

rearrangement. Among such 'eversporting displacements' found by Muller are those producing the 'mottled' alleles of white and those producing the 'variegated' alleles of brown. In the attack on the problem, raised by Muller, of the cause of this mosaic manifestation, a step forward was taken by Gowen and Gay (1933) in their finding that the presence of an extra *Y*-chromosome suppresses most of the mosaicism in the case of the mottled alleles of the white locus. This finding was confirmed, and was extended to the 'variegated' series (all probably connected with the brown eye colour locus) by Dubinin and Heptner (1934), Dobzhansky and Schultz (1934) and Glass (unpublished). We now find that an extra *Y* exerts a similar effect in suppressing most of the mosaicism of the yellow and achæte loci in the case of scute-8. This is additional evidence of the latter mosaics having a similar cause.

We have now investigated the influence of separate parts of the *Y*, and of the so-called inert region of the *X*-chromosome. We find that extra pieces of the *X*-chromosome, if they include the so-called inert region, exert an influence similar to that of the *Y* on the mosaicism of scute-8. This finding, which is contrary to the results reported by Dubinin and Heptner for brown, is in favour of the homology of the inert region of the *X*-chromosome with the *Y*-chromosome, already proposed on other grounds (Muller and Painter, 1932). The similarity of the *Y*-chromosome and the inert region of the *X* in their action on mosaicism is moreover confirmed by the following facts. A previous investigation (Noujdin, 1935) has shown the scute-8 chromosome contains genes which decrease the frequency of mosaicism and that these genes act not only directly, but also maternally, that is, through the cytoplasm of the egg. This maternal transmission also holds in the case of the effect produced by the *Y*-chromosome (and its separate arms) and by the inert region of the *X*-chromosome. Further, our investigation of two other mosaic strains of *Drosophila* (yellow-3*P* inversion involving the yellow locus and the probable brown allele 'A' of Dubinin and Heptner) shows that, though each of them is characterised by certain peculiar features, both are influenced in a similar manner by the *Y*-chromosome and (in the case of yellow-3*P* at least) by the inert region of the *X*, and in both strains this influence is not only direct, but also maternal. It is probable that the same would be found to apply to other 'eversporting displacements' such as those of the 'mottled' (white locus) series.

It is interesting to note that in both the *X*-chromosomes studied (scute-8 and yellow-3) and presumably also in the case of 'A', one of the breaks occurred in the inert region. It has been remarked both by Offermann (1935) and by Muller (1935) that in all cases of 'eversporting displacements' so far known, one of the loci of breakage was in the inert region, and they believe that this probably depends on a peculiarity of the position effect of this region. Conversely, a study of 20 deleted *X*-chromosomes, where one of the breaks likewise occurred in the inert region, has shown that most of these are connected with mosaicism. Here also mosaicism is inhibited by the *Y*-chromosome (both directly and maternally).

These results support the view that most cases of mosaicism accompanying chromosome rearrangement fall into the same general category of phenomena—'eversporting displacements'. They also provide

additional evidence that the problem of such mosaicism is connected with the general problems concerning the position effect and the nature of 'inert regions' of chromatin.

N. NOUJDIN.

Institute of Genetics,
Academy of Sciences,
Moscow.

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Physiological Races of *Lucilia sericata*, Mg.

IN a recent communication¹ under this title, Mr. A. C. Evans states that "Ratcliffe² has recently suggested that there may possibly be two physiological races of *L. sericata*, as the length of the pupal period of this insect at 32° C. in Scotland is 5.4 days while in France at the same temperature it is 8 days". The latter figure was obtained by Ratcliffe (as he states) from an earlier publication of mine³ where I was quoting Cousin⁴. Evans claims that my quotation is inaccurate and should be 4.9 days, but on further reference to Cousin's work⁴, I find that it is perfectly correct.

Evans, from the references given in his communication, has misquoted me as referring to a later publication of Cousin⁵, but a perusal of my paper³ shows clearly that I was quoting from Cousin's earlier work⁴. Her later account⁵ must have appeared while my work was in progress, and it is in this that she gives a figure of 116 hours for the pupal period of *L. sericata* at 33° C.

I wish, however, to agree with Evans in deprecating the "postulation of physiological races on this type of data", if, in fact, Ratcliffe's phrase "may possibly suggest" can be regarded as serious postulation. For, with only a single factor controlled, there is often a wide range in the duration of the different stages of development of *L. sericata*, and even with more than one factor controlled the range in duration is sometimes appreciable (Wardle⁶).

W. MALDWIN DAVIES.

University College of North Wales,
Memorial Buildings, Bangor.
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¹ NATURE, 137, 33 (Jan. 4, 1936).

² Ann. Appl. Biol., 22, 742 (1935).

³ Ann. Appl. Biol., 21, 267 (1934).

⁴ C.R. Soc. Biol., 101, 788 (1929).

⁵ Bull. Biol. France, Belg., Suppl. 15 (1932).

⁶ Ann. Appl. Biol., 17, 554 (1930).

Skatole as a Growth-Promoting Substance

INDOLE has been described as being inactive by Thimble and Koepfli¹, but skatole (β methyl indole) was apparently not tested. Pure skatole was obtained from B.D.H. and was twice recrystallised to remove possible impurities. Bending experiments were performed using oat coleoptiles (Argentine VI). Skatole was applied in gelatin blocks 1 mm.³; the concentration used was 1×10^{-4} in water. Gelatin and water were used for controls. Permanent records of the experiments were made as shadow photographs.

Taking curvature away from the side on which the blocks were placed as positive, of a total of 70 coleoptile pairs used, those under the skatole blocks showed 662° positive curvature and 20°