Thus the lack of optomotor reaction in white-eyed mosquitoes, confirms the conclusion, drawn from the study of the behaviour of white-eyed *Drosophila* mutants, that the pigments isolating the ommatidia in an apposition eye are necessary for the perception of contours and visual movement. A description of the behaviour of white-eyed drones[5] further strengthens this conclusion. As reported by Gilchrist and Haldane[1], white-eyed *Culex molestus* mate and breed successfully. Therefore the conclusion can be drawn—as it can for *Drosophila melanogaster* and *D. pseudoobscura*—that at least under laboratory conditions mating in this mosquito does not depend on the partners seeing each other.

In *D. subobscura* this seems necessary[6], as this species does not breed in the dark and as its white-eyed mutant cannot be bred at all in the homozygous condition.

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Sweat Glands

THE following observations on the sweat glands in animal skins seem worth recording.

Cattle skin. In the course of examining a number of ox-hide sections several years ago it was noted that the duct of the sweat gland at some point came to lie between the *arrector pili* muscle and the sebaceous gland. This has recently been confirmed in calf-skin (shown in Fig. 1, from a frozen section stained with Heidenhain's hæmatoxylin) in which the actual cross-over of the muscle and duct was observed. The gland (*a*) narrows into the duct below the insertion of the muscle into the hair follicle (*b*) and the duct immediately traverses (at (*c*)) the base of the muscle and lies for a short distance between it (*d*) and the sebaceous gland (*e*). It follows that conditions, such as cold, which stimulate the contraction of the muscle, with the consequent action of expelling sebum from the sebaceous gland, will also bring about constriction of the duct of the sweat gland, so preventing excretion from the gland.

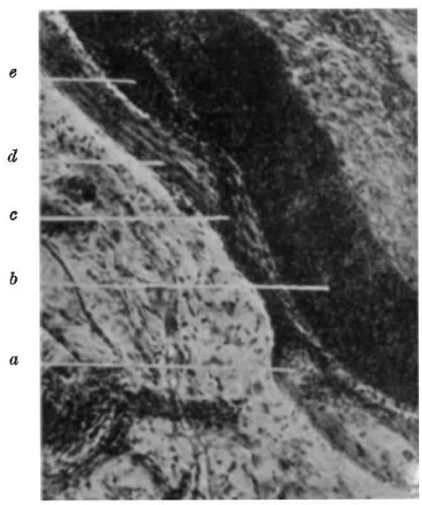

Fig. 1. (× *c.* 110.)

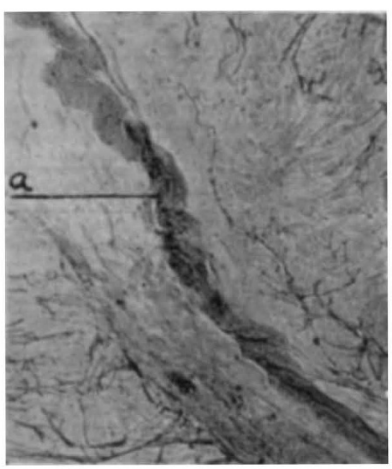

Fig. 2. (× *c.* 64.)

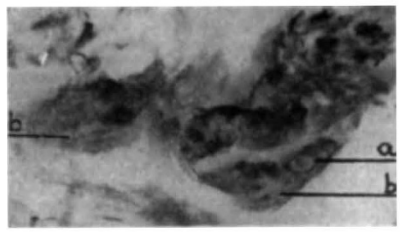

Fig. 3. (× *c.* 420.)

Dog skin. Sweat glands were observed in the butt, shoulder and belly regions of two mongrel dog skins, which also contained very large amounts of fat among the corium fibres. The coiled duct (*a*) is shown in Fig. 2 of a frozen section stained with Weigert's elastin stain. Some details of the gland are shown in Fig. 3 from a paraffin section stained with toluidine blue; *a* indicates a cubical epithelial cell and *b* smooth muscle cells.

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Reaction of Nucleic Acid to Aceto-carmine

THE non-stainability of many plant and animal chromosomes toward the Feulgen reagent[1] after prolonged hydrolysis with *N* hydrochloric acid at 60° C. has recently also been demonstrated in the salivary gland chromosomes of *Chironomus*[2]. Since the Feulgen reaction and aceto-carmine staining are both used for the demonstration of nucleic acid within the chromosome, it would be of interest to know whether acid hydrolysis will also cause the chromosomes to behave negatively toward the aceto-carmine dye. From the experiments thus conducted it was found that in the early period of hydrolysis (generally after 3–5 min.) the salivary gland chromosomes stained with aceto-carmine more distinctly than those unhydrolysed controls, due probably to the removal of other stainable components surrounding the chromosomes. This strong stainability was not changed within fifteen minutes of hydrolysis. Now, if the duration of hydrolysis exceeded this upper limit, a weaker staining capacity of these chromosomes toward the aceto-carmine dye would result; and finally they might reach a stage practically unstainable if hydrolysis was allowed to continue for 25–30 minutes. This means that the staining reaction of salivary gland chromosomes toward the aceto-carmine dye after hydrochloric acid hydrolysis was entirely parallel to that toward Feulgen reagent.

On the basis of these preliminary findings, the staining reaction of nucleic acid to aceto-carmine has been studied by experiments *in vitro*. A saturated solution of yeast nucleic acid was prepared, and into each of two test tubes 4 c.c. of this solution was poured. To the first tube 1 c.c. aceto-carmine dye was added; a red precipitate formed almost instantaneously. To the other 1 c.c. 45 per cent acetic acid was added (to obtain the analogous acid strength of aceto-carmine dye); no precipitation was observed. The precipitate produced by mixing aceto-carmine and nucleic acid solution was insoluble in water and acetic acid but readily soluble in mineral acids such as hydrochloric, sulphuric and nitric, giving a clear red solution.

The next point which we investigated was the reaction between some proteins and aceto-carmine. Three aqueous protein solutions: 1 per cent gelatine, egg albumin diluted (1 : 3) and saturated casein solution, were used for this purpose. 4 c.c. of each of the above three protein solutions were poured into three separate test tubes, and to each of them 1 c.c. of aceto-carmine dye was added. In the case of gelatine and egg albumin, the resulting mixture was a transparent red solution. In the case of casein, we obtained a more or less turbid one; this turbidity was not cleared up by the addition of mineral acids. The above reaction was repeated with gelatine and egg albumin solutions containing nucleic acid. 6 c.c. of the gelatine and 6 c.c. of egg albumin solutions respectively were shaken with 2 c.c. of saturated nucleic acid solution to ensure a thorough mixing. These mixtures, while turbid in the first instance, were finally all perfectly clear solutions. To 4 c.c. each of these mixtures, 1 c.c. of aceto-carmine dye was added. Turbid suspensions of fine precipitate were obtained. These precipitates, like those formed in the reaction between nucleic acid alone and aceto-carmine, were soluble in mineral acids. This indicates that the simultaneous presence of proteins, like gelatine and albumin, in a reacting mixture does not interfere with the reaction between nucleic acid and aceto-carmine dye.

The staining reaction of chromosome thymo-nucleic acid *in situ* as well as that of yeast nucleic acid *in vitro* clearly demonstrates that nucleic acid has, in general, a strong combining affinity with the dye aceto-carmine. The nature of the compound thus formed is unknown, but presumably it is combined through a salt-like linkage. The non-