

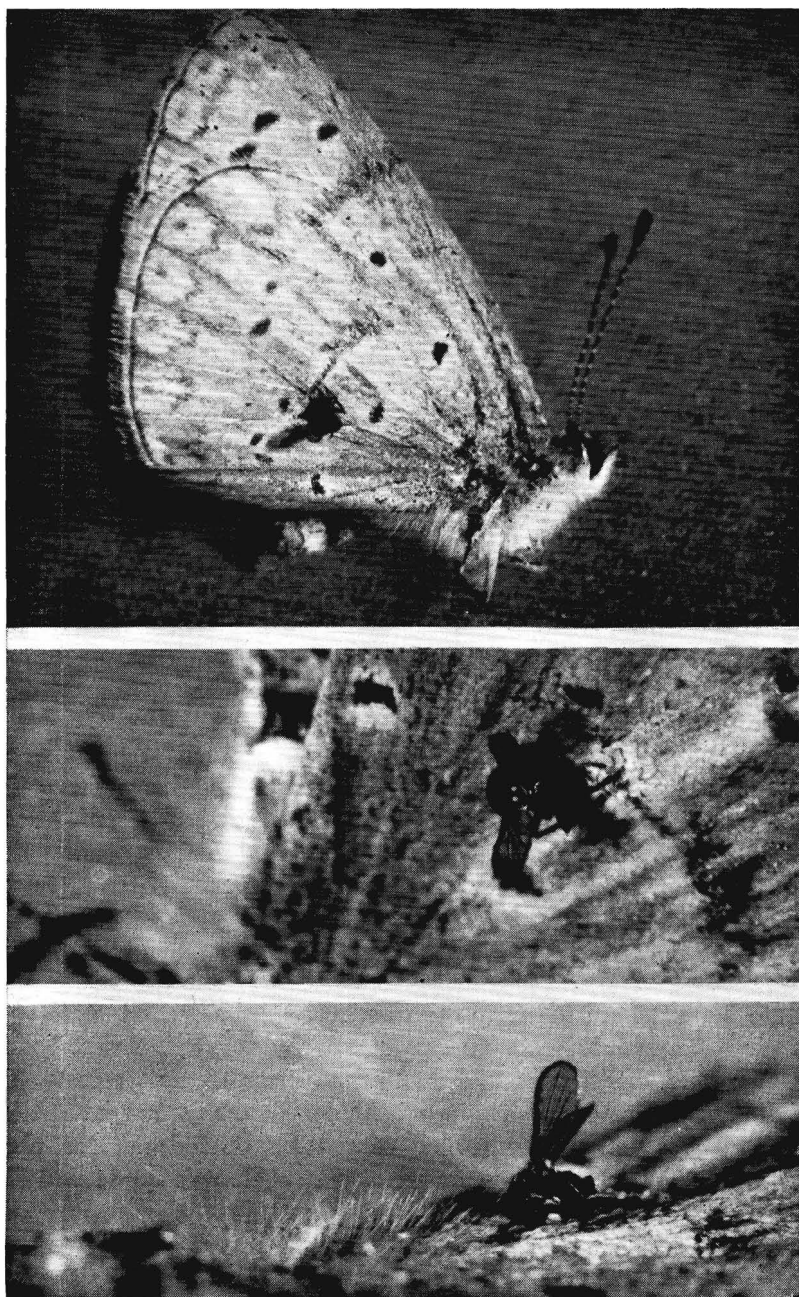
A BITING MIDGE ECTOPARASITIC ON ARIZONA LYCÆNIDS

by PAUL R. EHRLICH

On 21 August 1961, I was using a Questar telescope to observe individuals of *Celastrina argiolus* (= *Lycænopsis pseudargiolus*) sucking moisture from damp spots in the road running through the South Fork of Cave Creek (Chiricahua Mts., Cochise Co., Arizona, 5200 feet). Two small flies were seen to alight on the ventral surface of the hindwing of an individual under observation, and when the butterfly was carefully collected with forceps one stayed in place, while the other flew off. The fly remained attached while the butterfly was killed in a cyanide jar, and it was therefore possible to obtain the accompanying photographs of the parasite *in situ*.

