

yellow. Abdomen, strongly compressed, slightly darker at the tip, the first and second segments being very slender. The claspers of the male are rounded apically.

Length about 23 mm. Wing spread from 30 to 35 mm.

Habitat, Albany, N. Y. May 6, 1876 (W. M. Hill). Ithaca, N. Y., July 16, 1889 (J. M. Stedman). South Britain, Conn. 1884 (G. F. Pierce).

There are examples of this species from Cambridge, Mass., in the collection of the Museum of Comparative Zoology and from Georgia and New Hampshire in the collection of the Academy of Natural Sciences of Philadelphia. Types will be deposited in the New York State Museum and also at Cornell University.

Ophion (Eniscophilus) appendiculatum sp. nov.—Light fulvo-ferruginous, larger opaque spot of the cubito-discoidal cell with a small extension on its posterior angle. The smaller chitinous spot is nearly circular, light yellow in color and slightly posterior to the center of the glabrous area.

This species differs in addition to the above characteristics from the preceding one in having the cubito-discoidal nervure slightly angled and not sinuate. It is a smaller form, having a length of 18 mm. and a wing spread of about 27 mm. This species is probably an inhabitant of New Jersey, as it came into my possession through the kindness of Dr. J. B. Smith. The type is deposited in the New York State Museum.

ON THE UNITED STATES ORTHOPTERA WHICH HAVE BEEN REFERRED TO THE GENUS TRIDACTYLUS.

BY SAMUEL H. SCUDDER, CAMBRIDGE, MASS.

An examination of nearly three hundred specimens widely distributed over the United States leads me to believe that of the ten nominal species of *Tridactylus* which have been accredited to this country, only three names can be retained: *apicalis* Say, *terminalis* Uhl., and *minutus* Scudd. To *apicalis* belong I believe as synonyms *tibialis* Guér., *mixtus* Hald., and probably *illinoiensis* Thom.; to *terminalis*, *fissipes* Sauss. and *incertus* Sauss.; to *minutus*, *histrionicus* Sauss., and *histrionicus* Sauss. The discovery by Mr. A. P. Morse of the variation in

the fore tibiae of the male at once threw doubt upon the validity of several nominal species and I can see no good reason for retaining them.

There is considerable difference, as will be shown below, and as Saussure has pointed out, between the smallest of our species and the larger forms, and on this account Saussure has applied the name of *Heteropus* to this division, which I am inclined to regard as of generic value. The name *Heteropus*, given to an African species by Palisot de Beauvois, cannot, however, be used here,

as the most characteristic feature of our small species is the loss of the metatarsus which is described by Palisot as present in the African species. I suggest there-

fore the use of the term *Ellipes* (ἑλλιπής) for the group.

Our species may be separated by the following table:—

A¹. Larger forms, more than 5.5 mm. long. Pronotum with a delicate transverse sulcus near middle of anterior half; fore tibiae of male sometimes deeply fissate; hind tibiae with 4 pairs of long natatory lamellae, preceded by slight serrations, and armed at tip on either side with two very unequal calcaria, the longest scarcely longer than the metatarsus, the only member of the tarsi present (*TRIDACTYLUS*).

b¹. Larger, from 7-9 mm. long, of highly variegated coloring, especially conspicuous on pronotum and hind femora. *apicalis*.

b². Smaller, from 6-7 mm. long, of tolerably uniform dark fuscous coloring, the hind femora generally feebly and rather inconspicuously but sometimes distinctly marked with testaceous. *terminalis*.

A². Smallest forms, less than 5.5 mm. long. Pronotum with no transverse sulcus; fore tibiae of male never fissate; hind tibiae with a single pair of short natatory subapical lamellae, the margins of the tibiae smooth, armed at tip on either side with two very unequal calcaria, the longest about half as long as the tibia, the tarsus wholly wanting or at least practically invisible (*ELLIPES*). *minuta*.

Tridactylus apicalis Say.

I have seen specimens of this species from Ithaca, N. Y., July 28-30 (Pearce), Quincy, Ill., Sept. (McNeill), Maryland (Uhler), Ames, Iowa, Aug. 14 (Osborn), Kentucky (Wild in Uhler's coll.), Georgia (Morrison), Dallas, Tex. (Boll), San Diego, Cal. (Crotch), Los Angeles, Cal. (Crotch, Morse), San Bernardino, Cal., July 16 (Morse). It has also been reported from several of these points and from Staten Island, N. Y. (Davis), New Jersey (Smith), Indiana (Blatchley), Minnesota (Lugger), Nebraska (Bruner), Carolina (Saussure), Alabama (Scudder), S. Carolina (Burmeister), Council Bluffs, Mo. (Say), St. John's River, Fla. (Say). New Orleans, La.

