

segment quite broadly truncate at apex.

*Female*.—More robust, usually larger. Fifth ventral segment broadly but not strongly arcuate at apex.

*Measurements*.—Length (Types) 2.8-2.9 mm.; width 1-1.3 mm.

*Holotype*, male and, *allotype*, female, both to be placed in the National Collection at Ottawa, Canada.

*Paratypes* in the collection of the author and that of Mr. Ralph Hopping of Vernon, B. C.

*Type locality*.—El Mirador, Tulare County, California. Thirty-seven specimens studied. Collected by Mr. Hopping.

*Subaeneus* resembles *cruralis* Lec. in coloration, but differs in its more aeneous luster, coarser pubescence and sculpturing. It should follow *cruralis* in our lists.

## OBSERVATIONS ON THE CHERMIDAE (HEMIPTERA; HOMOPTERA).<sup>1</sup>

### PART III.

BY G. F. FERRIS,

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For the third of this series of papers I have selected for discussion five species. Of these, one, *Pachypsylla venusta* (Osten Sacken), is the type of its genus and consequently of the tribe Pachypsyllini. In connection with the description of the nymph of this species it is desirable to describe a peculiar nymph of which it is possible only to say that it belongs to the same tribe. Although the species to which it belongs must for the present remain nameless it is one of such interest that it is justifiable to consider it. Of the other species, two, *Psyllia buxi* (Linnaeus) and *Phyllopecta tripunctata* (Fitch) are the types of genera, while *Phyllopecta diospyri* (Ashmead) is of interest in connection with *P. tripunctata*.

### ***Pachypsylla venusta* (Osten Sacken).**

Fig. 1.

**MATERIAL EXAMINED.** Adults and nymphs from *Celtis* sp., Reserve, Louisiana, received from Mr. T. H. Jones and nymphs of apparently the same species from *Celtis mississippiensis*, Dallas and Brownsville, Texas (G. F. Ferris) and from galls on herbarium specimens of *Celtis douglasii* near Salt Lake City, Utah.

**NYMPHAL STAGES.** My material contains specimens of the last three stages, which, if the number of stages is the same in this species as in others studied would be the third, fourth and fifth. This species forms a large, spherical gall on the twigs and petioles of its host.

*Fifth stage* (Fig. 1A). Length 4 mm. Of psylliine form, the head very small, the wing-pads disproportionately small and the abdomen much swollen. Derm membranous throughout except for two pairs of small areas on the dorsum of the head, a pair at the base of the antennae, the wing pads, small areas on the venter of the abdomen, the extremely heavily chitinized apex of the abdomen and the appendages. The body is quite thickly beset with slender setae, those at the margins of the abdomen being longer than the others, which give the insect a shaggy appearance.

1.—Continued from Canadian Entomologist 57: 50. (1925).

Antennae (Fig. 1D) moderately stout, nine-segmented, the third segment about twice as long as any of the others and slightly bent. Legs quite stout, with a distinct trochanter; claws lacking; pulvillus apparently lacking.

Abdomen with the apical third, both dorsally and ventrally, very heavily chitinized, the shape of this area as indicated in the figure, and terminating in a conspicuous spine-like point which is flanked by stout spurs (Fig. 1F). Apparently the anal opening is borne by this process. Dorsally this chitinized area seems to involve three segments, each of which bears medially a cluster of three to six stout spurs. The two anterior segments included in this area bear at their lateral margins clusters of very peculiar pores (Fig. 1B).

The anal pore ring, which is such a marked feature of other members of this family, is entirely lacking.

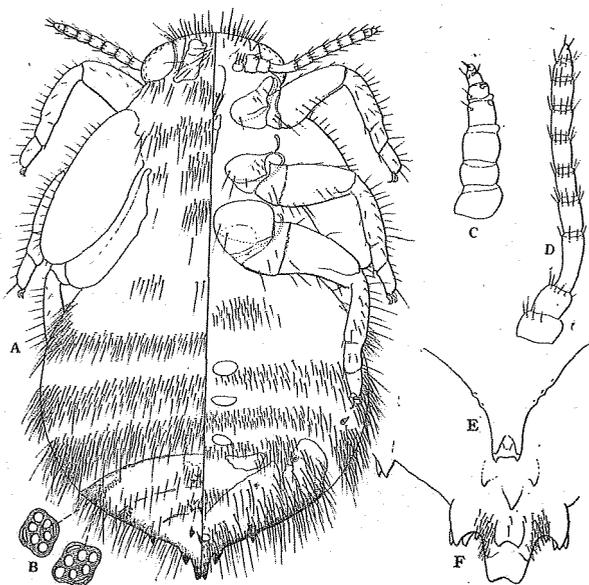


Fig. 1. *Pachyphylla venusta* (Osten Sacken). A.—Fifth stage of nymph; B.—pores; C.—antennae of third stage; D.—antennae of fifth stage; E.—apex of abdomen of third stage; F.—apex of abdomen of fifth stage.

