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ON CERTAIN BRITISH HEMIPTERA-HOMOPTERA.

(Revision of the Family *Cixiidae*).

BY JOHN SCOTT.

(Continued from page 148).

Species 5.—*CIXIUS CONTAMINATUS*.

Flata contaminata, Germ., Mag., iii, 196, 7 (1818); Thon Archiv., ii, 49, 29 (1829).

Flata albicincta, Germ., Mag., iii, 199, 9 (1818).

Cixius contaminatus, Burm., Handb., ii, 157, 4 (1835); Flor, Rhyn. Liv., ii, 24, 2 (1861); Marshall, Ent. Mo. Mag., i, 155, 2 (1864); Kirschb., Cicad., 49, 9 (1868).

Cixia albicincta, Burm., Handb., ii, 158, 6 (1835).

Head black, keels broadly pale brownish-yellow. *Face* brownish-yellow. *Elytra* almost invariably with three short black streaks along the anterior margin, and a short transverse fuscous streak midway between the cuneate patch and the apex.

Thorax: *pronotum* clear brown, or brown, or brownish-yellow; on the sides between the keels and the posterior margin, narrowly black. *Scutellum* black, keels and the side margins more or less reddish-brown. *Elytra* pale, greyish or dark grey, granules on the interior nerves somewhat minute, thickly disposed and placed irregularly, generally in pairs, sometimes placed from left to right, sometimes from right to left, and with an occasional single granule between them, towards the apex; anterior margin almost constantly with three short black streaks, from the first of which a more or less distinct brown band passes across to near the apex of the clavus; cuneate patch brown, in which is a few black granules; and midway between this and the apex is a short transverse fuscous streak. *Wings* pale, nerves piceous. *Legs* yellow, or with a fuscous shade; *thighs* pitchy-black.

Abdomen black; *genital segment* in the middle underneath, "claspers," &c., yellowish. Length, 2—2¼ lines.

In the variety *albicincta*, the inner longitudinal half of the elytra are dark brown, the outer half pale, with the usual specific characters.

This is our smallest species, and is at once to be recognised from all the others by the three short black streaks on the anterior margin. The dark grey form, on first sight, very much resembles *stigmaticus*.

Widely distributed, although the varieties appear to be confined to the south. It occurs from June to September, on various trees and bushes.

C.

Species 6.—CIXIUS STIGMATICUS.

Flata stigmatica, Germ., Mag., iii, 199, 8 (1818); Thon Archiv., ii, 49, 30 (1829).

Cixia stigmatica, Burm., Handb., ii, 157, 5 (1835).

Cixius musivus, Marshall, Ent. Mo. Mag., i, 155, 3 (1864).

Cixius stigmaticus, Kirschb., Cicad., 47, 4 (1868).

Elytra without bands, and the marginal nerve without united granules; dark grey or brownish-grey, with several irregularly disposed, and more or less confluent, darker spots.

Head: crown, face, and *clypeus* black, keels clear brownish-yellow.

Thorax: *pronotum* ferruginous, sometimes piceous between the keels. *Scutellum* black, keels somewhat prominent, side margins, at the base, brown. *Elytra*: nerves somewhat whitish, granules thickly disposed, generally along the top of the nerves, but sometimes slightly inclined, in pairs, from left to right towards the apex; cuneate patch brown, more or less distinct, transverse nerves black. *Wings* pale grey, darker towards and at the apex, nerves dark brown or black. *Legs* yellow; *thighs*, 1st and 2nd pairs black, 3rd more or less dark piceous, apex narrowly yellow; *tibiæ*, 1st and 2nd pairs with a narrow blackish ring near the base; *tarsi*, 3rd joint of the 1st and 2nd pairs black, 3rd pair, 3rd joint, brown.

Abdomen black, side margins narrowly bright orange-red; *genital segment* black, "claspers," &c., fuscous-yellow. Length, $2\frac{1}{4}$ — $2\frac{1}{2}$ lines.

Somewhat larger than *contaminatus*, with larger granules, and without the three short streaks along the anterior margin, so characteristic of that species.

Apparently not common, although widely distributed. I have seen specimens from Inverness-shire (Dr. White) and from Deal (Mr. Douglas), the latter taken amongst *Hippophæe rhamnoides*. It occurs in June and July.

