Nomenclature

(See also Muller's comments on pages 39-43 of this issue about nomenclature section of DIS-9)

Mohr, Otto L. Nomenclature and symbols.

For those who are not familiar with the Drosophila system of symbols through personal work, the fact that there is in Bridges' system no distinction between symbols for genes and aberrations with phenotypic effects and symbols designating the nature and origin of structural changes without visible effects, is apt to cause confusion. - This may easily be done away with in the following way: Symbols for genes and for the phenotypic effect of genes and of aberrations should be written in italics (e.g. w^e, *D*, *N*). Symbols for structural changes should be printed in Latin letters (e.g. T(3;Y), In(1)dl-49). Hence for instance Inversion 3L Payne with gleam which by Bridges is denoted In(3L)P^{gm} would receive the formula In(3L)P *gm* and the third chromosome deficiency which causes the dominant character complex Vein andwhich by Bridges is denoted Df(3)Vn, should receive the formula Df(3)*Vn*, etc. This enables the reader to differentiate between the two different categories of symbols. - It may perhaps be difficult to introduce this change in the typed DIS numbers but it ought to be stated in a foreword that authors are requested to use this system in their printed publications. - Further, in Bridges' system the basic locus symbol for a series of multiple allels originates from the designation of the first member of the series discovered. Thus in the Henna series the first member was dominant and was accordingly given the symbol Hn. Two later allels are denoted as Hn^r and Hn^{r2}, where r stands for recessive. This system is very cumbersome. Dominant members of allelic series are rare. When recessive members occur it is much more practical to use the symbol for the recessive allel as the basic locus symbol and add the superscript *D* for the dominant member (eventually Da, Db, Dc if additional dominant members should turn up). Thus the henna series would be hn^D, *hn*, *hn*^{2} instead of Hn, Hn^r, Hn^{r2}. - It may be added that both these suggestions were discussed at the conference on terminology held in London before the last congress and received unanimous support.

Research Notes

Argelander-Rose, A. Experiments with hemithorax.

In November 1937 about a dozen vg^{hem} flies appeared in several cultures of vg ar sp. Manifestation at 25° differed between 0 and 7%; in the average of more than 6000 flies it was 1.62%, 2.53% in females and 0.60% in males. After crossing this stock with x-ple, b cn vg, al dp, and L^2/Cy manifestation increased in some cultures up to 25% without, however, being constant. In a stock b pr vg it was then kept at an average of 9.3%, 11.2% in females and 7.4% in males. vg^{hem} flies mostly display absence of the right or left dorsal half of the thorax, very seldom the whole thorax was found missing. Sometimes the thorax was split in the midline. Also a great number of flies were found with a protuberance at one or both sides of the thorax (vg^{hem} p). Among 143 flies 62.2% were vg^{hem} and 37.8% vg^{hem} p. vg^{hem} and vg^{hem} p could not be selected. In stocks where vg^{hem} appears a large number of flies with extreme vg, wings reduced to knobs or very short, can also be found. - In some cultures of our stock which were left in the room at about 18-20° 50 to 70% vg^{hem} and vg^{hem} p arose, the next generation, however, bred at 25°, gave again only about 10%. A preliminary experiment showed an influence of temperature on the amount of manifestation. The time of development from mating the

newly hatched parents until F_1 began to hatch was 10.1 ± 1.0 days at 25° and 22.1 ± 1.6 days at 15-18°. Cultures which were kept at 15-18° for the first three days andthen transferred to 25° took 11.6 ± 0.7 days, those which stayed at 15-18° for four days and in 25° thereafter needed 11.6 ± 0.5 days. Fertility is 81.6 flies per vial at 25° and 49.8 at 15-18°. Manifestation in the offspring of the same parents, brought subsequently into different temperature, was as follows:

Temperature	Number of cultures	n	vg^{hem} %	vg^{hem} p %	Total vg^{hem} %
25°	20	1633	9.6	3.4	13.0 ± 6.4
15-18°	34	1694	20.8	10.4	31.2 ± 14.8
3 days 15-18°	14	262	13.4	6.5	19.9
4 days 15-18°	20	635	11.0	6.6	17.6

Manifestation is higher among the early hatching flies, particularly in mass cultures. At 25° 19.8% of the flies hatching on the first and second day were vg^{hem}, on the third and fourth day 11.3% appeared and on the fifth to ninth day 3.9%. In 15-18° the respective numbers were 45.7%, 40.3% and 32.6%.

Argelander-Rose, A.
Fertility of ClB females.

After one single copulation ClB/sc^1 - and ClB/y cv v - ♀♀, bred at 25°, gave an offspring on the average of 196.2 ± 25.6 flies. Fertilized eggs were laid during 9.8 days. The offspring hatched as follows on the

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	day
26.7	20.2	22.2	14.0	5.8	5.5	2.0	2.2	1.4	%

When mated to the males for three days the average number o the offspring was 138.4 ± 65.8.

Argelander-Rose, A.
Experiments on moter activity.

The flies, melanogaster, were put into a glass tube, 30 cm high and 4 cm wide, and by shaking the tube brought to the bottom. Then the time the fly needed to run to the top was taken. With each fly 5 experiments were made, one after the other, and that repeated on several days. In the average of 40 ♂♂ and 25 virgin ♀♀ (Berlin wild, w sn^3 B, w^e and y pn) the time for the way of 30 cm was 30.5 ± 8.5 seconds for the males and 45.0 ± 6.3 seconds for the females. No difference was detected with respect to age (1-14 days) or daytime (11.30h and 19h) and no improvement within 6 days. An attempt is being made to select fast and slow flies.