*Fourth stage.* Length 2 mm. Differing from the fifth stage in having the abdomen terminate in a simple process without the lateral or dorsal spurs (Fig. 1E); in having the antennae (Fig. 1C) short, stout and six-segmented and in having the legs shorter and stouter; and in the absence of the tibio-tarsal articulation.

*Third stage.* Length 1 mm. Differing from the fourth in having the antennae still shorter and stouter, although composed of the same number of segments and in the absence of the trochanter.

Note: This genus is evidently a very peculiar group. Although it has been placed together with two other genera as a tribe of the Psylliinae it differs so markedly from the typical psylliine forms as to suggest the probability that a different position must eventually be assigned to it. The peculiar groups of pores on the abdomen, the type of the antennae, the presence of trochanters, and above all the absence of the circum-anal pore ring are marked characteristics.

As far as I am aware representatives of this genus have not been recorded from California. I have at hand undetermined nymphs taken from small galls on the leaves of *Celtis reticulata* at Thing's Valley, near Campo, San Diego County.

Nymph of an undetermined species and genus.

Fig. 2.

MATERIAL EXAMINED. Nymphs only, from leaves of *Celtis reticulata*, Ridge Spring, Marathon, Texas, July 15, 1921 (G. F. Ferris).

This species forms a little, flat, waxen cell on the under side of the leaves of its host.

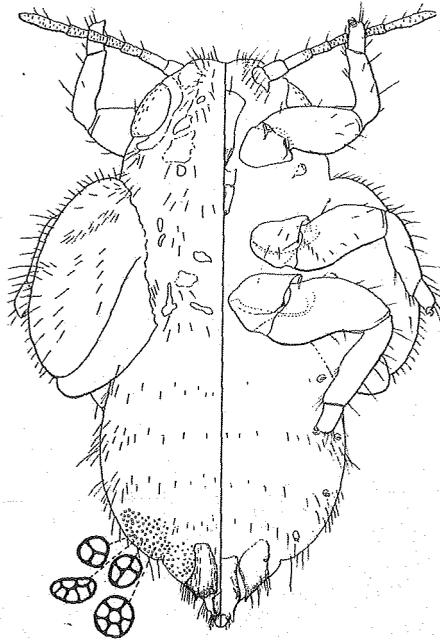


Fig. 2. *Undetermined species*. Fifth stage of nymph and abdominal pores.

NYPHAPAL STAGES. Last stage only present in my material.

*Fifth stage* (Fig. 2). Length 3 mm. Derm membranous throughout except for small areas on the head and thorax, the wing pads, small apical areas on the abdomen and the appendages. Body sparingly beset with small setae as indicated in the figure.

Antennae eight-segmented, rather short, the last five segments and the apex of the third imbricated. Legs quite stout, without a trochanter; claws present; pulvillus apparently lacking.

Extreme apical portion of the abdomen chitinized; dorsally with a small apical plate which is flanked by a pair of lateral plates that bear a spur at the margin and are continuous with a pair of ventral plates which enclose a larger median plate. Cephalad of this chitinized region, on the dorsal side, is a zone of peculiar pores each of which consists of from three to seven large loculi (Fig. 2). There is no indication of any circum-anal pore ring and the anus is apparently borne on the apical process.

Note: Having at hand only the nymph it is impossible to identify this species, but it is one of such interest that I am discussing it without a name. The species differs markedly from *Pachypsylla* in several respects, notably the absence of a trochanter, the different shape of the abdominal pores and the different arrangement of the apical chitinization on the abdomen. However, the absence of the circum-anal pore ring, a certain general similarity and the host indicate a relationship to that genus. It is not at all impossible that it is the nymph of *Tetragonocephala flava* Crawford, which was described from Brownsville, Texas, based on a single male, without indication of host.

### Genus *Phyllopecta* Zacher.

1913. *Phyllopecta*, Zacher, Ent. Mitteil. 2: 148.  
 1915. *Megatrioza*, Crawford, Philippine Jn. Sci. (D) 10: 254.  
 1919. *Megatrioza*, Crawford, Ibid. 15: 192.  
 1920. *Triosa*, Crawford, Ent. News 31: 70. (In part).