Species 7.—CIXIUS SIMPLEX.

Flata simplex, H. Schf., Nom. Ent., i, 64 (1835).

Elytra pale, marginal granules elongate, somewhat thickly placed, apex between the nerves with pale fuscous spots; *clavus*, marginal nerve, next the apex, black.

Head: crown, face, and *clypeus* black, keels brownish-yellow. *Eyes* brown. *Antennæ* yellowish.

Thorax: *pronotum* black, side keels and posterior margin pale brownish-yellow. *Scutellum* black, keels acute, side margins at the base, and at the junction with the side keels, narrowly clear brown. *Elytra* pale, somewhat opaque,

marginal nerve, as far as the black cuneate patch, white, from thence round the apex brown or fuscous, inner nerves pale yellowish-white, granules elongate, black, somewhat eye-shaped, placed at regular intervals along the top of the nerves, and somewhat more thickly disposed on the 1st and 2nd nerves of the corium, at the apex the granules are inclined to become more or less confluent; transverse nerves fine, black; apex of the claval suture, and a short streak next the junction of the nerve with the inner margin, black. *Wings* pale at the base, towards and at the apex pale fuscous, nerves piceous or fuscous. *Legs* yellow; *thighs* pitchy-black, apex narrowly yellow; *tibiae* with a narrow, piceous streak down the sides, base of all the pairs with a narrow blackish ring; *tarsi* yellow, 3rd joint of the 1st and 2nd pairs black, of the 3rd pair brown.

Abdomen black, margins of the segments above narrowly, and sides, orange-yellow or red; *genital segment* black, "claspers," &c., somewhat fuscous-yellow.

Length, $2\frac{1}{2}$ lines.

This insect is exceedingly like the following species (*similis*), and can only outwardly be distinguished from it by the different shape of the granules, their closer position both on the inner nerves and along the marginal nerve, and by the nerves being slightly more yellow.

I only know of two examples; one (a ♀) taken by Mr. Dale at Bonchurch, in October, the other (a ♂) in my own collection, without date or locality.

Species 8.—CIXIUS SIMILIS.

Cixus leporinus, Marshall, Ent. Mo. Mag., i, 155, 4 (1864), *nec* Panzer.

Cixius similis, Kirschb., Cicad., 49, 7 (1868).

Elytra somewhat whitish, marginal granules elongate, and placed at wide intervals, all the nerves white, apex without spots between the nerves.