Argelander-Rose, A. A case of high non-disjunction.

In a cross between ClB v/w sn^3/Y ♀ x y cv v ♂ one female appeared with v eyes which proved to be w v/y cv v/Y. In F_1 to F_3 the exceptional v females mated to wild stock males gave 2.9% exceptions, 13 ♀♀ and 7 ♂♂. In F_4 one culture gave 36.5% exceptions among 72 flies. From the exceptional v females of this stock cultures were obtained with an average of 22.3% exceptions (type A) as well as with 1.6% (type B). The cause for the high non-disjunction lies in the w v-chromosome. Of the regular females half are expected to be XXY-♀♀. From 61 regular w v/++ and w v/++/Y♀♀ 11 cultures of type A with 20.1 ± 7.7% exceptions were obtained, 20 cultures of type B with 3.5 ± 2.6% and 30 cultures with no exceptions where the mother had been and XX-♀. On the other hand, 18 regular

y cv v/+++ and y cv v/+++/Y females gave no type A, but 10 cultures of type B with 1.9 ± 1.3% exceptions and 8 cultures from XX-mothers. In the course of the experiments 5 equational exceptions of the constitution w v/w v/Y and w cv v/w v/Y were found which gave the same amount of exceptions in type A and B. The offspring of 365 exceptional females carrying the w v-chromosome and originating from mothers of type A showed 180 type A and 19% type B, whereas exceptional females coming from cultures of type B gave no type A at all. In the average of 137 type A cultures the exceptions amount to 18.7 ± 6.2% and 180 type B cultures gave 3.5 ± 2.6%. Crossing-over in the w v-chromosome is very much reduced with type A. Instead of 13.7% w v/y cv v/Y females gave on the average 1.4% crossing-over in type A and 7.1% in type B. The assumption is made that a duplicated piece of the w v-chromosome translocated to one of the autosomes might be responsible for the ghigh non-disjunction in type A. That would also explain the fact that type A splits up into A and B. Cytological proof of this assumption is about to be sought.

Bishop, Maydelle.
Bar-263-48.

A female with Bar-like eyes (experiment number 263-48) was found among the offspring of a cross between X-rayed (3000r) Swedish-b males and y pn females. This was crossed to y pn males and the offspring were recovered in the following proportion: B-like: females 17, males 11; y pn: females 11, males 12, which indicates that rearrangement in the X-chromosome might be involved. The mutant males proved to be fertile, and salivaries of their daughters were analyzed. This analysis showed a section from 16A into the chromocenter region (20) is transposed in the normal order into 3E. Female offspring of the mutant males crossed with the heterozygous mutant females show great variation in the amount of reduction of the eye, but no distinct division into two classes could be detected. Individual mating of females showing the greatest reduction yield both mutant and y pn males, indicating that homozygous mutant females are usually or probably always lethal. The eye-reduction is about half-way between B and B^1 and varies little in the male. - Description: B^{263-48} - Bar-263-48. Bishop, September 26,1939. Tp. From X-rayed Sw-b ♂. Eye-reduction in ♂ and het. ♀ between B and B^1; size constant in ♂♂ but variable in ♀♀. Hom. ♀ lethal, ♂ fertile. Salivaries show a segment with a break in 16A and the middle of 20 inserted into 3E in normal order. RK2A.

Boyd, M.M.M. and H. Spurway.
Over 50% crossing-over between two loci in D. subobscura.

The F_2 progeny from scarlet x interrupted were 95++; 27s+; 38+int; 00 s int. Therefore the loci are on the same chromosome. - Nineteen cultures have been counted in the test crosses using these loci. In 13 of these the number of crossovers between the two is greater than the number of non-crossovers, and out of the total 2,295 flies examined, 1,208 are crossovers, i.e., the recombination percentage is 52.6 ± 1.0. - In 7 of the 19 cultures the probability of obtaining as large or larger a deviation by chance from the expected 1:1 in the single factor ratios of one or both mutants is less than 5%. As the recombination percentage calculated from the remaining 12 cultures is 52·4 ± 1·3 the anomalous proportion of crossovers does not seem to be due to the abnormal segregations of the individual mutants. - More figures are being collected of the two point crosses to reduce the standard error and multiple stocks are being built up for examination of crossing-over and interference in the region between the 2 loci.

Braun, W. An exceptional case of factor dissociation in Drosophila melanogaster.