The genus *Phyllopecta* was named by Zacher in 1913 with *Psylla tripunctata* Fitch (= *Triosa tripunctata* Fitch) as type. *Megatrioza* was named by Crawford in 1915 with *M. armata* Crawford as type. Crawford (1920) states that the genus *Phyllopecta* can not stand as *tripunctata* is "clearly a member of *Triosa*."

However, Crawford himself (1919, p. 193) has referred the American species *Triosa diospyri* Ashmead to the genus *Megatrioza* and on the basis of his description of the latter genus it seems really to belong there. I have at hand material of both *diospyri* and *tripunctata* and it is evident that these two species are actually congeneric, all of the characters given by Crawford for *Megatrioza* being equally well developed in both, if not even more strongly in *tripunctata*. This being the case it appears that *Megatrioza* is a synonym of *Phyllopecta*.

The most distinctive features of the genus, as given by Crawford, are the presence of a spur, or spurs, at the base of the hind tibiae and of an anteriorly directed spur on the hind coxae in addition to the posteriorly directed spur. The majority of the species occur in the eastern tropics and the two species here referred to the genus are as far as known the only New World representatives.

I am attempting in this series of papers to figure and describe as many as possible of the nymphs of generic types. In this particular instance the figures of *diospyri* and *tripunctata* were prepared before I was aware that the latter was a generic type and consequently this species is not figured in detail. However, the labor of preparing these drawings is rather time consuming and consequently I am figuring only the former completely, the two species being so much alike in their general features that complete figures for both seem hardly necessary.

### *Phyllopecta diospyri* (Ashmead).

Fig. 3 A, B, D, E, F, G, I, K, L, M.

MATERIAL EXAMINED. Adults and nymphs from *Diospyros*, Magnolia, Louisiana (T. H. Jones) and adults from Quantico, Virginia (C. D. Duncan).

ADULT. I shall here call attention merely to certain points of interest not mentioned by Crawford in his monograph.

The basal spurs on the posterior tibiae (Fig. 3M) are weakly developed, although distinctly present. The apex of the posterior tibiae (Fig. 3B) bears a strong apical spur on one side and three spurs on the other. The anterior spur of the posterior coxae (Fig. 3I) is well developed and easily visible.

NYMPHAL STAGES. My material contains nymphs of three stages, the fifth and probably the third and second.

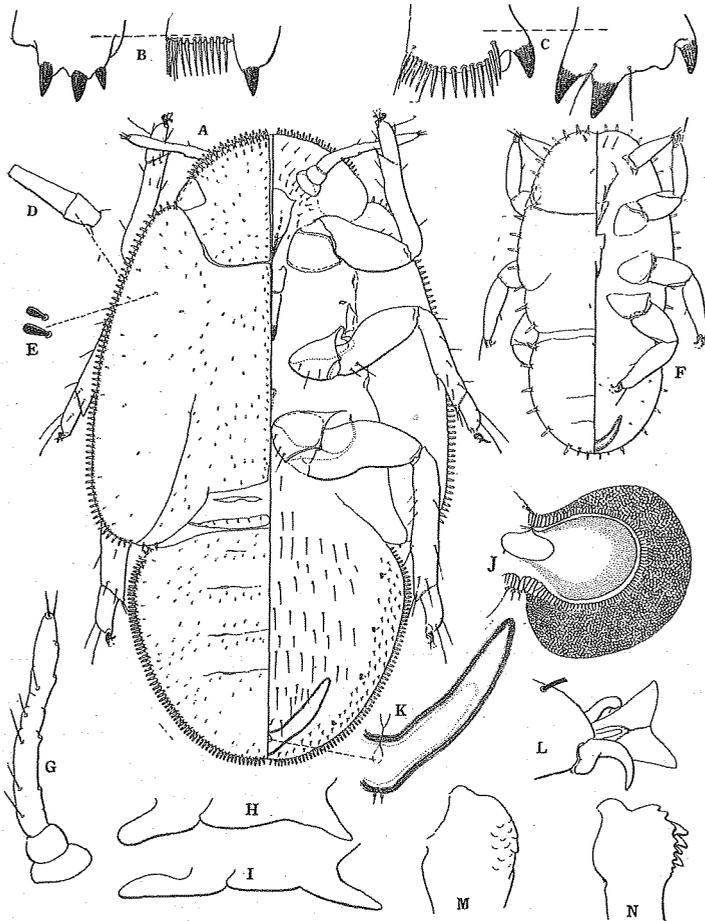


Fig. 3. *Phyllopecta diospyri* (Ashmead). A.—fifth stage of nymph; B.—apex of posterior tibia of adult; D.—seta; E.—clavate setae of the dorsum; F.—second (?) stage of nymph; G.—antenna of fifth stage; I.—spurs of posterior coxa of the adult, anterior spur to the left; K.—portion of circum-anal pore ring; L.—apex of tarsus; M.—base of posterior tibia of adult.