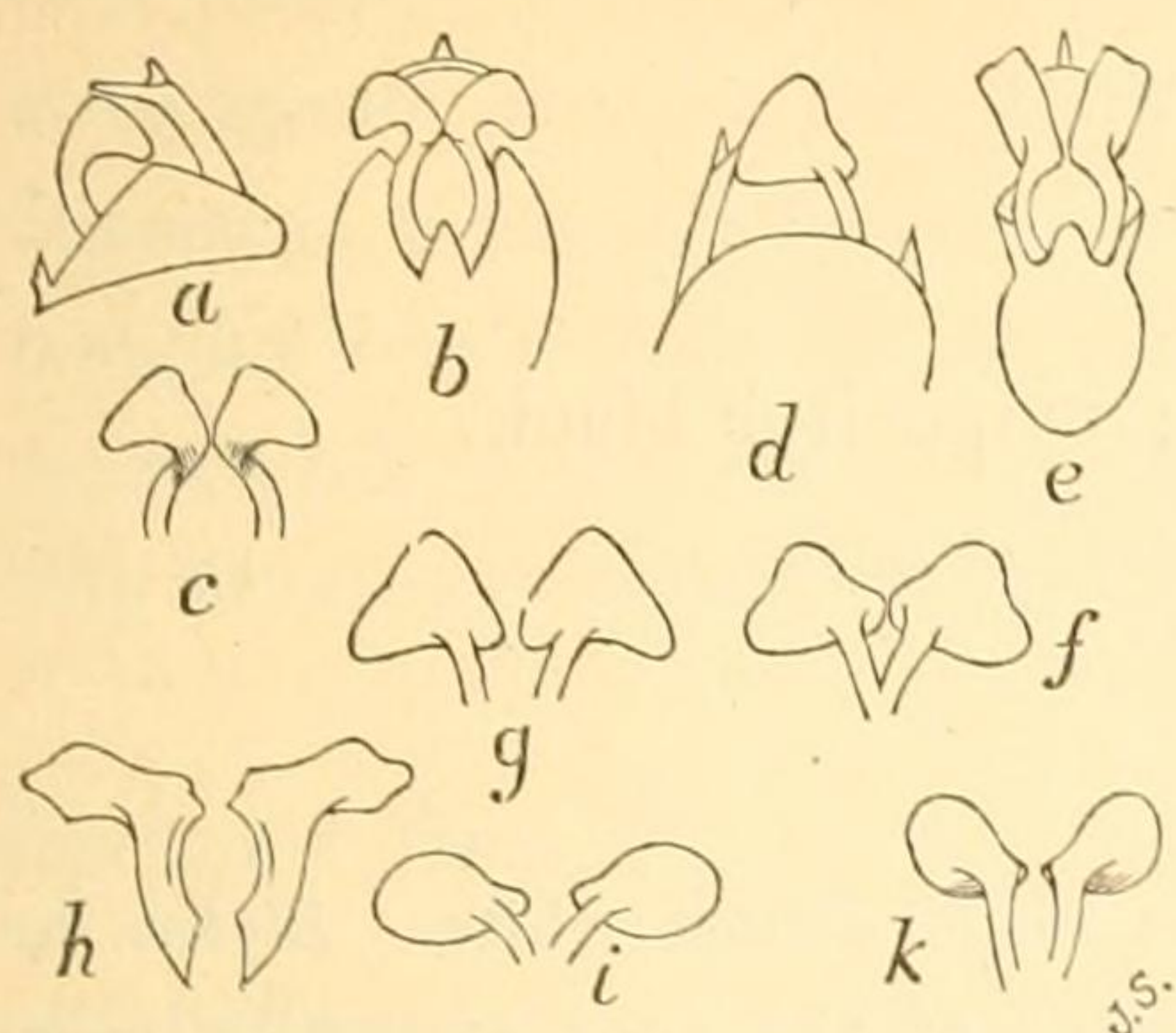
Head: crown, face, and clypeus black, keels brownish-yellow. *Eyes* brown. *Antennæ* brown.

Thorax: pronotum black, side keels and posterior margin pale brownish-yellow.

Scutellum black, middle keel sometimes brown, side margins, from the base to the junction with the side keels, narrowly brown. *Elytra*: marginal nerve from the black cuneate patch round the apex exteriorly yellow, interiorly fuscous, inner nerves chalk-white, granules elongate, of almost uniform width, somewhat remotely placed along the top of the nerve; transverse nerves fine, black. *Wings* pale, transparent, nerves fuscous. *Legs* yellow; *thighs* pitchy-black, apex narrowly yellow; *tibiae* with a narrow, piceous streak down the sides; *tarsi*, 1st and 2nd pairs somewhat fuscous, 3rd joint black, 3rd pair yellow, 3rd joint yellow.

Abdomen black, margins of the segments above narrowly yellow, side margins orange-red; *genital segment* black, "claspers," &c., pale fuscous-yellow.

Length, $2\frac{1}{2}$ lines.



- a. side view of genital segment of ♂ *Cixius stigmaticus*.
 b. the same, viewed from beneath.
 c. claspers of do.
 d. side view of genital segment of ♂ *C. brachycranus*.
 e. the same, viewed from beneath.
 f. claspers of do.
 g. ,, ♂ *C. intermedius*.
 h. ,, ,, *nervosus*.
 i. ,, ,, *simplex*.
 k. ,, ,, *similis*.

The more remote intervals of the granules, their difference in form, and the *chalk-white* nerves are the chief outward characteristics whereby to distinguish this species from *simplex*. The form of the genital organs of both species are abundantly distinct.

I have examined several individuals in Mr. Dale's collection, taken by him at Bonchurch, Isle of Wight, and it has also been taken by Mr. Douglas at Deal on *Hippophæe rhamnoides*, in company with *C. stigmaticus*. It appears in June, July, and October.

[Revision of the Family *Delphacidæ*, and descriptions of several new species of the genus *Delphax* of authors].