In a series of experiments which were designed to test the production of mosaics after X-radiation of the father, normal males were irradiated and then crossed to y w^a ec cv ct v m g f/ClB females. Among 220 crosses of that kind many exceptional males were observed in the F_1 of 3 crosses which had been started at the same time. Culture No. 1783 contained ♀♀ : 66 normals, 6 ClB; ♂♂ : 6 y - f, 6 normals, 2 f (single crossover), 1 g f (single crossover), 1 y - g (single crossover), 1 y - cv (single crossover), 1 y w^a (single crossover), 1 g (double crossover), 1 y m g f (double crossover), 1 w^a m (triple crossover), 1 w^a m g f (triple crossover), 1 y ec g (4-ple crossover), 1 y w^a ct m (4-ple crossover), 1 y ec cv ct g (5-ple crossover) and 2 w^a ec cv ct m f (5-ple crossover). Culture No. 1782 ♀♀ : 31 normals, 11 ClB; ♂♂ : 4 y - f, 1 normal, 1 f (single crossover), 1 w^a m f (5-ple crossover). Culture No. 1780 ♀♀ : 8 normals, 3 ClB, 1 y - f, 1 w^a m ct, 1 w^a g f, 2 w^a m ct cv, 1 w^a f, 1 m g f, 2 w^a ct m f, 1 f; ♂♂ : 3 y - f, 5 normals, 2 g f (single crossover), 1 y w^a ec (single crossover), 1 v m g f (single crossover), 1 w^a cv ct m (5-ple crossover), 1 y ec g (5-ple crossover). - We will not discuss the production of the exceptional females of Culture No. 1780 here, because their appearance is due to changes produced by X-radiation of the father. The appearance of the exceptional males in these 3 crosses, however, presents a puzzling problem. It has to be noted that, (1) although ClB females are produced, none of the exceptional males shows B (this excludes the possibility of a loss of Cl in the mother), (2) the exceptional males represent single, double, triple, 4-ple and 5-ple crossover classes. (3) When the exceptional males were mated to y or y-f/ClB females they behaved like ordinary crossover males. Three explanations can be suggested for the production of these exceptional males. (1) ClB is known to exhibit non-disjunction rather frequently. The mother may have been a XXY female and exceptional crossovers between X and Y may have taken place. The very rare occurence of reciprocal crossover classes in the exceptional males may indicate such an exceptional process. (2) The lethal which normally is located at the left break of the inversion may have disappeared and a lethal close to B may have been present. In such a case an exceptional great number of crossovers may have taken place into the inversion and the classes which receive B would receive the lethal too, therefore no B males among the exceptional males. The great number of double and triple crossovers may indicate that the crossovers took place into the inversion. (3) The inversion may have been reinverted in some gametes and the B disappeared at the same time. - It was felt desirable to put this case on record here until a final solution can be found at some time. The writer would be pleased to learn of similar cases and to receive suggestions as to possible solutions.

Brehme, K. S. The 'Minute' condition as a possible effect of a hormone deficiency.

It has been shown (Beadle and others) that v^+ and cn^+ hormones can be utilized by larvae when administered in food, in the form of boiled and crushed bodies of larvae which contain these hormones. In order to determine whether the Minute phenotype results from lack of a hormone present in the wild type, Minute larvae were fed on wild type larval tissue. Food was prepared as follows: wild type larvae were cultured under conditions of optimal feeding; at 84 hours from hatching, they were boiled in distilled water and mashed. Brewer's yeast was added to the amount of 1 1/2% of the weight of the larvae. The mixture was placed with moist filter paper in 4x1 inch shell vials, stoppered with cotton and autoclaved. Eggs from a mass mating of Mw/ca ♂♂

by ca/ca ♀♀ were collected on autoclaved egg spoons (method of Clancy) over a period of 5 hours; they were then immersed in 85% alcohol for 10 minutes and placed in the vials under sterile conditions. Of 30 to 40 placed in each vial, about 15 hatched. The larvae were observed to ingest the boiled larval tissue. At 8-hour intervals, puparia were removed from the experimental vials and placed on moist filter paper in clean vials. The experiment was conducted at 25° C. - Minute bristles and lengthened larval period were taken as criteria of the Minute condition. Of the 82 imagoes obtained, 41 had wild type bristles and claret eyes, 41 had Minute bristles and wild type eyes, the phenotypes expected if the Minute condition were not eliminated by administration of a hormone present in the wild type and deficient in the Minute. The mean length of the larval period of the wild type was 174 hours; of the Minutes, 203 hours. Puparium formation was retarded in both groups, probably due to inadequency of the food. Normally the average difference in pupation time of wild type and Minutes is 42 hours; this difference was greatly lessened under the experimental conditions. However, the Minute larval period is still significantly longer than wild type. - It may be condluded that the Minute phenotype does not result from deficiency of a hormone which is present in the wild type and can be administered by feeding. This result is to be expected from the evidence of somatic mosaics.

Brähme, K.S. Development of eye color in Minutes.

Beadle (1938) reported a change which occurs in the larval period 70 hours after oviposition; larvae removed from food before 70 hours die without pupating, those removed after this time pupate successfully. There is a period just before 70 hours when larvae are sensitive to low food levels; v larvae underfed at this time pupate a day or more later than their normal sibs and produce a small quantity of v + substance. Beadle's hypothesis is that metabolism is altered in starved larvae in such a way as to produce metabolites which are used in manufacture of v + substance. To examine the possibility that in normally fed v larvae a sub-threshold concentration of v + substance is formed and in starved larvae prolongation of the larval period allows time for production of an effective quantity of hormone, Brehme has used Minutes as an agent for prolonging the larval period. Fully fed Minute and non-Minute offspring from the following crosses were compared: Mw/+; bw/bw; v♂ by bw/bw; v/v♀, MFla/+; bw/bw; v♂ by bw/bw; v/v♀ ,bw/bw; v♂ bt Ml^2/bw; v/v♀ , bw/bw; v♂ by Ml/bw; v/v♀ (Minute - brown crossovers were examined in the last two crosses). All flies had colorless eyes. This supports Beadle's hypothesis that a factor other than mere prolongation of development results in production of v + substance in starved larvae. It has also been found, by complete starvation, that the 70-hour change occurs 14 hours later in Mw(larval period prolonged 42 hours) than in wild type larvae (Florida stock); the change is 6 hours later in Ml^2 (larval delay of 12 hours) than in wild type (Oregon-R-C).

Bryson, V. Unspiraled testes in Drosophila melanogaster.

