

PROCEEDINGS OF THE SOCIETY.

(Continued from p. 44.)

Mr. Teale showed many pictures of the praying mantis at all stages, including a series of the female devouring her mate. This large insect is one of the easiest to photograph. It, or one of the large silkworm moths,—such as the Luna, Polyphemus, Promethea or Cecropia,—provide good subjects for the beginner in insect photography.

The meeting adjourned at 10:00 P.M.

CARL GEO. SIEPMANN,
Secretary.

MEETING OF APRIL 11, 1940.

A regular meeting of the Brooklyn Entomological Society was held at the Brooklyn Museum on Thursday evening, April 11, 1940. President William T. Davis presided, and ten other members were present, namely, Messrs. Buchholz, Engelhardt, Gaul, Malkin, McElvare, Moennich, Sheridan, Siepmann and Teale; also Dr. Alexander B. Klots and Mrs. Klots, and Messrs. Arnold Goldberg, Gaylord C. Hall, Bostwick H. Ketchum and W. Pfeffer.

The minutes of the previous meeting were read and accepted. Mr. Engelhardt, reporting as treasurer, said that the Society had no bills outstanding, and that the books showed receipts of \$1872.97 and disbursements of \$1251.88 since Jan. 1, 1940, leaving a cash balance of \$621.09.

Mr. Davis said that the first butterfly he had seen this year was a cabbage butterfly, at St. George, Staten Island on April 7.

The speaker for the evening was Dr. Alexander B. Klots, who spoke on the subject of Arctic-Alpine Insect Distribution in the Rocky Mountains.

Dr. Klots said that the field of insect taxonomy is so large, and with so considerable a literature, that it is necessary for the student to specialize. The taxonomy of the past was based on inadequate series of specimens, and conclusions regarding the habitat, range and definition of species was based upon a mere sprinkling of material from scattered collecting points. But today, lack of transportation no longer makes it difficult to obtain material in a specialized group from a representative number of localities throughout its range. Cars, good roads, and even the airplane have made the most remote regions accessible.

In his studies, Dr. Klots has narrowed himself to two genera of butterflies, *Colias* and *Brenthis*, and one genus of moths, *Crambus*. By concentrating on these groups and collecting wherever possible throughout their range, a good idea of the distribution of the various species can be obtained, and many facts and ideas that were previously at most suspected, can be substantiated. This brings the realization that what have been considered distinct species are in many cases only varieties of a few large and widely distributed species.

The groups in which Dr. Klots specializes are representatives of the holarctic fauna, which in its broadest sense, includes the species of the northern regions of both the Old and the New Worlds, and the species extending southward into the alpine regions of mountain ranges. The holarctic fauna was pushed to the south by the glacier, and when the glacier receded, the fauna followed it northward in both hemispheres, while parts of it were isolated in the mountain ranges of both continents. Groups restricted to high altitudes thus become isolated on mountain tops without occurring in the intermediate regions. This complete isolation in a given mountain range makes the arctic-alpine fauna of especial interest to the student of subspecies.

New Hampshire and Mt. Katahdin (Maine) have small areas above timberline, and the species representing glacial remnants are few. There is nothing that compares with the extensive Rocky Mountain alpine fauna. The Californian mountains, too, for some reason, in the Lepidoptera at least, likewise have little arctic fauna worth mentioning. It is possible that when the glacier receded, a natural barrier may have prevented these forms from reaching California.

Several genera of Lepidoptera have an arctic-alpine distribution. *Oeneis*, of the Satyridae, above all, is an arctic-alpine genus. One group of this genus occurs in the Canadian zone of coniferous forest. Another, whose species are usually darker in color, embraces the most arctic-alpine of all butterflies, occurring only above timberline. *Semidea* and *katahdin*, occurring in New England, are really subspecies of two widespread arctic species.

In *Erebia*, also of the Satyridae, there is the same trend as in *Oeneis*. One species, *epipsodia*, occurs in the lowlands; all the others occur at or above timberline. *Erebia magdalena* occurs in the most impossible situations on the great rock slides. A thorough monograph of the species of the World has been published, and this is the most thoroughly worked up of all the holarctic genera.

Parnassius, of the Papilionidae, has a very wide, and a mixed distribution. Arctic and alpine forms occur, as well as forms that come down as low as the sagebrush regions. Because of its wide distribution and range of habitat, it is not nearly as interesting a genus to the student of subspecies, as complete isolation of forms at high altitudes is unlikely.

