

As it seemed from the description that the species of this genus were distinguished largely by color, discussion followed in regard to the taxonomic value of color. Dr. Gill spoke of the great variation in the value of color in different groups of animals. In birds, for example, the color seems to be very constant, while in certain mammals it is very variable in the same species, although the modern school of mammalogists are coming to use color variations as specific. With shells there is great color variation. Dr. Dyar said that in some groups of moths the color was variable within specific limits. Mr. Schwarz said that in beetles the value of color differed in different groups. In the Cicindelidæ there is considerable variation, but it follows a definite law as pointed out by Dr. Horn. In the Coccinellidæ and Chrysomelidæ, many species are very variable, but there the law of variation is obscure, while occasionally species may occur which are perfectly constant in color. Mr. Ashmead said that the wing pattern is of considerable importance in the classification of the parasitic Hymenoptera. In such genera as *Perissopterus*, *Decatoma*, *Cerapterocerus*, *Eusemion*, *Chiropachys*, *Habrolepis*, and many others, the color pattern of the wing is of generic value. Dr. Gill said that most naturalists refused to use color in a generic sense, but some, like Seebohm in the Turdidæ, have used it extensively. Mr. Ashmead spoke of the eggs of birds as possessing specific characters. Dr. Gill said that the characters used by oologists were of little value.

Mr. Ashmead said that the eggs of insects frequently possess valuable characters, even of family rank, such as those of the Pentatomidæ and certain groups of Lepidoptera. Mr. Schwarz referred to Rupertsberger's rare work on the classification of insects from the eggs, and Dr. Dyar referred to Chapman's work on the eggs of Lepidoptera.

—The third paper of the evening was by Mr. Schwarz, entitled :

ON THE INSECT FAUNA OF THE MISTLETOE.

By E. A. SCHWARZ.¹

Kaltenbach mentions four species of insects living upon *Viscum album* in Europe, viz., *Psylla visci* Curt. (*exophila* Frfd.), *Aspidiotus visci* Frfd., and two Cerambycid beetles of the genus *Pogonocherus*. The latter, however, have been bred

also from other woody plants. In the United States only one insect has hitherto been recorded from *Phoradendron* viz., *Lecanium phoradendri* Ckll., but there is in the National Museum an undescribed Psyllid discovered on *Phoradendron macrophyllum* in California, by Mr. A. Koebele, which in the wing venation differs remarkably from all described genera of the subfamily Psyllinæ. Finally, Prof. Cockerell kindly informs me that he had described three species of Coccidæ as occurring on mistletoe in Mexico.

In the vicinity of our eastern cities the mistletoe is well-nigh exterminated since many years or confined to the very tops of tall trees, but in the southwest these parasitic plants, more particularly *Phoradendron macrophyllum*, are still extremely abundant on trees growing along water courses, and the following fragmentary observations were made by me, in April, on two short visits to the mouth of Bear Canyon¹ in southern Arizona. The majority of the more accessible mistletoe bushes proved to be more or less infested by *Lecanium phoradendri* and, in many instances, plants had been killed by the prevalence of the scales. A search for Coccinellid enemies produced, after considerable exertion, only a few specimens of *Cephaloscymnus occidentalis* Horn.² Occasionally mistletoe branches, either not or but feebly infested with scales, were observed to be dead or wilting, and it was found were hollowed out for a distance greatly varying in length, according to the thickness of the twig. The author of these galleries proved to be a Curculionid larva of the genus *Otidoccephalus*, the particular species being still undescribed. The beetle makes its exit through a round hole at the side of the twig, and the deserted gallery is then usually occupied by a colony of ants, *Cremastogaster* sp., which attend to and protect the *Lecanium* scales.

The infested twig is not killed at once by the boring of the *Otidoccephalus* larva, but remains green for one season or longer, but at any rate long enough to allow colonies of a Scolytid beetle to undergo one or two generations in the terminal portion of the twig. This Scolytid, one of the smallest in our fauna, is also undescribed, and belongs, as far as I can make out at present, in the neighborhood of *Stephanoderus*. It is an "inside borer," but no regularity whatever can be observed in the tiny galleries, nor could we see any trace of "ambrosia." The colonies are extremely

¹This locality is situated about 3 miles northwest of the abandoned Ft. Lowell, Pima Co., at the foot of the Santa Catalina Mts.; altitude 2,900'.

²This species was subsequently found by Mr. Hubbard and myself in the Sta. Rita Mts. and at Oracle among a *Lecanium* scale on various oaks, and among a diaspinous scale on *Quercus arizonica*. The eastern species, *C. zimmermanni* Cr. feeds on *Aspidiotus aucylus*. For some reason not yet ascertained both Coccinellids and their larvæ are extremely rare in spite of the abundant and apparently permanent food-supply.

populous, a single one containing between 70 and 100 specimens, but the males appear to be just as rare as in *Xyleborus*.

In one instance another borer in *Phoradendron* twigs was met with, viz., a *Bostrychid* larva. This was bred and produced a somewhat crippled specimen of an undescribed species of *Amphicerus*. The species was not met with elsewhere in Arizona, but is probably not peculiar to the mistletoe.

The Californian *Psyllid* mentioned above was not observed at any place visited by me in Arizona, but a *Lycænid* larva was not rare feeding on the leaves of *Phoradendron*. Several imagoes were bred, and Dr. Dyar determined the same as *Thecla halesus*.

Mr. Dyar stated that the published records show the food plant of this *Thecla* larva to be oak. This he thought probably was a mistake and mistletoe is its true food. Mr. Ashmead said that the live oaks in the city of Jacksonville, Fla., were covered with mistletoe, especially at the tops. He has seen a scale insect and an *Aphid* on the mistletoe, but has never worked either of them up.

—Mr. Pollard asked whether any insects were known to feed upon the Spanish moss (*Tillandsia*) in the South. Messrs. Ashmead and Schwarz replied that this moss is full of insects, but they thought that none of them feed upon it, although Mr. Schwarz stated that *Monocrepidius vespertinus* eats the leaves occasionally. Mr. Morris stated that in the moss used in packing he had seen a breaking or eating of the ripened pods, but was not sure that it was caused by insects.

Mr. Schwarz read the following letter written by Mr. Hubbard in 1894, on the fauna of Florida caves:

INSECT LIFE IN FLORIDA CAVES.

By H. G. HUBBARD.

CRESCENT CITY, FLA., July 31, 1894.

I found so much to do at Eustis with Webber and Swingle that I spent four or five days with them in the laboratory. Just as I was thinking of leaving them, Mr. Swingle received a letter from an old-time guide of his telling about some large caves in Hernando and Citrus counties. As they are only 30 or 40 miles west of Eustis, we concluded to visit them and explore, but we found much trouble in getting there. However, we reached Istachatta on the Withlacoochie river after a night's traveling. We found here extensive but shallow and muddy caves. I should say about