In the course of experiments to determine the modifying action of extreme Minutes, 94 males of the following genotype were obtained: 1(3)39a M^w/Lyra. Of these, 18 showed little or no trace of the genital arch or anal plate, and the anus was imperforate resulting in complete closure of the intestine. Dissection revealed that in such males the testes were either free in the abdominal cavity or attached loosely to the intestine, in either case being oval in shape. The genital ducts were undifferentiated. This stock was maintained for five months, during which time the penetrance of the trait gradually fell off, presumably through the constant selection of fertile males.

Eloff, G. Effects of ultra-violet radiation on crossing-over between y and w in Drosophila melanogaster.

Data so far obtained and involving 75 control and 52 experimental cultures comprising approximately 20,000 flies, indicate that 60 minutes irradiation of heterozygous female pupae by means of a Hanovia Quartz mercury vapour lamp caused a rise in the crossing-over percentage between the genes for yellow and white. However, both controls and experimental cultures yielded high crossing-over values viz. 2.18 and 2.95 which might be due to a slight rise in temperature on the stage of thequartz lamp. - An interesting phenomenon was the high percentage of wing abnormalities of the flies which emerge from the irradiated pupae. For the controls window-glass screens, and for the experimental material vitreosil plate of the same thickness were used. Screens prepared from the wings of the South African locust, Nomadacris septemfasciata, were used to gauge the penetrability of ultra-violet rays through chitin. It was found by spectrographic analysis that a vitreosil plate and screens of 3 wing thickness absorb the wavelengths shorter than 3650° A. Also no wing abnormalities were obtained with screens of 3 wing thickness, whereas 2- and 1-wing screens had correspondingly higher effects. - Another phenomenon observed was that among the y-w crossovers of both controls and experimental material at least 3 shades of red eyes were noticed in males and females. The reason for this is not yet clear. The experiments are continued.

Eloff, G. Mode of attachment of nucleolus to chromocenter in salivary gland nuclei of some Transvaal Drosophilids.

Observations on salivary gland nuclei, especially of Zaprionus and of Drosophila funebris seem to indicate in several cases: (1) thepresence of radial lines of stress on the nucleolus; (2) a conical elevation on the nucleolus probably where the thread was attached; (3) slightly trumpet-like extremities of the connecting thread. These suggest that the connecting thread is of tubular nature.

Poulson, D. F. Effects of Notch deficiencies.

The following Notches have been investigated embryologically to determine the nature of the developmental upset which prevents the appearance of Notch males: N 264-38a, N-8 (Mohr), N 264-19a, N 264-8a, N 264-40, N 264-47, and N 264-34. The embryological upsets are the same in all cases indicating that the locus involved lies within the facet band. - Only at the time of formation of the nervous system does development deviate visibly from normal. There is no separation into superficial cells and neuroblasts, and practically all of the ventral ectoderm becomes part of an abnormal nervous system. This leaves the ventral side without hypoderm. The same is true of the cells on the dorsal side where the supra-oesophageal ganglia arise. Apparently many mesodermal cells also become included in the nervous system. There is little or no differentiation of tissues or structures of mesodermal origin. Mid-gut rudiments, although present, do not unite to complete the mid-gut. Hind-gut and Malpighian tubes are present, but the stomodaeum shows little development. None of the ectodermal derivatives of the anterior end, such as salivary glands or imaginal disc invaginations appear. The germ cells are present in two groups at the normal level of the gonad. There appears to be no gonad envelope. - Subsequent development is entirely abnormal. Although there is differentiation in the hypertrophying nervous system, the distribution of ganglia and tracts is irregular. Part of the hind-gut becomes well differentiated. The

proventricular region of the mid-gut is recognizable. Cellular breakdown is not apparent until some hours after the time of hatching of normal larvae. Mitosis is found after this time. - The all-over effect is the development of ectodermal organs and tissues, and the failure of the others. The hypertrophy of the nervous system is at the expense of the hypoderm.

Spurway, H. and P.A.R. Street. The sex-linkage of witherod in Drosophila subobscura. Witherod was found in the inbred F_2 from a wild fly, where it segregated in 4 out of 8 cultures examined. The phenotype is limited to the ♀ ♀, where the penetrance is between 50-60% after outcrossing, but can be raised by selection to 100%. - Males from such a selected stock were outcrossed to a ♂ stock. Their sons were outcrossed again, and their progeny in turn inbred in pairs. Twenty-one cultures, none containing less than 30 ♀ ♀ were examined and no wi flies observed. If the mutant were autosomal it would be expected to segregate in a 1/4 of the cultures and the probability of observing the result obtained is $(3/4)^{21}$ or 0.0024. Therefore wi is assumed to be due to a mutation on the X-chromosome. - Occasional witherod males have been observed. Either their phenotype is not inherited by their sons, or it is due to an independent semi-dominant autosomal mutation.

Sutton, E. Cytological analysis of In(1)A 99b. In(1)A 99b (Stone), obtained from Texas, has an intercalary reinversion (induced by irradiation) within the limits of the original inversion. Cytological analysis of the salivary chromosomes shows the primary breaks between 1E3.4 and 2A1.2 at the left end and between 19D and E at the right end. The secondary breaks of the reinverted segment lie between 6D1.2 and E1.2 and between 19A3.4 and C1.2. The new arrangement within the chromosome is as follows: Tip to 1E3.4-19D to 19C-6E1.2 to 19A3.4-6D1.2 to 2A1.2-19E1.2 to chromocenter.

