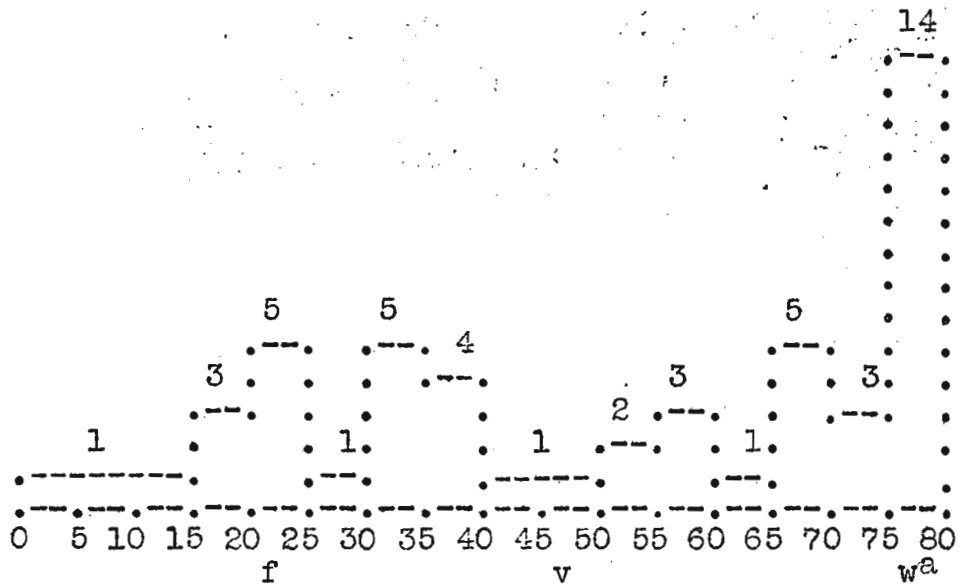
NOTES AND NEWS

Research items

Effect of ether on gene changes. S. Gershenson - In 1930 a large experiment with D.mel. was carried out with an aim of producing gene-mutations by means of etherization. Apricot larvae 2 and 4 days old were submitted to a sub-lethal dose of ether vapor (40-48 minutes in an atmosphere saturated with ether vapor at 16°C). Many variations were recorded in the flies which developed from the treated larvae (mostly bristle characters). 1200 x-chromosomes from 96 males studied (ClB method) gave a negative result (2 lethals) (U).

A case of ClB reinversion. S. Gershenson - In 1931 a sc^{1} t v sl B D.melanogaster male was obtained from a female of the structure ClB/sc^{3} v. Study of the chromosome showed that it not only lost its lethal action, but also was reinverted, the new breaks being probably precisely in the same points as the breaks of the ClB inversion. Two explanations are possible: either the lethal action of the ClB chromosome is due to a position effect, or the reinversion occurred simultaneously with a double crossing-over in the left non-inverted part of the ClB chromosome (which must then have carried the lethal). Contamination excluded. A semi-lethal was present in the reinverted chromosome, located near sl (U)

Distribution of x-chromosome lethals. S. Gershenson - In 1931 a study of the distribution of x-ray lethals in the sc^{8} w^{a} In X of D.melanogaster was carried out (in collaboration with N.I. Shapiro and E.J. Borissenko). The following picture was obtained (51 lethal located) (U):



The manifestation of dominants in the triploid. Jack Schultz - Most of the dominants available in D.melanogaster have been observed in the triploid, in the course of a series of experiments concerned with the effects of upsets of genic balance on dominance relations. The following are easily classified when present in single dose in the triploid: Bar, Beadex^2, Bristle, Curly, Deformed, Dichaete, Hairless, Hairy-wing, Jammed, Lobe^2, Moire, Stubble. Those which are almost completely suppressed include: Delta, Gull, all Minutes, Notch, Plexate, Plum, Star. It may be noted that in no case is the manifestation as extreme in the triploid as it is in the diploid and many of the first group show a marked diminution of the effect.

A few of these dominants have been studied in double dose. The Minutes and Moiré do not survive. The following survive, manifesting the dominant characters in extreme form: Delta, Dichaete, Gull, Hairless, Plexate, Plum, Stubble.

Inversions in the x-chromosome of D.melanogaster - A. H. Sturtevant and G. W. Beadle - As is well known, there exist many different inversions in the X. When two of these are put in the same female, single crossovers occur within the common inverted region, and in several combinations viable crossover offspring are produced. The crossover chromosomes carry net deficiencies and/or duplications for the regions at the end-points of the inversions. These (especially the deficiencies) make it possible to determine the end-points with a precision limited only by the number of recessive mutations whose loci are already accurately mapped adjacent to the breaks.

The nomenclature of the inversions is now in a chaotic state; and becomes intolerably confusing when one begins dealing with crossovers between different inversions. We are using the following scheme: Each inversion is given an arbitrary letter; the sequence in ClB is referred to as "In B", that in y^4 as "In Y". Then, for each pair of inversions, two single crossovers are theoretically possible; these are described by the use of both letters concerned. In the case of the two referred to, the crossover that has the left end of ClB and the right end of y^4 is called "B-Y"; that with the left end of y^4 and the right of ClB (which has not been obtained) would be "Y-B".

