NOTES ON NEW ENGLAND ACRIDIDAE.—III. OEDIPODINAE.—V.

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14. CAMNULA Stål.

Camnula Stål 1873. Recensio orthopterorum, i, 114.

20. *Camnula pellucida* Scudd. Figs. 20, 20a.

Oedipoda pellucida. Scudder, 472 (1862). Smith,—Me., 151,—Conn., 373; Thomas, 137.

Camnula pellucida. Saussure, 81; Fernald, 41; Morse, 105; Beutenmüller, 296.

Antenna: ♂, 7-9; ♀, 6-8.5. H. fem.: ♂, 9.5-12.3; ♀, 11-14.7. Teg.: ♂, 15.5-18.5; ♀, 19-23.5. Body: ♂, 17-21; ♀, 21-28. Total length: ♂, 20.5-24.5; ♀, 22-30 mm.

In the markings of the tegmina, form, and color *pellucida* looks like a diminutive *Hippiscus*, to which genus *Camnula* is not distantly related. It varies much in size and tegminal markings but is not likely to be confused with any other species found here.

It is extremely common, even abundant locally, throughout the northern part of New England, being probably the most numerous in point of individuals of any of our Oedipodinae. It is found in dry, grassy pastures and other untilled lands, preferably on high ground. Its flight is silent or slightly rustling, usually low, short, and direct, resembling that of a large *Melanoplus*; when with the wind, however, it is

occasionally prolonged for several rods in a straight line.

It begins to appear in the winged state about July 1st and may be found during the rest of the season. I have taken it from July 2 till Sept. 6.

I have collected it at Fryeburg, Norway, and on Speckled Mt., Stoneham, Me.; at various points in the White Mts., N. H., including the summit of Mt. Washington; at Jay, Hyde Park and St. Johnsbury, Vt.; at Winchendon, Adams, and on Greylock Mt., Mass.; a single specimen (on a rainy day) at So. Kent, Ct., in the extreme western part of the State, and several at Thompson, in the extreme north-eastern part. In the latter place it was not uncommon in a locality on the north side of a high drumlin a mile east of the village. I have also received it from Hanover, N. H. (Weed); and Florence, Mass. (S. W. Denton).

15. HIPPISCUS Sauss.

Hippiscus Saussure 1861. Rev. et Mag. de Zool., xiii, 398, (1861).

A genus of locusts of large size and robust form represented in New England by two species, one common, the other extremely rare but occurring more plentifully in the South and West. Mr. Scudder has recently published a revision of this genus (*Psyché* (1892), p. 265 et seq.).

21. *Hippiscus tuberculatus* Pal. d.
Beauv. Figs. 21, 21a.

Acrydium tuberculatum. Palisot de Beauvois, Insectes d'Afr. et d'Amer. 145, pl. 4, fig. 1, (pt. 9.) (1817). (*Teste* Saussure, 87.)

Locusta corallina. Harris, 176.

Oedipoda phoenicoptera. Scudder, 468; Smith, — Me., 151, — Conn., 371; Thomas, 135.

Hippiscus tuberculatus. Saussure, 87; — Addit., 27 (var.); Fernald, 42; Scudder, Psyche, (1892), 303; Morse, 105; Beutenmüller, 297.

Antenna: ♂, 10.5-12; ♀, 11.5-13.5. H. fem.; ♂, 14-16; ♀, 18.5-20.5. Teg.: ♂, 24-30; ♀, 30-32. Body: ♂, 25-28; ♀, 36-44. Total length: ♂, 32-38; ♀, 39-43.

Yellow-winged examples of this species have been taken but are very rare. Oftentimes the head, pronotum and hind femora, even in the half grown nymph, are largely greenish.

This is the largest and most striking locust of the present group. Owing to its gaily colored wings it is a conspicuous object in flight, but it is sufficiently alert and active to make its capture a matter of some difficulty, being both very ready to take wing and flying a considerable distance. The ♀ is much less active than the ♂ and is difficult to flush more than once or find unless marked down with great care. Both are occasionally secured in sweeping. The stridulation of the ♂ is a rapid rattle, louder, but similar to that of *Arphia sulphurea*, with which species

this is commonly found associated. It is found in bushy pastures and untilled land of light soil or elevated location.