Walotzky, E. (See page 72)

Technical Notes

Blanc, Richard. Accurate timing of prepupae and pupae. It has been frequently observed by investigators of temperature-effective periods (TEP) that the TEP of a population is composed of the differing TEPs of the individuals therein (cf G. P. Child, 1935, Gen. 20:127-155). This means that flies of the same chronological age may actually be in different developmental stages. In fact, even with conditions as homogeneous as possible, larvae from eggs laid in the same 2-3 hour period may pupate as much as a day apart. - The difficulty entailed by such a developmental spread may be obviated by selecting the nearest developmental landmark to the putative TEP and dividing the population into more homogeneous groups on this basis. For the study of TEPs in early pupal life, puparium formation and pupation may be chosen as characteristic stages in developmental physiology. The initiation of the prepupal period is indicated by eversion of the spiracles, cessation of motion, and loss of the definitely segmented appearance of the larvae. Young prepupae may be obtained by periodic collections and may be identified in many stocks by the color of the cuticle which is white at first and is still a very light brown at the end of the first hour. - At 25° C, pupation normally occurs at approximately 12 hours after puparium formation, although a considerable variation in time may be found. The beginning of the pupal period is indicated by a number of features, particularly by the disappearance of the large longitudinal tracheae. The writer prefers to use this developmental event as a point

of reference of two reasons. First, there is evidence of a considerable individual difference in length of time of the prepupal stage, which may differ from culture to culture by more than an hour and even shows a noticeable spread within the same culture. Secondly, cultures may be collected en masse in a Petrie dish and be quickly and surely examined at periodic intervals for disappearance of the tracheae.

Brody, George. Making eggs visible on medium used for egg collections. Several methods for making eggs more visible on the surface of the collecting medium in order to facilitate counting and removal of eggs were tried. A transparent medium (Agar 1.5gr., Crystal Clear Karo 15cc., Tap Water 100cc.), the surface of which had been inoculated by means of a camel's hair brush with a fermented molasses suspension of yeast, was used in conjunction with black trays. This had the effect of providing a black background for the white eggs. This method gave high yields only for the first few hours of egg collection. The visibility of the eggs on the surface of the medium was remarkably good. A further advantage was the smooth flat surface of this medium. For longer egg collection periods it was necessary to use cornmeal-molasses-agar-yeast medium. Charcoal added to the medium was not satisfactory; instead vital dyes added in small quantities just before pouring were used to color the medium. Those tried were Neutral Red, Methylene Blue, and Trypan Blue, of which the last was found to be most effective. There was no apparent detrimental effect introduced by these dyes. If the eggs are left on the medium for more than six to eight hours, the chorion becomes colored. This is an advantage in dechorionation of eggs since the egg itself remains white, only the chorion being colored, so that if any of the chorion remains on the egg, it is visible. Where eggs must be left on the medium, the use of a dark molasses in greater proportion, and cornmeal in lesser proportion, will provide a sufficiently dark background.

Brody, George. The use of paper boxes for collecting eggs. Paper boxes are made in the same way as embedding boxes by folding around a 1x1x3 cm. block. One end of the box is made longer to facilitate removal from the shell vials in which they are used. The boxes are dipped in a high melting point paraffin (crude grade serves equally well) and immediately immersed in cold water. In this way several layers of wax may be added. Very little time is required for making these boxes. Eggs may be left to develop in the boxes. Since they cost almost nothing to make, they may be thrown away after using once, and thus cleanliness is ensured for every batch of eggs.

Green, M. and E.M. Slider. A method for mounting the female reproductive organs of Drosophila. The female is placed in a drop of Ringer's or physiological salt solution on a slide and the genitalia dissected with a pair of fine needles. After the entire tract is removed from the abdomen of the female, blot the excess salt solution. Place one or two drops of 70% alcohol on the genitalia on the slide. This causes a coagulation of the organs. Occasionally the ovaries clump together; if so, they may be carefully separated with the dissecting needles. After 15-20 seconds, add a drop of 85% alcohol to the ovaries, followed by 95%, and then absolute. At this stage, carefully add a drop of colloidin (in absolute alcohol and ether) to the slide so that it runs under the genitalia. Then immerse the slide in 70% alcohol. This

coagulates the colloidin and thus fixes the genitalia to the slide. After about 10 minutes in the 70% alcohol, the slide is transferred to dilute eosin or "fast green" (in 95%) for 2-5 seconds. This stains the transparent ducts of the tract. (If a water stain is to be used, the slide should be run down to water from the 70%). Then pass the slide first into carbol-xylol for 30-60 minutes, then into xylol for 30 minutes, and mount in balsam or diaphane. The preparations should never be placed in absolute alcohol after the colloidin has been added as this would dissolve the colloidin. This method enables one to make permanent preparations in a minimum time of 2 hours. The method is applicable for making preparations of the male reproductive tract although we have not made many preparations.