(Guérin), Mexico (Saussure), Guatemala (Saussure), Ecuador (Bolivar), South America (Brunner), and Burmah (1) (Brunner).

Tridactylus terminalis Uhler.

Specimens before me come from Winchester, Mass., Nantucket, Mass., July 13 (Morse), Staten Isl., N. Y., (Davis), Maryland (Uhler), Southern Illinois (Uhler), Carolina (Schaum), Agricultural College, Miss., Oct. (Weed), and Dallas, Tex. (Boll). It has further been reported from Cambridge, Mass. (Scudder), Connecticut (Smith), New York (Beutenmüller), New Jersey (Smith), Indiana (Blatchley), Illinois (McNeill), Minnesota (Lugger), Nebraska (Bruner),

Carolina (Saussure), Louisiana (Saussure), Tamaulipas, Mex. (Saussure), and Nicaragua (Bruner.)

Ellipes minuta (Scudder).

I have examined specimens from Southern Illinois (Thomas), Rock Island, Ill. (Walsh), Indiana (Blatchley), Georgia (Morrison), Enterprise, Fla. (Schwarz), Biscayne Bay, Fla. (Mrs. Slosson), Lake Worth, Fla. (Slosson), Charlotte Harbor, on stalk of *Spartina* near water (Slosson), Palm Beach, Fla.

(Slosson), Agricultural College, Miss., Oct. (Weed), Texas, not common, running on margins of streams (Belfrage), Dallas, Tex. (Boll), Palm Springs, Cal., July 13 (Morse), Ahwanee, Cal., Aug. 15 (Morse), and San Bernardino, Cal., July 16 (Morse). It has also been reported from Minnesota (Lugger), Nebraska (Bruner), Mississippi and Florida (Ashmead), Cuba (Saussure), St. Vincent and Grenada (Brunner and Redtenbacher), and Vera Cruz and Tabasco, Mex. (Saussure).

LIFE HISTORIES OF NORTH AMERICAN GEOMETRIDAE. — XXX.

BY HARRISON G. DYAR, WASHINGTON, D. C.

Phiasne irrorata Pack. I have described the mature larva (Ent. News, v, 63, 1894).

Egg. Elliptical, strongly flattened, rounded, no angles; one end slightly and only in a small area truncate, the other somewhat depressed; smooth whitish green, the reticulations distinct, broad, elongate transversely, resembling low ridges especially toward the truncate end, irregular, somewhat waved. Size $.8 \times .6 \times .3$ mm.

Stage I. Normal, moderately elongate—head rounded, erect, pale reddish luteous, elongate; clypeus moderate, reaching over half to vertex, pointed; sutures brown; ocelli small, black; width .35 mm. Body cylindrical, shields membranous, concolorous, anal feet spreading, the flap large, rounded. Pale greenish, a broad, dark olive dorsal shade on joints 3 to 12, defining the subventral fold which looks pale by contrast; venter faintly olive; tubercles and setae small, in pale spots in the dorsal space; setae short and stiff, dusky, very minutely enlarged at the tip, normal.

Stage II. Head rounded, somewhat elongate with a high narrow clypeus, held obliquely; pale dull luteous, ocelli black, mouth brown; width .45 mm. Body moderate, segments not elongate, normal, pale translucent green with faintly indicated, narrow, white lines; tubercles large and elevated, most distinct posteriorly, transverse, white; setae short, dark; abdominal feet with very faint brown tint. No shields and practically no marks above. A broad, purple-brown ventral band, the whole length, even on the labium.

Stage III. Head rounded, free, larger than joint 2, pale straw color, a broad light brown stripe up from the antennae to across the center of lobe; width .9 mm. Body cylindrical not elongate, translucent green, not shining, a faint, diffuse, narrow, broken, dorsal line; subventral fold yellowish, venter purple brown. Thoracic feet black, appressed, the feet of joint 10 black outwardly, of 13 green except in front. Tubercles whitish, rounded, slightly elevated. Later no dorsal line but faint longitudinal white lines.



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