

A NEW SPECIES OF GONATOCERUS (MYMARIDÆ) PARASITIC ON THE EGGS OF A NEW SPECIES OF IDIOCERUS (BYTHOSCOPIDÆ) FEEDING ON POPLAR

By M. D. LEONARD and C. R. CROSBY, *Ithaca, N. Y.*

On May 29, 1914, a resident of Ithaca brought to the Insectary some poplar branches badly infested with nymphs of a Bythoscopid. No further opportunity was presented for the study of the insect until the spring of 1915 when, on April 1, we procured some small branches from the infested trees and placed them in water in a warm room in order to force out the buds. The eggs began to hatch on April 19 and the first adults were obtained on May 14. The insect was at first thought to be *Idiocerus alternatus* Fitch but, owing to discrepancies between the life history of that insect as described by Osborn and Ball (Iowa Agr. Exp. Sta. Rept. for 1897, p. 118) and the life history of the species under discussion, we were led to question the determination. Prof. Herbert Osborn has kindly compared our specimens with those in his collection and informs us that he is of the opinion that they represent an undescribed species.

Idiocerus gemmisimulans new species.

Female. Length, 7 mm. Vertex yellowish with a dark brownish irregular line connecting the eyes along the crest; the usual spots on the vertex indicated by two small more or less indistinct brownish dots; vertex mottled with brownish, especially at the inner upper angle of the eye and in the center where it is more or less bluish in certain lights. In the darker specimens a broken irregular dark brownish procurved line connects the antennæ. Ocelli situated on dark brownish spots. Face pale yellowish. Sculpture of vertex finely, transversely rugulose. Basal segment of antennæ yellowish, second segment blackish, remainder yellowish to dark brownish. Prothorax with bronzy reflections, brownish, sometimes mottled with bluish, transversely rugulose; sculpture more pronounced than on the vertex. Scutellum brownish, paler behind, rugulose in front of the depressions and transversely striate behind. Wings pale brownish, veins with alternating dark brown and white portions. When the wings are at rest the following white portions of the veins are most conspicuous: terminal portion of *2d A* (which when the wings are closed makes in combination with the white vein on the opposite wing a conspicuous V-shaped mark); a section near the base of *Cu* opposite the fork of *R*; the fork of *R*; and the junction of *Cu2* and *1st A*. Legs brownish yellow; tibiae with a more or less distinct dark brownish stripe extending along the basal half of the outer edge. Claws blackish. Ventral aspect of insect yellowish.

Male (Pl. 30, Fig. 6). Length, 6 mm. Coloration of head similar to that of female. Prothorax slightly more grayish with two irregular blackish spots in center and one on either side on posterior border. Scutellum yellowish brown with a blackish bar in front notched in the center behind, and nearly interrupted by two large areas of the ground color; behind this bar are two small blackish spots. Membrane of wings for the most part pale brownish, more pronounced at tip, veins with alternating whitish and dark brownish or blackish portions. The extent of the dark brownish portions on the wings varies to a considerable extent but is often as shown in Pl. 31, Fig. 10. The markings on the wings are more distinct than in female. Antennæ and legs similar to those of the female. Antennæ without discs. Face of the male (Pl. 31, Fig. 9) similar to that of female. In the lighter specimens the mottling on the vertex, which in the darker specimens often forms a more or less distinct band connecting the eyes, is very faint, and the procurved line connecting the antennæ lacking.

Egg (Pl. 30, Fig. 7). Length, 1.36 mm., width, .4 mm., bluntly rounded at posterior end, tapering gradually to anterior end which is obliquely truncate and provided with a dark brownish cap; pale translucent, shiny; chorion finely punctate.

The eggs (Pl. 31, Fig. 8) are inserted in groups of five to ten, eight being a common number, just under the bark of the green twigs, usually just above a bud. The eggs lie flat in a more or less curved row under a thin flap of bark which soon turns brown.

NYMPHS.

Stage I (Pl. 30, Fig. 1). Length, 1.29 mm., width of head including eyes, .63 mm. General color shining dark brown or black. Head with a narrow yellowish median line. Thorax with a broader yellowish median line of varying width. First and second abdominal segments yellowish; the latter brownish laterally. Eyes reddish. Antennæ pale yellowish, except basal segment which is black. Coxæ, trochanters and extreme base of femora pale yellowish; remainder of femora and basal half of tibiae dark brownish or blackish; terminal half of tibiae and first tarsal segment pale yellowish; whole of second segment of fore tarsi, and tip of second segment of middle and hind tarsi, blackish; claws blackish.