Kodani, M. Modified smear method for salivary chromosome preparation

The lack of proper staining capacity and the inability to render chromosomes flexible enough so they will spread out on crushing are the main difficulties with poor aceto-carmine stains. The main source of such defects is often a loss of fixing power of acetic acid when it has been boiled with carmine powder. Fixation of the chromosomes with acetic acid prior to the application of stain has been found to remove the defects. The best way is to dissect salivary glands in Ringer's solution containing a small amount of acetic acid (100 cc of Ringer's solution + 4-5 drops of glacial acetic acid). An additional advantage of dissecting the glands in the aceto-Ringer mixture is that the fat attached to the glands becomes fragile and hence very easily removed. - After the fat is removed, the glands are immediately transferred to the stain. From five to fifteen minutes of staining usually suffices; the exact time of staining has to be determined for each new batch of stain. After the glands have been stained sufficiently, they are transferred to a slide; the stain is then properly removed and a clean 45-50% acetic acid solution is flooded on the glands. All undesirable particles which may be present in the stain will be thus removed, and the glands are ready to be crushed. - In preparing permanent slides, an additional staining may be done in order to improve the smears. After dehydration in an alcohol chamber over night, the cover-glasses are taken off and both the slides and cover-glasses are placed in absolute alcohol containing a small amount of fast green stain (50 cc of absolute alcohol + 3 drops of 0.5% fast green in 100% alcohol). The slides and cover-slips are left in the solution for about one minute and then mounted in euparal. The smears thus treated show the cross-bands stained a bluish-red color while the material around the chromosomes has a greenish tinge. By means of this additional staining the small bands which are stained only faintly with the carmine are made darker and more visible.

McQuarrie, Agnes. Raising the larvae.

The culture that has been used in this study and which has proved to be satisfactory was the cornmeal-molasses-agar media (see Sturtevant in "Culture Methods for Invertebrate Animals", pp. 437-445). Powdered brewers yeast was added to the media and also sprinkled upon the moist paper toweling. An additional supply of yeast is added to the culture when the larvae are about half grown. - To secure the largest larvae, the culture medium must not be allowed to get too old. - The best results in larvae production were found when only a few flies, 8 to 12 adults, were released in a jar. - The bottles are set in the cold room (12-15° C.) where early growth is started. The culture bottles were left in the cold room for two weeks, or until the larvae had begun to work their way out of the medium and to the sides of the jar. - The bottles were then transferred to the ice chamber of the ice box,

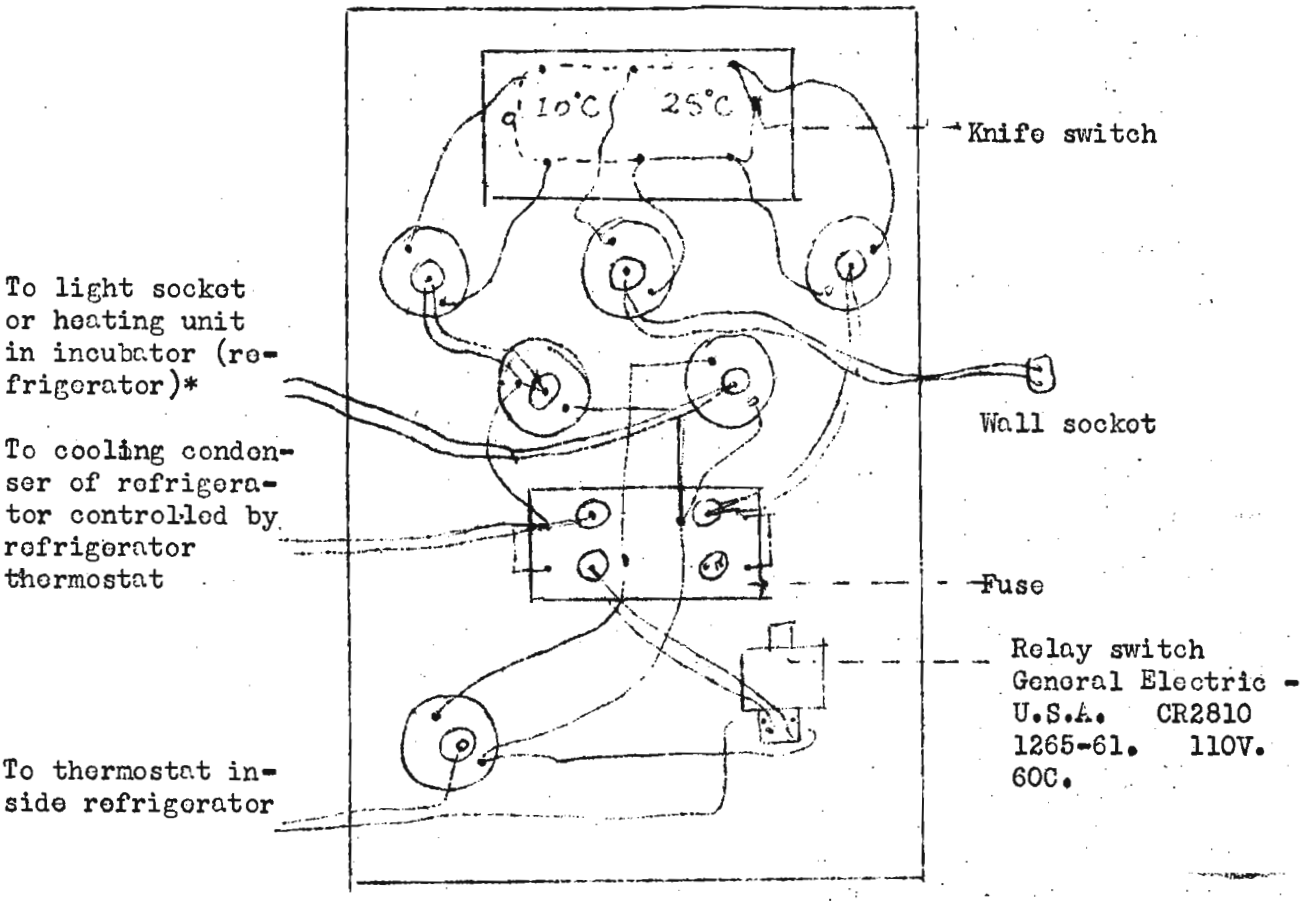
and it is here that the larvae undergo the remainder of their growth, usually about 5 to 10 days. Care must be taken that the cotton plugs do not touch the ice, as water will be absorbed and will inundate the medium and drown the flies. - The work was done in an old-fashioned ice box, because we had no electric refrigerator. I believe much better results could be obtained by raising the flies in a refrigerator where the temperature could be kept constant. The temperature in the ice chamber was kept as close to 5° C. as possible.