In *Colias*, *hecla*, *palaeno* and *nastes* represent purely arctic species occurring to the north of timberline, but they do not occur above timberline on mountains. They are arctic, but not alpine. *Colias pelidne* and *gigantea* occur in the arctic and in the northernmost alpine regions. *Gigantea*, until recently, was not known to occur south of Ft. Churchill or the Riding Mountains in Manitoba, but this summer Dr. Klotz obtained a series in the Wind River Range, Wyoming, which is undoubtedly a subspecies of *gigantea*. *Pelidne* is another species which reaches its southernmost distribution in the Wyoming mountains.

Colias christina, *occidentalis* and *interior* reach as far south as Wyoming, Northern California and New York, *christina* even occurring in Utah, but they occur at somewhat lower altitudes than the preceding species. *Colias chrysotheme* is an abundant and widespread species of the palaearctic region, and if series from Europe and Siberia are compared with our common *eurytheme* and *philodice*, it is seen that they, too, are races of *chrysotheme*.

Colias alexandria occurs almost as far south as *eurytheme*, but it does not occur further north than southern Canada.

Colias behri is an endemic species limited to a small range in the California mountains, and *harfordi* and *scudderi* are two localized species occurring at somewhat lower altitudes in the same state and Colorado respectively.

In *Brenthis* the same distribution pattern occurs as in *Colias*. There are the extreme arctic species, as *chariclea*, *improba* and *polaris*. Some varieties of *chariclea* described from southern Canada are not this species. *Pales*, hitherto considered a palaearctic species, occurs all over northern Europe, central and northern Asia. It has not penetrated far into North America, not having been found east of the McKenzie Delta. Recently, however, a subspecies has been taken in the Wind River Range of Wyoming.

Brenthis bellona of the eastern states, and *epithore* of California, are offshots of *friga*, but both are distinct species.

Colias and *Brenthis* are represented in South America, but there the species have been so long isolated from the northern groups of the genera, that they are very different in general appearance.

Dr. Klots showed lantern slides of the Rocky Mountain Regions where he had collected, and motion pictures in color of the Wind River Range of Wyoming.

The meeting adjourned at 10:00 P.M.

CARL GEO. SIEPMANN,
Secretary.

MEETING OF MAY 16, 1940.

A regular meeting of the Brooklyn Entomological Society was held at the Brooklyn Museum on Thursday, May 16, 1940. Mr. William T. Davis presided, and eleven other members were present, namely, Messrs. Buchholz, Dietz, Engelhardt, Gaul, Malkin, McElvare, Moennich, Naumann, Shoemaker, Siepmann and Teale; also Miss Dietz and Messrs. Irving Ehrenreich and Arnold Goldberg.

The minutes of the previous meeting were read and accepted. Mr. Engelhardt reported as treasurer and read a letter from the editor. Mr. Engelhardt proposed for membership: Mr. Fred T. Naumann, 94 Harrison Street, East Orange, New Jersey. The by-laws were suspended and Mr. Naumann was duly elected to membership.

Mr. Engelhardt reported as delegate to the Eighth American Scientific Congress in Washington.

A specimen of *Lemonitis orthemus*, dark form *chrysopina* was shown by Mr. Shoemaker.

Mr. Albro Tilton Gaul showed photomicrographs of the embryological development of the hornet, *Vespula maculifrons*. The specimens were preserved in formaldehyde, dehydrated, impregnated with paraffine and cut with a microtome. A Bausch and Lomb K camera was used in conjunction with a Spencer microscope. Exposure was two minutes with a 16 mm. objective and 15 minutes with a 4 mm. objective, using paniprocess film and a yellow filter consisting of a bottle of saturated picric acid.

Mr. Davis said that there are some species of Orthoptera that can be distinguished only by their song. He also mentioned that in the Bombylid flies, a species was observed, which, in some cases, had a long period, and in others a short period, and that later the two forms were found to be distinct species differing by minute structural characters. Mr. Engelhardt added that some species of Lampyridae can be distinguished only by their flash.

Mr. McElvare showed two books of interest to entomologists, "Laboratory Guide to Entomology" and "Handbook of Range



Klots, Alexander B. 1941. "Arctic-Alpine insect distribution in the Rocky Moun-tains." *Bulletin of the Brooklyn Entomological Society* 36, 97–100.

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