(continued from p. 75).

Species 5a.—LIBURNIA PALLIDULA.

Delphax pallidula, Boh., Handl., 48, 16 (1847); Öfvers., iv, 265, 9 (1847); Stål, Öfvers., xi, 191, 6 (1854); Flor, Rhyn. Liv., ii, 44, 3 (1861); Kirschb., Cicad., 25, 11 (1868) ♀.

Developed form ♂.

Pale yellow, with a slight fuscous shade. *Elytra*: middle nerve black.

Head yellow. *Antennæ* yellow, granules brownish. *Eyes*, in life, greenish; after death, dark brown. *Ocelli* minute, black.

Thorax: *pronotum* yellowish-white. *Scutellum* ferruginous, keels more or less broadly whitish. *Elytra*: *corium* between the anterior margin and the middle nerve almost white, from thence to the claval suture yellowish; the furcate middle nerve, from about in a line with the apex of the clavus, black; apex of the marginal nerve between the bifurcation, black; *clavus* yellowish, nerves darker. *Wings* pale, transparent; two entire nerves, the transverse nerve and a short one from its upper extremity to the dorsal angle, black. *Sternum* pale yellow. *Legs* pale yellow. *Claws* black.

Abdomen pale yellow, above frequently brownish, side margins and dorsal line pale; *genital segment* pale yellow, almost white.

Developed form ♀.

Like the above in all particulars; ovipositor black.

Undeveloped form ♂ and ♀.

Clear pale yellow.

Thorax: *pronotum* and *scutellum* between the keels almost white. *Elytra* lanceolate, as long as the abdomen, middle nerve at the apex generally brownish. All the other characters as in the developed forms.

Length: developed, $1\frac{1}{2}$ — $1\frac{3}{4}$ lines; undeveloped, $1\frac{1}{8}$ line.

Very closely allied to *L. Scotti*, and the resemblance is most remarkable in the undeveloped form. It is, however, more delicate than that insect, is smaller in every way, and has not the black spot on the cheeks, nor the ovate black spot at the apex of the elytra.

I am not aware that the developed form of *L. pallidula* has ever been noticed before, and it is on this account that I have described it. Although the type (undeveloped) which Dr. Stål was good enough to send me has *no* dark markings on the elytra, yet in fresh specimens there are more or less traces of the middle nerve being brownish next the apex.

Rare in the developed state; undeveloped form common.

Taken by myself at Wimbledon, in September.

Species 22a.—LIBURNIA EXTRUSA, *n. s.*

Undeveloped form ♂.

Yellow. Styloid processes black, viewed from above they are seen to project outwardly, and appear like a \cap .

Head: *crown* yellow, the foveæ small, somewhat deep and distinct. *Forehead* and *face* slightly dusky, keels, and a narrow transverse line a little above the lower margin of the eyes, pale yellow, base of the forehead brownish; *clypeus* brownish, keels pale yellow; *cheeks* yellow, inner margin narrowly brownish. *Antennæ*: 1st joint pale yellow, 2nd pale brownish-yellow. *Eyes* black. *Ocelli* black.

Thorax: *pronotum* pale yellow, keels distinct but not prominent; sides more or less fuscous beyond the keels. *Scutellum* pale yellow, keels distinct, sides more or less fuscous beyond the latter. *Elytra* pale yellow, covering about two-thirds of the abdomen, rounded at the apex, nerves with minute granules, marginal nerve, except round the pale yellow apex, white. *Sternum* yellow; *metasternum* on the sides with a black spot. *Legs* yellow, 1st and 2nd pairs somewhat dusky; *claws* black.

Abdomen yellow, sides slightly fuscous, base of the segments very narrowly, and three minute spots on each, blackish; these last characters are more or less distinct in different individuals: *genital segment* yellow, side of the posterior margin brownish-black in the middle; viewed from behind, there is a black spot on each side of the centre: styloid processes black; when viewed from above, they are seen to project outwardly, somewhat in the shape of a horse shoe.

Undeveloped form ♀.