Palmer, Louise. A spoon for Drosophila egg collecting.

Pyralin, a product of the Dupont Co., has proved a very effective substance for making spoons used in Drosophila egg collecting. The grade used is about 3 mm. thick and is practically transparent. It may be bought in large sheets. Spoons are cut from the material with scissors in any desired shape to fit the culture bottle or containers for laying females. The spoons used in this laboratory are cut with handles which extend out past the cotton stoppers of the bottles or vials. Agar may be added to the spoons with a bulb pipette or funnel with rubber tube and clamp. If carefully done the mass adheres to the smooth surface and does not run over the edges. - This material has the advantages (1) that it transmits light and may be placed directly on the stage of the microscope for counts or observation, (2) that the spoons containing eggs may be dipped in water, alcohol, or other sterilizing agent, (3) that the eggs may be easily counted and divided into portions by cutting the agar and lifting out the desired number with a scalpel or section lifter, (4) that the food does not stick to the spoons but does adhere sufficiently for average manipulation, and (5) although the spoons may not be boiled they are easily ste ilized in 70% alcohol.

Quisenberry, J. H. and James E. Greer. Conversion of refrigerator to Drosophila incubator.

In addition to our regular cool-room, we use in another room an auxiliary incubator designed by Dr. E. P. Humbert. Such a unit may be quite useful to schools which wish to keep stocks through the summer for use during the regular school session without the expense of operating a large cool-room, for small laboratories, or, as in our case, as an auxiliary unit when work is also done in another room. A large General Electric refrigerator was so wired with thermostats that it can be used as a 25° C. or 10° C. incubator. The regular controls and thermostats of the refrigerator provide the latter temperature. By simply throwing the switch and defrosting the freezing unit, the box becomes a 25° C. incubator. A simple wafer or other thermostat can be used inside of the box for the 25° C. The wiring arrangement is shown by the accompanying diagram.



*A 40 or 60 Watt globe may be used. This does not burn when switch is on 10° C. side.

Shipman, Emmet E. N-butyl technique for dehydrating Drosophila larvae

Excellent sections of larvae may be obtained by using the n-butyl alcohol technique described by K. A. Stiles, 1934, Normal butyl technic for animal tissues with special reference to insects., Stain Tech.9:97-100. Larvae were relaxed in hot water before being placed in the fixing agent. Gilson's Mixture (nitric, acetic, corrosive, alcohol) gives good results, but other fixitivies may of course be used. For dehydration, the writer used Stiles' mixtures of n-butyl and ethyl alcohols as recommended. There is a wide time tolerance for tissues in the fluids of the n-butyl series so one can arrange a schedule of changes to suit his convenience. Larvae may be stored in pure n-butyl alcohol. The writer has obtained very good sections from larvae stored for two years in n-butyl. Infiltration with paraffin must be thorough and must be slowly done. It is best to puncture the chitinous larval skin while the larvae are still in n-butyl in order to secure good infiltration when paraffin is added. The instructions given by Stiles may then be followed during the infiltration. The writer of this note will be glad to send a more complete description of the technique upon request.

Trent, S. C. Egg Collector.

For experiments requiring the observation of large numbers of eggs the following modification of the method devised by M. Schwoitzer in DIS-4 ('35) has been found an improvement. It is based upon observation that the flies prefer to lay their eggs in

crevices. - After the food cake of standard cornmeal agar has hardened on the paper cap, one additional drop of the unsolidified medium is dropped upon it forming a smaller second layer at the center, with the desired cul-de-sac between. After the flies have had an opportunity to lay, the removal of this layer readily exposes the eggs in a localized area and obviates the loss of time usually spent in searching for them.

News Items

Buzzati-Traverso, A. The establishment of a "Drosophila wild stock keeping center" in Pavia, Italy.

Last April the following circular was sent, together with the first list of available stocks of Drosophila species, to all the European Drosophila Laboratories (according to DIS-11) and to several other European genetical and zoological institutions: "The increasing interest in work on the population-genetics of the genus Drosophila in Europe makes it necessary to install a stock-keeping-center, where all wild strains of Drosophila species from different places should permanently be kept at the disposal of all Drosophila geneticists and zoologists interested in Drosophila systematics. As a matter of fact, those who collect flies in nature are mainly interested in one particular species or even in a certain group of geographical strains, and are not interested in keeping other ones which they accidentally catch. The wild stock-keeping-center should provide means to avoid such waste of very valuable material, which otherwise would undoubtedly be lost. On the other side, it would provide a source of systematical information and test material for Drosophila species in Europe. Since the Instituto in Pavia has under way systematical work on Drosophila species, and since it is directly connected and cooperating with the Berlin Institutes (Genetische Abteilung des Kaiser Wilhelm Instituts in Berlin-Buch, and Kaiser Wilhelm Institut fur Biologie in Berlin-Dahlem) which are also engaged in population genetics of various Drosophila species, the undersigned have agreed in establishing such stock-keeping-center in Pavia. The importance and usefulness of such a center for Drosophila studies will necessarily depend on the degree of active cooperation of European geneticists in collecting flies". Signed by: H. Bauer - A. Buzzati-Traverso - G. Gottschewski - C. Jucci - N. W. Timoféeff-Ressovsky. The stock lists which appear in this issue of DIS include all the different stocks received during the summer.