*Phyllopecta tripunctata* (Fitch). C.—apex of posterior tibia of adult; H.—spurs of posterior coxa of adult, anterior spur to the left; J.—portion of circum-anal pore ring of fifth stage; N.—base of posterior tibia of adult.

*Fifth stage* (Fig. 3A). Length 2.1 mm. Of the typical triozone form, rather narrowly oval, the humeral angle of the wing pads produced forward to the posterior margin of the eye. Dorsum strongly chitinized throughout except for a small area at the base of the abdomen, the derm smooth, bearing quite numerous, very small, clavate setae (Fig. 3E). Margin of the body with a continuous series of quite closely set setae (Fig. 3D) which on the head

and abdomen tend to be arranged in a double row and on the wing pads are in a single row.

Antennae (Fig. 3G) three-segmented, the first two segments very short, the third long, constricted at intervals but definitely not segmented. Legs with the femora not attaining the margin of the body; without trochanter; with the tibio-tarsal articulation well defined; claws present, the pulvillus (Fig. 3L) triangular, very slightly or not at all petiolate.

Ventral side with the derm membranous except for a faint marginal area on the abdomen which bears numerous small setae. Anal opening set rather close to the apex; circum-anal pore ring (Fig. 3K) large, broadly V-shaped, the outer ring consisting of a single row of small, slit-like pores, this enclosing a very faint inner ring of extreme minute circular pores.

*Third (?) stage.* Length 1 mm. Closely resembling the fifth but with the antennae shorter and with the tibio-tarsal articulation lacking.

*Second (?) stage.* (Fig. 3F). Length .5 mm. Antennae very short, two-segmented. Dorsum without clavate setae; marginal setae very few, relatively large; wing pads small, but distinct; circum-anal pore ring of the same general shape as in the fifth stage; tibio-tarsal articulation lacking.

### ***Phyllopecta tripunctata* (Fitch).**

Fig. 3 C, H, J, N.

**MATERIAL EXAMINED.** Adults and nymphs from blackberry, Egg Harbor, New Jersey, received through the kindness of Mr. Alvah Peterson, and nymphs and adults from wild blackberry, Baton Rouge, Louisiana, received through the kindness of Mr. T. H. Jones.

**ADULT.** I have nothing to add to the description given by Crawford except to call attention to the following points.

The base of the posterior tibia (Fig. 3N) is beset with several very conspicuous spurs; the posterior coxae (Fig. 3H) bear a very evident anterior spur that is only slightly shorter than in *diospyri*; the apex of the hind tibia bears three very strong spurs (Fig. 3C).

**NYMPHAL STAGES.** Nymphs of the fifth stage only are present in my material.

*Fifth stage.* In general form and appearance almost identical with that of *P. diospyri*, although somewhat more round; having the same arrangement of the marginal setae, except that on the head they tend to become somewhat more numerous and form somewhat more than a double row; dorsal clavate setae lacking, the derm wrinkled and slightly papillate, mottled with areas of pigment. The most striking difference in the two species is to be found in the character of the circum-anal pore ring, which in *tripunctata* (Fig. 3J) is enlarged and composed of great numbers of minute pores in addition to the usual row of slit-like pores. Pulvillus apparently broader and shorter than in *diospyri*.

Note: This species is the type of the genus *Phyllopecta*.

***Psyllia buxi* (Linnaeus).**

Figs 4, 5.

1921. *Asphagidella buxi* (Linn.), Enderlein, Zool. Anzeiger 52:120.MATERIAL EXAMINED. Adults and nymphs from *Buxus*, San Jose, California (C. D. Duncan).

ADULT. General color in life a pale green, becoming yellowish in dried specimens. Length (on slide, exclusive of wings) 4.2 mm. Antennae lacking on the available specimens. Head (Fig. 4C) with the vertex about half as long