Dr. W. W. WIRTH, of the U. S. Department of Agriculture, has identified the fly as *Forcipomyia* (*Neoforcipomyia*) *baueri* Wirth, a member of the dipterous family Ceratopogonidæ (=Heleidæ) which is well known to most of us through the activities of the members which attack man (known variously as punkies, no-see-ums, sand flies, all-jaws, etc.). *Forcipomyia baueri* was described from a series of specimens taken by D. L. BAUER from the underside of the wings of *Callophrys* (*Mitoura*) *siva* and *Philotes enoptes* on Mingus Mountain, Yavapai Co., Arizona. The only other record which has come to my attention of a *Forcipomyia* attacking a North American butterfly is that of *F. mexicana* Wirth attacking *Pyrrhogyra otolais* Bates (Nymphalidæ: Nymphalinæ) in Mexico (collected by BAUER). WIRTH's (1956) excellent paper on biting midges ectoparasitic on insects shows exotic ceratopogonids to be quite catholic in their tastes, with attacks recorded on *Pieris* (Pieridæ, Pierinæ), *Eurema* (Pieridæ, Coliadinæ), *Danaus* (Nymphalidæ, Danainæ), *Morpho* (Nymphalidæ, Morphinæ) and *Helicopsis* (Lycænidæ, Riordinæ).

Ceratopogonids also attack larval butterflies, adult and larval moths, and a wide variety of other insects. In all cases they are presumably "bloodsuckers" (ingest the hæmolymph). Many aspects of the relationship between the ectoparasitic midges and lepidopterans deserve study; it would be especially interesting to know the degree of host specificity displayed by the midges. Lepidopterists are urged to make detailed observations on any observed attacks, and to submit the flies to Dr. WIRTH for identification.



Top: *Forcipomyia baueri* on ventral surface of right hindwing of *Celastrina argiolus*. Middle and bottom: close-up views of the midge. [Photos by M. A. Mortenson.]

I would like to thank Dr. W. W. WIRTH for identifying the midge, and Mr. MARTIN A. MORTENSON for taking the photographs. This work was done while the author was at the Southwestern Research Station of The American Museum of Natural History, and was supported by Grant No. G-14740 from the National Science Foundation.

Reference

Wirth, Willis W., 1956. New species and records of biting midges ectoparasitic on insects (Diptera, Heleidae). *Ann. ent. soc. Amer.* 49: 356-364.

Div. of Systematic Biology, Stanford University, Stanford, Calif., U. S. A.

GUIA PARA EL ENTOMOLOGO PRINCIPIANTE. [Guide for the beginning entomologist; in Spanish.] By Kenneth J. Hayward. 1961. 168 pp., 7 pls. Instituto Miguel Lillo, Universidad Nacional de Tucuman, Argentina, *Miscelanea*, No. 22. Available from the Instituto for \$3.00 USA.

This is a manual of entomological procedure aimed at beginners in the study of insects. These are discussions of the morphology and classification, of collecting techniques, and of the orders of insects. Professor HAYWARD recognizes 34 orders. This is a larger number than seems ideal in the light of recent work, and especially good grounds exist for reducing to infra-ordinal status his Phasmida, Diploglossata, Megaloptera, and Raphidiodea. Probably the Isoptera should stand next to the Blattaria, and in the Apterygota the Collembola should be listed first (or better eliminated from the Insecta), Protura second, Entotrophi third, and Thysanura last; Thysanura are by far the closest to the Pterygota, and Collembola and Protura by far the most remote. But these old classificatory points are common to many current general texts, and the work under review cannot be singled out for them. Spanish-speaking insect collectors needing a beginner's guide will find this work valuable.

CHARLES L. REMINGTON

Dept. of Biology, Yale University, New Haven, Conn., U. S. A.