Buzzati-Traverso, A. Work on the population genetics of a Drosophila species belonging to the obscura group.

Since the Fall of 1938 work has been under way on the population genetics of a so-called Drosophila obscura. Such a fly has 5 rod-shaped and 1 dot-shaped chromosomes. The exact taxonomical determination of such species cannot be made for the time being, since the whole systematics of European Drosophila needs revision. By inbreeding fertilized females caught in nature a number of mutations have been obtained. Work is going on to get marked chromosomes and to make the maps of the salivary gland chromosomes. A very high concentration of heterozygous inversions seems to be present in the geographically different lines so far examined.

Buzzati-Traverso, A. "Scientia Genetica" - A new Genetics Journal for Latin countries.

Last April there appeared the first issue of the quarterly "Scientia Genetica". In this journal, whose Director is Dr. C. Jucci and the author of this note the editor, papers of Latin authors or of non-Latin authors, but written in a Latin language, are being published. A number of articles on Drosophila have already appeared. (See current bibliography).

Frolova, S. A correction

Since 1935 I have been working with Drosophila repleta. The culture was obtained by the Institute of Experimental Biology, Moscow, from a Laboratory of one of the Institutes of the United States, America. The comparison of the flies from this culture with Drosophila hydei, sent to the Institute of Experimental Biology by Professor Kikkawa from Japan, revealed neither morphological differences nor differences in the chromosome complex. - A cross, carried out not long ago, showed a complete identity of the salivary gland chromosomes in the flies taken from these cultures. Therefore, it became apparent that a culture of Drosophila hydei was erroneously sent to us instead of Drosophila repleta. - Thus, in all my works (Nature, No.3460, vol.137, Biologichoskij Zhurnal, vol.v, No. 2, 1936; Nature, No.3579, 1938; Nature, No. 3590, 1938; Bull. de Biol. et de médecine expérimentale, vol.VI, No.2, 1938; Biologichoskij Zhurnal, vol. VII, No.4, 1938) the cytological data described for Drosophila repleta belong in reality to Drosophila hydei. - A similar misunderstanding has also taken place with a culture of Drosophila robusta sent to us from the same Laboratory of the United States, America and erroneously termed Drosophila sulcata. This error was discovered in 1937 when, from the same laboratory, we received the culture of Drosophila robusta. In my two works published in 1936 (Nature, vol. 138, No.3483, 1936; Bull. de Biol. et de médecine expérimentale, vol.II, No.2, 1936) the cytological data on Drosophila sulcata belong to Drosophila robusta.

Personal News

The following is a section taken from the letter written by Boris Ephrussi on October 31, 1939: "For the time being I am out of genetics - there is practically nothing left of my laboratory, since all my male co-workers are enlisted and the girls gone. I can only keep some of my fly stocks, but it would be impossible to send flies to anybody; maybe this should be stated in DIS, as well as the following: our main worry is now to keep in contact with what is going on in the field we were working in before the war. Difficulties in keeping up with the literature are great and will gradually increase. We all will be grateful, therefore, to the American colleagues for sending reprints still more generously than before. Thanks to all in advance! Please send also, as before, 2 copies of DIS. I hope we will use them some day again. This should show you that in spite of the profound sadness, with which we think of all the projects we had to abandon, we remain greatly optimistic in front of the present situation".

A note received from Timofeeff-Ressovsky indicates that the work in his laboratory is progressing normally with a somewhat reduced staff.

Buzzati-Traverso is struggling to keep up with his research at intervals while on leave of absence from military duty.

B. Slizynski and Mrs. Slizynska came to Edinburgh to attend the Genetic Congress and were not able to return home. They are now working at the Institute of Animal Genetics at Edinburgh.

Additional Research Notes

Waletzky, E. Interaction of bifid with other wing mutants.

Previous work has shown the existence of a disproportionate combination effect of bifid with various Beadex allels and with scalloped. Qualitative examination indicates that bifid does not interact disproportionately with miniature or radius interruptus. Disproportionately small wings are formed in the bifid clipped and the bifid vg^{nipped} combinations. No effect of bifid on $vg^{vestigial}$ was detectable. The embryonic development of these wings is being studied.

Waletzky, E. Manifold effects of Wrinkled.

Reduced wings and abnormal black pigment spots on the head are manifold effects of Wrinkled. The manifestation and the penetration of these two characters are correlated in + W/++ flies. The smaller and more abnormal the wing, the greater the frequency and intensity with which the pigment appears. When the wing is practically normal in size and shape, abnormal pigment is absent. These relations also hold in D +/+ W and D^3 +/+ W flies, which frequently have practically normal wings. However, the penetration of the pigment character is not increased in D +/+ W flies whose wings are reduced by the presence of miniature or dumpy. W/W flies, whose wings are very greatly reduced through the presence of $vg^{vestigial}$, show no pigment. Similarly the penetration of the pigment character is very low in W/W flies whose wings are greatly reduced through the presence of vg^{nipped} or $Beadox^J$. Further combinations are now being studied for their effect on these correlations.