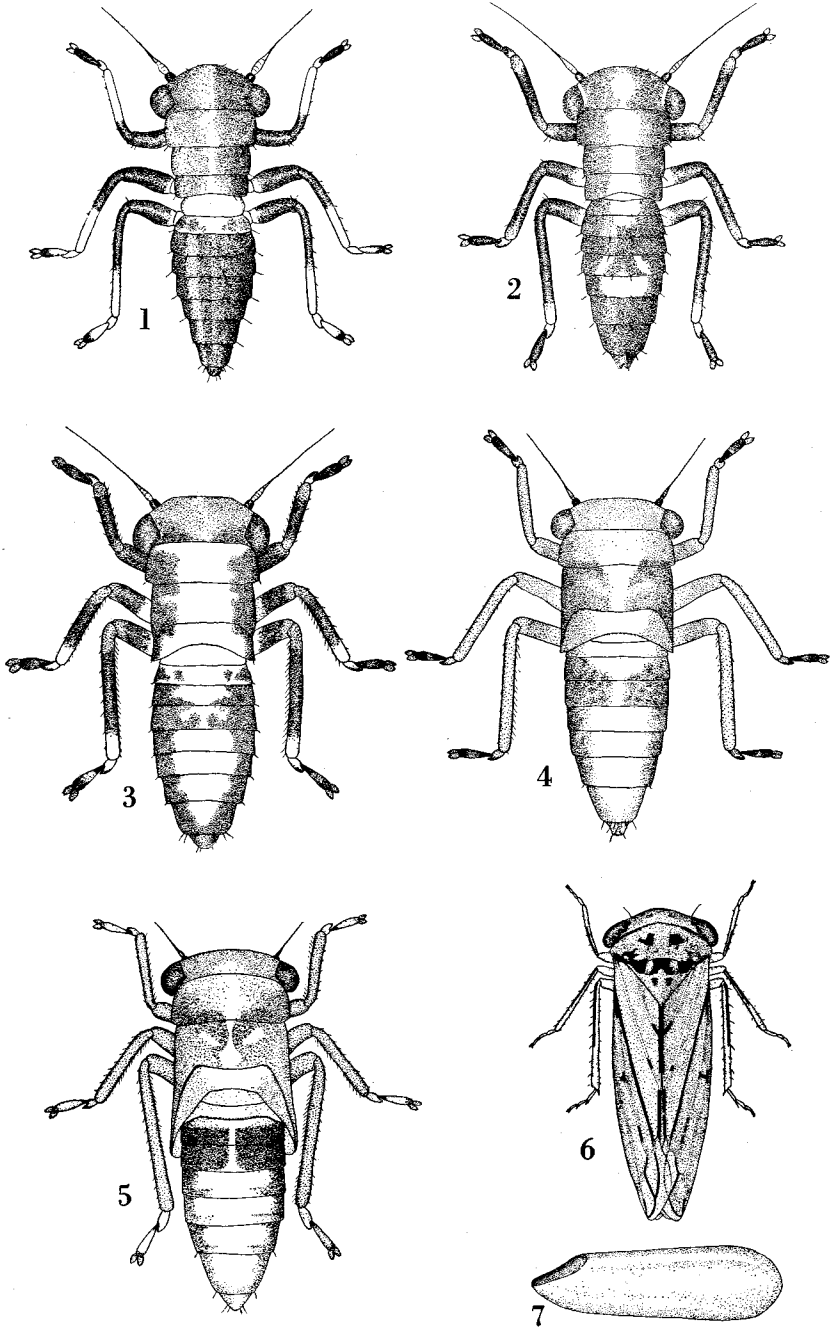
Stage II (Pl. 30, Fig. 2). Length, 1.98 mm., general color dark brownish to blackish. A pale yellowish median stripe, varying in width, extends from near the vertex back to the middle of the third abdominal segment. Segments five and six of abdomen yellowish in center. These yellowish markings vary considerably in extent and distinctness in different individuals. There is also a pale yellowish line on the head bordering the inner margin of the eyes. Eyes reddish. Antennæ pale yellowish except basal segment which is blackish. Coxæ, trochanters, extreme base of femora and tip of middle and hind tibiæ pale yellowish or whitish. Tip and base of fore tibiæ and tip of fore femora light brownish. First segment of tarsi whitish or slightly tinged with brownish; second segment of tarsi blackish; claws light brownish.

Stage III (Pl. 30, Fig. 3). Length, 2.61 mm., width of head including eyes, .85 mm. In this stage the general color is somewhat lighter than in the two preceding stages and the yellowish median stripe is considerably broader. It varies in extent and width but is usually about as shown in the figure. Head wholly tinged with brownish, with dark brownish or blackish on caudal margin inside eyes. Eyes and antennæ as in preceding stage. Legs dark brownish or blackish except for the following parts: coxæ, trochanters, extreme base of femora, and tip of middle and hind tibiæ and first tarsal segment, pale yellowish; tip of fore tibiæ, tip of femora, base of tibiæ, center of second tarsal segment, and the claws, light brownish. Metathoracic wing-pads extend back to second abdominal segment and mesothoracic wing-pads noticeably produced backward.