Abdomen yellow, the three spots on the segments more or less distinct.

var. *fuscula*. *Elytra* fuscous-yellow, nerves darker, granules distinct. *Abdomen* dusky yellow, sides broadly fuscous-black, posterior margin of the segments across the back more or less fuscous-black, their extreme margin fuscous-yellow. All the remaining characters as in the other form.

Length, ♂, 1 line; ♀, $1\frac{1}{4}$ — $1\frac{1}{2}$ lines.

This species stands immediately before *L. neglecta*, Flor, which it is extremely like; and, but for Flor not mentioning the *projecting* styloid processes, so very characteristic in this species, or the white marginal nerve of the elytra, also very distinct, and the different shape of the genital segment of *L. neglecta*, when viewed from behind, as figured by Fieber in the *Verhand. d. k. k. zool. bot. Gesell.*, vol. xvi, t. 8, fig. 52, I should have referred it to that species without doubt.

I took both sexes at Wimbledon, in September last, but very sparingly. Mr. Douglas and I had each, some years ago, taken the ♀; but, as we could not reconcile it with any description, it has stood amongst our doubtful species until now.

Genus 6.—ACHOROTILE.

Head: crown quadrate. *Face* with two middle keels, parallel from the crown to within a short distance of the clypeus, where they approximate; the channels between the side and middle keels pustulate. *Antennæ* with the basal joint short, about three-quarters of the length of the second.

Thorax: *pronotum* with three keels, those on the sides not reaching to the posterior margin, but curved round outwardly, their inner margin pustulate. *Scutellum* with three entire keels; side keels diverging posteriorly, pustulate along their inner margin. All the other characters as in *Liburnia*, &c.

Genus 6.—ACHOROTILE, *Fieb.*

Species 1.—ACHOROTILE ALBOSIGNATA.

Delphax albosignata, Dahlb., k. Vet. Ak. Handl., p. 199 (1851);
Stål, Öfvers., xi, 196, 31 (1854).

Delphax fuscinervis, Boh., k. Vet. Ak. Handl., p. 113 (1852).

Achorotile albosignata, Fieb., Verhandl. d. k. k. zool. bot. Gesell.,
xvi, 521, 15, t. 8, fig. 16 (1866).

Undeveloped form ♂.

Black, shining.

Head: crown yellowish-white, the three foveæ deep and distinct, the keels acute and prominent; two pustules on each side between the side and middle keels. *Face* dark brown or somewhat piceous on each side; in the channel between the side and middle keels are seven pustules, placed thus—three in a line with the eye, two next the clypeus along the outer margin of the middle keel, and two (the uppermost of which is almost in a line with the lower margin of the eye) along the inner margin of the side keel; along the side keels, towards their lower extremities, are also five pustules, similar in position to those along the middle keel. *Clypeus* and *cheeks* dark brown or piceous. *Antennæ* dark brown, 1st joint darkest.

Thorax: *pronotum* pitchy-black, with a broad yellowish-white streak down the middle, outer margin of the side keels with four pustules. *Scutellum* pitchy-black, with a yellowish-white streak down the middle; inner margin of the side keels with two pustules. *Elytra* pitchy-brown, shining, not covering more than the two basal segments of the abdomen, almost truncate posteriorly; nerves distinct, not granulated. *Legs* fuscous-black; *thighs*, apex whitish; *tibiæ*, 3rd pair, spines and apex whitish; *tarsi*, 3rd pair whitish, 3rd joint brown.

Abdomen black, shining, posterior margin of the 2nd and 3rd basal segments broadly white; *genital segment* above posteriorly somewhat brownish.

Length 1 line.

This insect may at once be distinguished from every other in the family by the pustulations on the head, pronotum, and scutellum, and the white margin to the basal segments of the abdomen, as pointed out.

I have made the description from a continental example of the undeveloped imago, presented to me by Dr. Stål, on the strength of six pupæ taken by J. C. Dale, Esq., near Bonchurch, in the Isle of Wight, in October. Both sexes are represented, the pupa of the female being orange-yellowish, with the two basal foveæ on the crown and two spots on the scutellum, black, and the sides of the elytra and abdomen more or less fuscous; that of the male being entirely fuscous-black. The pustules are present on the head and face as in the perfect insect.

There is but this one species known on the Continent, and which, according to Dahlbom, occurs in July.

Lee: December, 1870.