

## A PICTORIAL KEY TO THE NORTH AMERICAN MOTHS OF THE FAMILY OPOSTEGIDAE

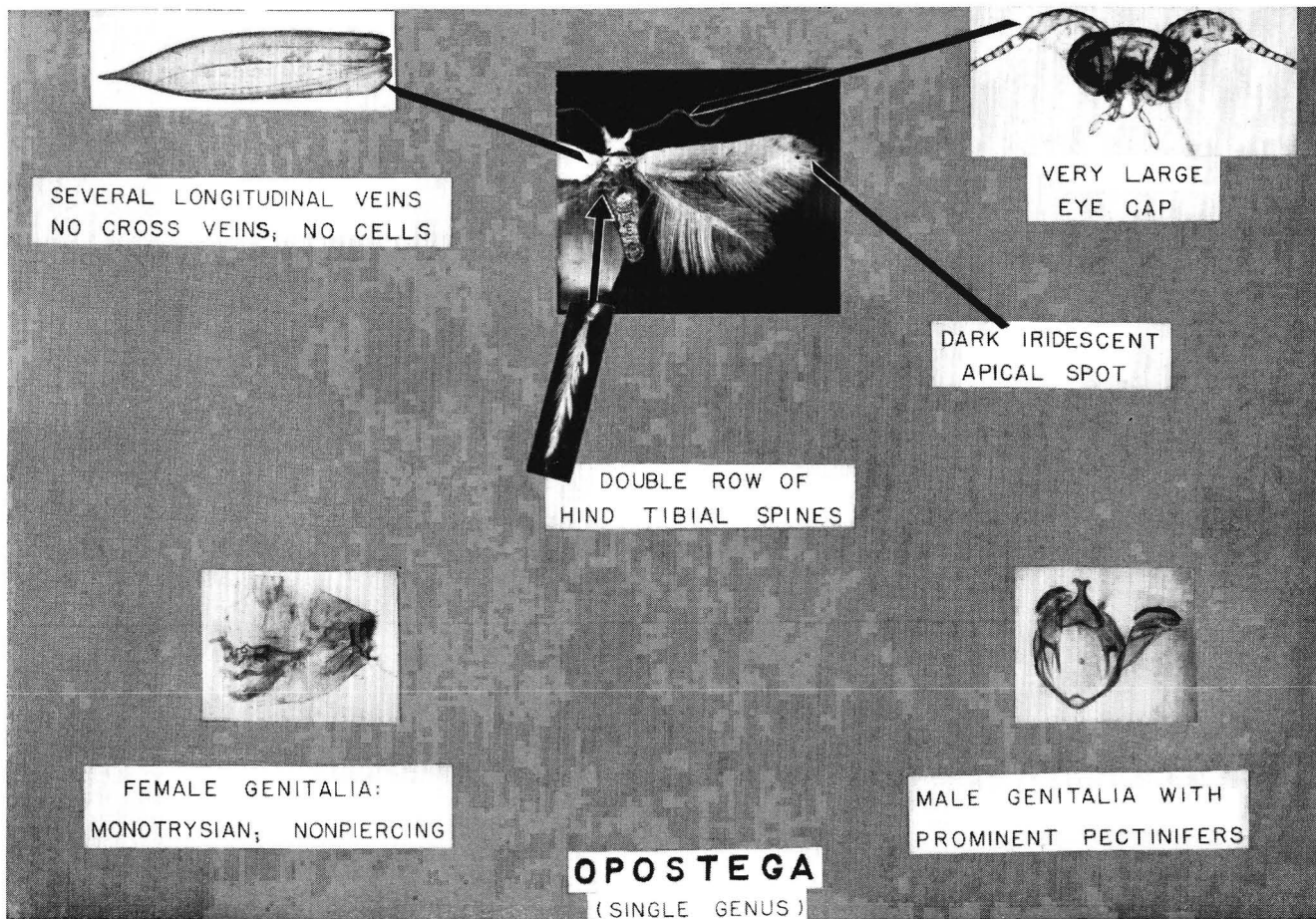
by JOHN R. EYER

The following account is the result of several years study of moths of the genus *Opostega*, particularly representatives of North American species, from the U. S. National Museum, the Canada Department of Agriculture, the American Museum of Natural History, the Los Angeles County Museum, Cornell University, and several private collections. Whenever possible, types, paratypes, and/or specimens "compared with type" were included. Since the present location of CHAMBERS' types of *O. nonstrigella* and *quadristrigella* is not known, specimens which conformed most closely with the original descriptions were selected for genitalia characterization; specimens which agreed most closely with CHAMBERS' description proved, on examination of genitalia, to be *O. albogalleriella* Clem.