The following inversions in the X have been studied in this laboratory. The end-points are given as accurately as our present data allow - they are being determined still more closely in most cases.

Current designation	New equivalent	Position of left inversion-point	Position of rt inversion-point
ClB	In B	Between ec and bi	Between sy and fu
dl-49	In D	No new data(near rg)	No new data(fw-g)
sc^8	In E	Between ac and sc	To rt of bb
y sc^4	In F	Between ac and rst	Between cr and bb
bb-deficiency*	In O	Between rb and rg	To rt of cr
roughest	In R	Uncertain	Uncertain
sc^7	In S	Unknown	Between fa and sn
y^4	In Y	Between y and ac	Between fu and cr

*Of Dobzhansky, not of Gershenson. The latter is "F-E" on our terminology.

In D and In S have not given single crossovers in any of our experiments. In R is a long inversion, which gives crossovers with several of the others; it is, however, complicated by the presence of a 1-3 translocation, with probably at least three points of breakage in X. The analysis is still incomplete.

The following crossovers have been obtained and studied: B-O; B-Y, E-F, E-Y, F-E, F-Y, O-Y, R-E, R-F, R-O, Y-E and Y-F. Others can presumably be produced, though several of them (such as Y-B) are known to be inviable.

These studies are being continued, with the object of attacking problems concerning crossing-over, disjunction, and the somatic effects of duplications and deficiencies.

Breakage point in x-chromosome for Blond-translocation (Tl-2). M. Demerec - A certain proportion of offspring from crosses with Blond are deficient for the yellow end of the x-chromosome from the point where the breakage occurred to the end of the chromosome. These flies have minute characteristics. In test made with y, ac, br and pn yellow, achaete and broad showed in minute flies but prune did not show. This indicates that pn is not included in the translocated piece and that y ac and br are included. The breakage point, therefore, is between br and pn.

Intersexes of D.virilis. G. A. Lebedeff - Out of four lines of flies producing morphologically different types of intersexes (Amer.Nat., 68:68-69, 1934), line 2, producing intersexes predominantly of the hermaphroditic type, is still segregating. The three other lines are producing practically only one type of intersexes. These lines are: (1) ♀-like intersexes; (3) intersexes of ♂-like type retaining ♀ shape of abdomen; (4) intersexes of the ♂ type. F_1's from crosses between 1 x 3, 1 x 4, and 3 x 4 lines are morphologically intermediate between lines. F_1's from 1 x 3 and 1 x 4 besides having external and internal genitalia of the ♂, also

have ♀ genital plates, vagina, two spermathecae, and tubular recepticle. There are, however, minor differences in the shape of the abdomen between F_1's of 1 x 3 and 1 x 4. F_1's from 3 x 4 cross have ♂ external and internal genitalia, but the shape of the abdomen is intermediate between ♀ and ♂, although resembling more that of a ♂. F_2's from all crosses segregate in 1:2:1 ratio. Results suggest that either three alleles of the gene for intersexuality are responsible for the different morphological type of intersexes, or that there are three alleles of modifiers of the gene for intersexuality.

News items

Genetics Laboratory, Columbia University, New York, N.Y. - Apart from work of Schweitzer and Dunn, melanogaster is used chiefly for course work and master's problems by graduate students. Each year several students are able to carry out preliminary experiments in locating new genes and in studying interaction and dominance effects of known genes (especially eye colors and eye sizes) and material to be used for these purposes is welcome. Dunn is interested in lethals and semi-lethals like l_{hII} which have retarding effect on development.

Schweitzer has been analyzing the data on crossing-over in D. melanogaster in terms of the cytological events. He is interested in crossing-over data for other species in which whole chromosomes are covered with no more than 1/2% of undetected doubles.

Apparatus. Curt Stern - A funnel has been constructed, which facilitates the filling of food-bottles. The funnel is made of metal and has a capacity sufficient for food for about 60 bottles. It has a metal faucet which is easy to handle. The funnel is mounted on a stand, but can be detached for cleaning purposes. Below the funnel opening the stand has a hole through which extra drops of the food fall so that the bottles do not get dirty. The base of the stand has a rail which guides the bottles. This funnel can be obtained from the Will Corporation, Rochester, N.Y. A similar model has been in use for many years at the Kaiser Wilhelm Institut and has proven of great help in reducing the time and labor involved in the preparation of fly-food.

The Will Corporation has also on sale an etherizing glass following in general the design of C.B. Bridges (32) given in Amer. Nat., 66:250-273. An improvement consists of the following: Instead of a small funnel and a layer of plaster of Paris which have to be fitted and fastened into each glass individually, a one piece metal funnel and either holder is used which fits in without special fastening devices.

Inbred Bar. Charles Zeleny - Closely inbred (single pair brother and sister matings) 17° and 27° constant temperature lines are being maintained; at present (January 1934) 297 generations at 27° and 129 generations at 17°.