

REVIEW

STUDIES ON THE COMPOUND EYES OF LEPIDOPTERA. 1. ON THE COMPOUND EYES OF BUTTERFLIES, ESPECIALLY ON THE PSEUDOPUPIL AND ITS MEANING TO THE PHYLOGENY OF SPECIES; 2 ON THE MORPHOLOGY AND FUNCTION OF THE COMPOUND EYES OF HESPERIIDÆ. By Nobumasa Yagi. *Journ. Faculty Textiles and Sericulture, Shinshu Univ.* (Ueda, Japan), vol. 1: pp. 131-173, 6 pls. (1951); no.3: pp. 29-41, 2 pls. (1953).

The view of Prof. YAGI is that the structure of the compound eye gives valid evidence for relationships of the various groups of the Lepidoptera, evidence comparable to that from the genitalia or wing-veins. He found that the "pseudopupil" visible in the eyes of living butterflies expresses the subsurface structure, but in the Hesperiidæ, Papilionidæ, and most Lycenidæ the pseudopupil is masked by pigment.

The eye of Hesperiidæ is reported to be very different from that of the true butterflies and from that known for moths; it is said to be similar to the eye of diurnal Sphingidæ. Structurally, the hesperiid eye is found to be of the superposition type found in nocturnal insects, in which light entering one ommatidium eventually stimulates receptors in adjacent ommatidia. But functionally the Skipper eye is said to be of the apposition type; the crystalline cone is pointed proximally, so that light passing through it is concentrated on the end of the rhabdome and does not pass to other ommatidia. Because of these distinctive features, YAGI believes the Skippers must be classified as a third suborder, "HETERHOPALOCERA", standing apart from the Heterocera and Rhopalocera. He rejects KIRI(KOFF'S view of close affinity with the Thyrididæ.

YAGI believes that "the origin of [a] group or species starts at first from the difference of [the] sense organ which perceive[s] the mate". Since species-recognition during courtship in butterflies seems to come largely from visual symbols, he supposes that the origin of species in butterflies begins with changes in eye structure!

C. L. REMINGTON, Osborn Zoological Lab., Yale University, New Haven 11, Conn., U.S.A.

A PERMANENT METHOD OF LABELING SLIDES

In the preparation of genitalic slides in the past I have found that one of the hazards that presents itself occasionally is the loss of the data on a slide label or the loss of the label itself because of defective glue or some other accident. Recently Professor ELSON S. BARGHOORN of the Harvard University Herbarium has shown me a method by which the permanency of the labeling on a slide may be practically guaranteed.

First of all a thin solution of Damar or Balsam in Benzol is made. Since Damar and Balsam are very viscous a solution of the proper consistency will be one in which this viscosity has been greatly reduced so that the solution flows quite freely. A thin layer of this solution is then applied with a camel's hair brush to the portion of the slide to be labeled. After the painted portion has been allowed to dry for several minutes it can be written on with India Ink. I find this surface far superior to that of most commercial brands of paper slide labels for writing, since the ink will not run, and individual letters stand out with remarkable clarity.

The next part of the method is the one which insures the permanency of the label. It merely consists of painting the labeled portion of the slide with a varnish sold under the trade name of Tufon #74. This varnish is prepared by the Brooklyn Varnish Company, and its virtues, together with those of related compounds, are fully discussed in a paper by Professor BARGHOORN (*Science*; 106:299 1947). When the varnish had dried it forms a very hard coat that is impervious to the great majority of ordinary laboratory reagents. The one precaution that must be observed in using this varnish is to soak instruments which have been immersed in it in Xylol before it hardens. Once the varnish has become hard it is no longer soluble in Xylol and is exceedingly difficult to remove.

N.W. GILLHAM, Biological Labs., Harvard University, Cambridge 38, Mass., U.S.A.