The position of the family, composed of the single genus *Opostega*, in the classification of Microlepidoptera is problematic. SPULER (1913) included *Opostega* as a subfamily of the Nepticulidae but recommended its elevation to family rank. MEYRICK (1928) placed the genus in the family Lyonetiidae remarking that it exhibited "the extreme of neural degeneration and the largest eyecap of any of the representatives" (Plate 1). FORBES (1923) described its phylogenetic status as follows, ". . . the group seems to represent, as near as anything, the point of origin of the Lyonetiidae from the common Tineoid stem, as it shows characters that appear also in the Tineidae, Nepticulidae, Psychidae, and Lyonetiidae." HEINRICH (1918), basing his opinions on a study of the larva, included also resemblances with the Tischeriidae.

The North American representatives are usually white in color (Plate 1) with obscure gray or brown markings and because of their small size and fragile texture are frequently rubbed and difficult to distinguish. The presence of a conspicuous pectinifer in the male genitalia has proven most useful in separating this family from the Nepticulidae and Lyonetiidae; and the shape of the anellus of the male and of the ostium pads of the female in the distinguishing of species. The five species may be divided into two groups on the basis of wing pattern and male and female genitalia as follows:

Group I, (Plate 2, figures in upper brackets) which includes only the species *O. scioterma* Meyr., exhibits both a dorsal and costal color spot



on the front wing and the darker color markings of the tornus are less distinct than in the representatives of the second group. The male genitalia possess a tubular, membranous, aedæagus reinforced by a longitudinal, chitinous fold and it enters the diaphragma through a membranous, semi-cylindrical anellus. The saccus of the vinculum is reflexed and forms an inverted "U". The socii are fused to form a transverse plate across the hind margin of the tegumen. The valve is cylindrical, lacks a distal prolongation of the sacculus, and the pectinifer is attached terminally. It is small, in comparison with the representatives of Group II, and bears 15-20 teeth.

The female genitalia are of the monotrysian type with very rudimentary apophyses and no modifications for cutting or piercing. Ostium pads are absent and the ninth tergite is hood-like with its caudal margin entire.

Group II (Plate 2, figures in lower brackets) includes the four species, *i. e.*, *O. cretea* Meyr., *O. quadristrigella* Cham., *O. albogalleriella* Clem., and *O. bistrigulella* Braun. The forewings possess only the dorsal spot and the markings of the tornus are arranged in diagonal fascia or narrower bands termed "strigils," which radiate from the dark iridescent apical dot.

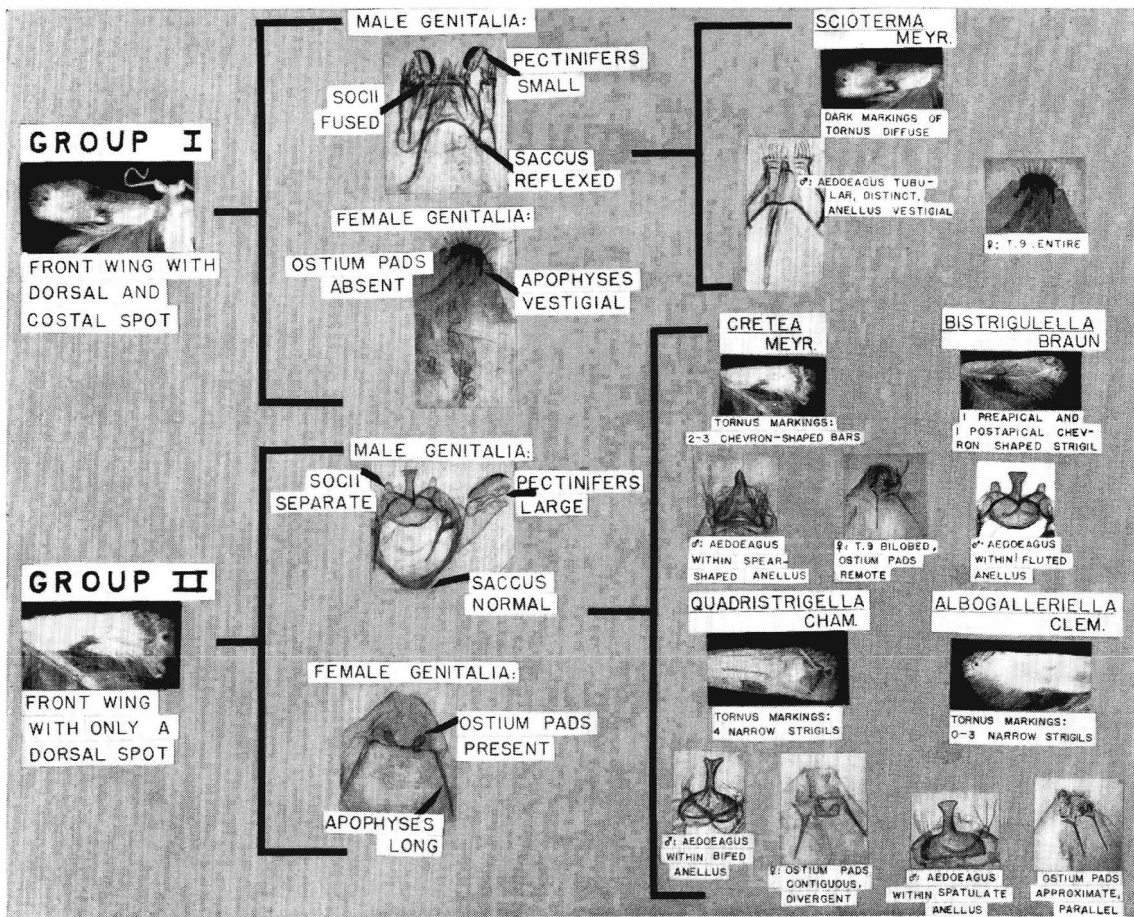
The male genitalia possess a flat, membranous aedæagus which enters the diaphragma through a heavily chitinized, saddle-shaped anellus. The vinculum extends posteriorly as a U- or V-shaped saccus. In some species this structure may be a combination of the anellus and gnathos. Due to the suppression of the 10th somite a study of the pupal development is necessary to establish the homologies correctly. The tegumen bears a pair of small separate socii attached laterally above the anal tube. The sacculus of the valve is extended posteriorly into a finger-like process. The pectinifer is comparatively large, possesses 30-45 teeth, and is articulated about midway along the costa.