Stage IV (Pl. 30, Fig. 4). Length, 3.88 mm., width of head including eyes, 1.57 mm. Markings variable but in general as shown in figure. Paler than in preceding stage being rather light brownish. Head pale brownish. Median yellowish area broad on prothorax, narrowing on mesothorax, then wider on metathorax. Laterad of this area on the pro- and metathorax pale brownish, on mesothorax dark brownish. Abdomen with two large yellowish areas narrowly connected on the median line, bordered laterally with dark brownish. Eyes and antennæ as in preceding stage. Legs yellowish brown, femora paler at base and tip. Fore tibiæ tinged with dusky except at base. First tarsal segment yellowish tipped with dusky; second segment dark brownish or blackish, lighter in middle; claws brownish. Wing-pads extend back nearly to third abdominal segment.

Stage V (Pl. 30, Fig. 5). Length, 4.9 mm., width of head including eyes, 1.98 mm. Head pale brownish. Prothorax yellowish or brownish yellow, hind angles darker; mesothorax brownish except a yellowish median portion and a yellowish spot on either side of this, as shown in figure. Metathorax yellowish in center as in preceding stage; wing-pads pale brownish. First two segments of abdomen brownish yellow, remainder of abdomen yellowish except the lateral margins of segments five to nine which are dark brown and a blackish band interrupted narrowly along the median line and including the posterior two-thirds of segment three and the whole of segment four. Antennæ and eyes as in preceding stage. Legs light brownish; first segment of tarsi yellowish, second segment at base and tip, and the claws, tinged with brownish. Wing-pads extend back to middle of fourth abdominal segment.

Until about the fourth stage the nymphs remain feeding on the leaves. In the fourth and fifth stages they are found on the smaller twigs resting usually with the head directed towards the base of the branch. In this position they bear a striking resemblance, both in form and color, to the buds of the poplar.



Idiocerus gemmisimulans

Described from thirty-four adult specimens—thirteen females and twenty-one males. Reared on the common poplar, *Populus deltoides* Marsh, and from Lombardy poplar, *Populus nigra italica* Du Roi, at Ithaca, N. Y. The descriptions and drawings of the nymphal stages were made from living specimens. Types in the Cornell University collection.

This species is most closely related to *I. lachrymalis* Fitch, from which it may be distinguished by the fact that the antennæ of the males lack discs, the absence of the spots on the face, the less distinct spots on the vertex, and the presence of a blackish line on the tibiæ.

THE EGG-PARASITE. On May 20 it was noticed that parasites were emerging from the eggs of *Idiocerus* through a small round hole in the bark overlying the egg-clusters. Six specimens were secured of which four were females and two males. This species is apparently undescribed.

Gonatocerus ovicenatus new species.