The young, which may be found as early as the latter part of August, are curious little depressed, toadlike objects usually purplish leaden in color. They may be found, under suitable conditions, in the fall, winter, and early spring months in localities frequented by the adult.

This species appears in the winged state about the first of May, probably sometimes in the last week of April, and may be found until the middle or latter part of July. I have taken it on May 8 and July 13.

I have seen it from Norway, Me.; and have examples from Keene, N. H. (Prof. Weed); Brattleboro, Vt. (Mrs. J. B. Powers); Winchendon, Marlboro, Sudbury, Wellesley and several towns in the immediate vicinity, in Mass.; Thompson, and So. Kent (young), Ct. It is also very widely distributed outside of New England.

22. *Hippiscus rugosus* Scudd.

Fig. 22.

Oedipoda rugosa. Scudder, 469 (1862). Smith, Me., 151; Thomas, 132.

Hippiscus rugosus. Saussure, 85; Fernald, 42; Scudder, Psyche, (1892—, 287; Morse, 105; Beutenmüller, 298.

This species does not differ materially in size from its congener, the preceding, which is the only one with which it is likely to be confused, and from which it is readily distinguished by the form

of the head and pronotum. The wings are usually yellow, often pale yellowish-white, sometimes orange or even red.

This is our rarest Oedipodine, and the only one which I have not met in the field in an extended experience in collecting the New England locusts. Reported from Norway, Me., by Smith, and eastern Mass. by Scudder, nothing

is recorded concerning the date of capture or character of the locality where found. It probably occurs, however, in localities similar to those frequented by its congener. Numerous specimens which I refer to this species were found by Mr. S. W. Denton in Ohio and Illinois in midsummer.

THE LARVA OF LYCOMORPHA PHOLUS.

BY HARRISON G. DYAR, NEW YORK.

1839. Harris, Silliman's Journ. Sci. Arts. XXXVI, 318.

1862. Harris, Ins. Inj. veg. 341.

1869. Melsheimer, Harris' ent. corresp. p. 112.

1882. Packard, Papilio III, 181.

1896. Dyar, Proc. Boston soc. nat. hist., XXVII, 136.

Harris states that the larva lives on lichens growing on rocks.

Melsheimer found them on lichens on the trunks of hickory trees.

The full grown larvae occurred to me not uncommonly on an old stone fence at Jefferson Highlands, N. H. in the middle of June. Eggs were obtained a month later.

Egg. Laid singly, adherent. Oblately spheroidal, the lower half more flattened than the upper, both well rounded; a little elongated in one diameter, but only just perceptible. No true reticulations, but the surface is distinctly flattened in hexagonal areas, the edges of which are not defined into elevations, but form simple angles of the surface. These areas are rather large in proportion to the egg, regular. Surface a little granular. Color shining dark bluish green. Diameter .5 mm.

Stage I. Head bilobed, black; width .3 mm. Body all whitish, the hairs long and pale; tubercles concolorous. The hairs are barbed and arise singly from the small

tubercles, normal, subprimaries absent. On the thorax seta ii b is distinctly present, not weak; i a, i b and ii a in line, rather remote. The head is blackish with sutures inky black. Length of larva 1.5 mm.

Mature larva. Gray, dotted with pale green with thin, very long, blackish hairs. Head bilobed, clypeus large, lower part pale; brown with two pale green, narrow, transverse, irregular lines; hairs short, white; width 1.5 mm. Body rather flattened, brown gray with many irregularly triangular, transversely streaked patches; a geminate, rather large, anterior segmental, dorsal, pale yellow one on joints 5 to 11 is most distinct, the others whitish, smaller and confused. Legs pale, two setae on the obscurely corneous plate. I have described the other setae.

The spottings seem to represent broken ad-dorsal, lateral, suprastigmatal and substigmatal lines. The coloration closely resembles the lichen covered rocks, so that the larvae are only seen on close examination.

Cocoon. A fine arched thin web on one side of a stone.

Pupa. Delicate, thin shelled, pale brown. Smooth, not tapering much till the anal segments, compact, motionless, though two incisures stretch out somewhat when the moth emerges. Anal end smooth, no trace of cremaster. Cases compact, the leg and an-