

THE RHOPALOCERA OF PRINCIPIA COLLEGE

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During the past four years the writer has carried on a study of the butterflies occurring in the vicinity of the campus of Principia College. The campus is just seventeen miles northeast of the city limits of St. Louis. It is on some of the highest of the limestone bluffs overlooking the Mississippi River. Ecologically, the hills comprising most of the campus are covered by typical oak-hickory climax forest. A total of seventy-eight species, eighteen subspecies and forms, and one aberration were taken during the study. Five of the seventy-eight species and one of the subspecies are exotic insects not normally to be found here. Of these six butterflies, *Phyciodes gorgone* and *Hemiargus isola* have their normal range more than three hundred miles to the west, *Phoebis sennae marcellina*, *Eurema mexicana*, and *Anthanassa texana* are Texan and Mexican species, and *Strymon m-album* flies in Florida and adjacent states. The presence of southern and southwestern butterflies as far north as central Illinois possibly may be explained by prevailing southwest winds blowing during late summer and fall.

In conducting the study of butterflies at Principia College, the writer has made constant observation of the dates when each species is on the wing. This enabled him to outline the flight periods, number of broods, and abundance of individuals for each species found. The necessary brevity of the present paper eliminates the inclusion of this material, however.

The foodplants of thirty-one species have been determined for this area. Parasites have been reared from six species and have been identified by the United States Bureau of Entomology and Plant Quarantine. An ichneumon-fly, *Epiurus alborictus*, was reared from a larva of the Green-clouded Swallowtail, *Papilio troilus*. This little wasp normally parasitizes the larvae of leaf-rolling moths of the family Tortricidae. Thus, the use of this swallowtail butterfly as a host is noteworthy. The unusual parasitism may

be explained by the leaf-folding habit of *P. troilus* larvae. Possibly the female wasp entered the folded leaf of this butterfly larva while searching for the normal host, and deposited an egg within the larva of the swallowtail.

Eight of the ten families of North American butterflies have been taken at Principia College. These are briefly discussed in the remainder of the paper.

Six species of swallowtails, Papilionidae, have been found, all commonly. Host plants have been determined for all six species. Three subspecies have been taken in this family, two of which are merely broods which have received names. The practice of naming broods seems to the writer a useless encumbrance of the already overloaded synonymy of butterflies. The other subspecies is the dimorphic yellow female of the common Tiger Swallowtail. Normal females here are mostly a smoky gray-black, but the subspecies here mentioned applied to the female form whose markings greatly resemble those of the male.

Eleven species of Pieridae have been found. One southwestern species, *Eurema mexicana*, was taken. This has also been taken rarely in Missouri and is a straggler this far north. *Phoebis sennae marcellina* is a geographic race found in the American tropics. A perfect pair has been taken during this study at Principia College: a female on August 25, 1941; a male October 5, 1941.

Our one representative of the Danaidae is *Danaus plexippus*, the Monarch butterfly. As in all other parts of its range, so in Illinois, there is a conspicuous fall migratory flight to the Gulf States and southward. No return flight in spring has been observed, but individuals sometimes are seen in early April. Fresh specimens emerge from the chrysalis in late April. Although he has as yet no verification, the writer believes that numerous eggs are laid in the fall before migration, and that the next year's early brood comes from these eggs. This would

explain the fact that no spring migration of many individuals has even been observed as far south as Illinois.

Only two species of Satyridae have been taken, and one other is doubtless common in mid-summer. The paucity of local species of this family is explained by the fact that the wood nymphs are principally found in the Transition Zone and the Boreal Region.

The family Nymphalidae is represented by nineteen species in the collecting done. Two of these are exotic. *Euphydryas phaeton*, the Baltimore Checker Spot, is a species which breeds in the area of study, but for unexplained reasons it appears only one out of ten or more years. In 1934 numerous larvae were found on the campus of Principia College, and easily reared. That year the species was not rare on the wing. Since then careful searching has revealed no single larva or adult of this species. A similar lapse also preceded this one year of abundance.

Only one species of Libytheidae, or snout butterflies, has been taken. This is *Libythea bachmanii*. It appears irregularly each year, and is attracted in the adult stage to blossoms of both black and honey locust.

Twelve species of Lycaenidae have been taken, and three others probably also occur in the region. Two of the species found must be classed as rare stragglers. In the Bulletin of the Brooklyn Entomological Society (XXXVII, No. 1, pp. 6-8), appeared a paper by the writer discussing the unusual occurrence of *Hemiarctus isola*, a tiny blue butterfly rarely ranging east of Kansas. A single slightly worn female of *Strymon m-album*, a Florida hairstreak, was taken on the campus of the college April 18, 1943.

The writer knows of only one previous capture of this species in this part of the country, a specimen taken in St. Louis County, Missouri, several years ago.

The last family of butterflies is the HesperIIDae, or skippers. More of these small, heavy-bodied butterflies have been found than any other family, twenty-six species having been taken. Probably about four more will eventually be found. Only one of the skippers caught here is worthy of special note. During the first week of July, 1942, the writer's father, P. S. Remington, Jr., collected a large series of *Problemata byssus* at Principia College. This species has previously been known only from the Gulf States, and its occurrence this far north greatly extends its range.

As a result of this four-year study of the butterflies of the vicinity of Principia College, seventy-eight species have been recorded. Five of these are rare stragglers. From twelve to fifteen more species probably breed here. Most of these latter fly during a two-month period of mid-summer when the writer's absence from the campus has necessitated omitting them from the present study. Thus, approximately ninety species of butterflies breed regularly in this small area. Probably less than forty others are to be found in other parts of Illinois. Since about seven hundred species of butterflies are recognized as occurring in North America, more than ten per cent of the North American species are to be found on the campus of Principia College. After careful collecting has been carried on in all main sections of the State, a list of the species found in Illinois may be prepared, and will arouse the same interest as the state lists from California, Kansas, Nebraska, Minnesota, and New York.