The female genitalia possess a transverse plate, ventral of the genital opening, which bears a pair of short processes, named "ostium pads" by PIERCE (1935). The posterior margin of the ninth tergite is indented and forms two setiferous lobes.

The distinguishing characters of the four species are summarized as follows:

*Opostega cretea* Meyrick.

Anterior wing with a distinct dorsal spot extending diagonally forward and into the discal area. Tornus with three broad, costal fascia and one or two additional fascia in the posterior fringe. Posterior wing tan or gray. Four melanistic specimens were observed in which also the front wings were a brownish color, hence masking the fascia.



*Male genitalia.* — Central process of anellus spear shaped; socii  $1\frac{1}{2}$  to 2 times as long as broad.

*Female genitalia.* — Ostium pads longer than broad and separated by approximately the distance of their length.

*Opostega quadristrigella* Chambers.

Anterior wing with two parallel or slightly divergent costal strigils separated by several series of distinctly white scales, a third strigil below them in the posterior fringe and a fourth less distinct strigil in the apical fringe. Dorsal spot usually gray. Posterior wings gray. In melanistic specimens all or part of the front wing is overlaid with gray scales.

*Male genitalia.* — Tip of central process of anellus bifid. Socii approximately as broad at base as their length and narrowing apically.

*Female genitalia.* — Ostium pads short and broad, inner margins contiguous at base and diverging apically.

*Opostega albogalleriella* Clemens.

Anterior wing with two divergent strigils in the costal margin of the tornus and one in the fringe beyond the apical dot. In some examples any or all of these were absent. Such variants conform closely with CHAMBERS' description of *nonstrigella* and since his types can not be located these two may be conspecific. Dorsal spot small; sometimes absent. Hind wings white or slightly yellow.

*Male genitalia.* — Tip of central process of anellus spatulate; posterior margin rounded and smooth on inner surface.

*Female genitalia.* — Very similar to *O. quadristrigella* Cham. Ostium pads and ninth tergite more slender.

*Opostega bistrigulella* Braun.

Anterior wing with two distinct fuscous strigils between apical spot and costal fringe and two less distinct, more diagonal strigils extending into the posterior (dorsal) fringe. The area of scales and cilia between these strigils is whiter than the remainder of the wing. This is the largest of the North American species, having a wing expanse of 12-15 mm. in comparison with 6-10 mm. for the others.

*Male genitalia.* — Central process of anellus spatulate, flattened and longitudinally ridged or fluted on inner surface. Distal process of sacculus broad and thumb-shaped.

*Female genitalia.* — No females were found in any of the collections examined.

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Department of Biology, New Mexico State University, University Park, N. M., U. S. A.

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BUTTERFLY MIGRATION

September draws them through her sunny skies  
Along the magic wave line of the shore,  
Those feathered dreams that men call butterflies,  
To honey cups not known to them before.  
Their veined but fragile wings do not display  
The strange endurance furthering their flight.  
Unhampered by the subtle breeze each day  
They hover over meadows and alight  
In mass communion, quaffing of the mead  
That gives them strength for yet another mile,  
Forming bouquets on each enticing weed  
Which lends itself as altar for a while,  
Then flutter on, their tattered wings the toll  
Of constant struggle toward the longed for goal.

KATHERINE HUNN KARSNER  
Westtown, Penna., U. S. A.