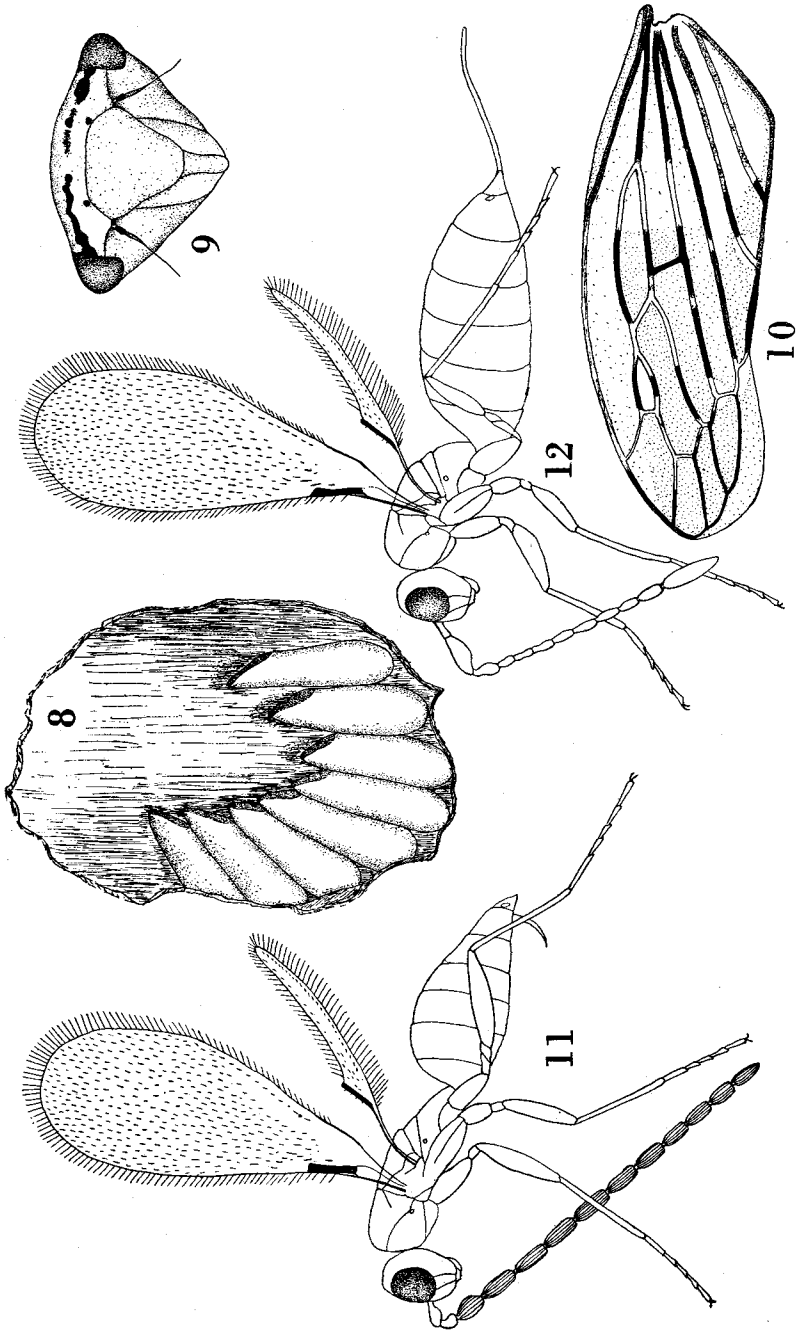
Female (Pl. 31, Fig. 12). Length, 1 mm., ovipositor, .36 mm. General color black, the eyes dorsally and posteriorly narrowly margined with white. A broad band on the vertex connecting the eyes and including the ocelli, whitish. Thorax and abdomen uniform black. Ovipositor black, distal third bent slightly downward. Antennæ brownish, radícula slender, one half as long as the scape. The scape is compressed, widened below, the articulation with the radícula marked by a whitish band; pedicel obconic. The relative length of the segments of the antennæ is indicated by the following ratio: radícula and scape, 36; pedicel, 18; funicle segments 10, 12, 16, 15, 18, 17, 16, 16; club 40. Legs blackish, base and tip of front femora, front tibiæ, and tarsi of all the legs paler; terminal tarsal segments darker than basal segments. Wings hyaline. Front wing one-third as wide as long. Length of longest marginal cilia about one-fifth width of the wing.

Male (Pl. 31, Fig. 11). Length, .9 mm. In color similar to the female. Whitish markings on the head as in the female. Antennæ brownish, thirteen segmented. The relative length of the segments of the antennæ is indicated by the following ratio: scape 15; pedicel, 10; funicle segments, 20, 25, 24, 20, 22, 25, 25, 25, 22, 23, 22. Scape short, rounded below; pedicel broadly obconic; first funicle segment broader than succeeding segments; the segments of the funicle coarsely ridged longitudinally.

Described from four females and two males, reared at Ithaca, N. Y., from the eggs of *Idiocerus gemmisimulans* Leonard and Crosby, May 20, 1915. Types in the Cornell University collection.

According to Girault's table to the species of *Gonatocerus* (Trans. Am. Ent. Soc., 37: 273), this species would run fairly well to *G. maga* Girault, from which it may be distinguished by the antennal characters given above.

Our thanks are due to Professor Osborn for examining our specimens of *Idiocerus* and comparing them with specimens in his collection.



Idiocerus and Gonatocerus

EXPLANATION OF PLATES 30 AND 31

- Fig. 1. *Idiocerus gemmisimulans*, first stage nymph.
- Fig. 2. *Idiocerus gemmisimulans*, second stage nymph.
- Fig. 3. *Idiocerus gemmisimulans*, third stage nymph.
- Fig. 4. *Idiocerus gemmisimulans*, fourth stage nymph.
- Fig. 5. *Idiocerus gemmisimulans*, fifth stage nymph.
- Fig. 6. *Idiocerus gemmisimulans*, adult male.
- Fig. 7. *Idiocerus gemmisimulans*, egg.
- Fig. 8. *Idiocerus gemmisimulans*, cluster of eggs in position.
- Fig. 9. *Idiocerus gemmisimulans*, face of male.
- Fig. 10. *Idiocerus gemmisimulans*, wing of male.
- Fig. 11. *Gonatocerus ovicenatus*, male.
- Fig. 12. *Gonatocerus ovicenatus*, female.