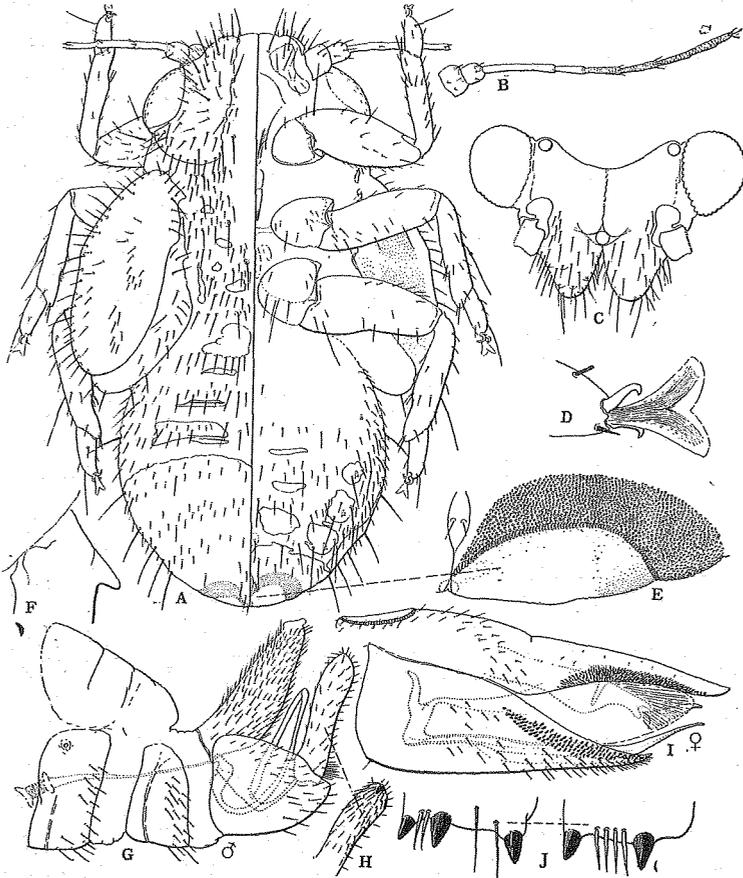


Fig. 4. *Psyllia buxi* (Linn.). A.—fifth stage of nymph; B.—antenna of fifth stage; C.—cephalic aspect of head of adult; D.—apex of tarsus of fifth stage; E.—portion of circum-anal pore ring of fifth stage; F.—base of posterior tibia of adult; G.—apex of abdomen of male adult; H.—inner face of clasper of male; I.—genital segment of female adult; J.—apex of posterior tibia of adult.

as broad, the genal cones nearly as long as the vertex, bluntly rounded, quite strongly divergent. Genital segment of the female (Fig. 4I) nearly as long as the remainder of the abdomen, both tergite and sternite beset with a longitudinal band of small, black, tubercle-like setae. Male with the anal valve (Fig. 4G) moderately long and slender, beset with numerous fine setae; claspers slender, terminating in a single small tooth on the inner side (Fig. 4H). Wings shown in Fig. 5. Posterior tibiae with three apical spurs on one side and two on the other (Fig. 4J) and with a strong basal spur (Fig. 4F).

NYMPHAL STAGES. Fifth stage only present in my material.

*Fifth stage* (Fig. 4A). Length 2.3 mm. Of the typical psylline form. Derm of the dorsum membranous except for a pair of large ocular plates, the wing pads, the terminal half of the abdomen and a number of small plates arranged as shown in the figure. Dorsum and margins with numerous setae of various lengths, those along the abdomen especially large.

Antennae (Fig. 4B) seven-segmented, the last three segments imbricate. Legs large, the femora reaching beyond the margin of the body; without trochanter; tibio-tarsal articulation distinct; claws present; pulvillus (Fig. 4D) triangular, somewhat petiolate.

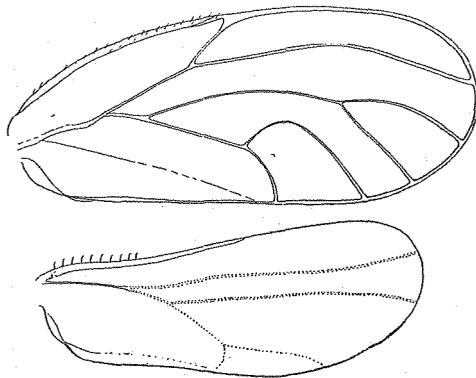


Fig. 5. *Psyllia buxi* (Linn.). Wings.

Venter with the derm membranous except for a small plate at the base of each antenna, the apex of the abdomen and a series of small abdominal plates arranged as shown in the figure. Anal opening at the apex of the abdomen; circum-anal pore ring encircling the apex of the abdomen, composed of great numbers of small, circular pores in addition to the usual row of slit-like pores (Fig. 4E).

Note: This species has several times been recorded from the United States but there appear to be no detailed discussions in the American literature. It has been utilized by Enderlein as the type of the genus *Asphagidella*.

I am not prepared to comment at length or with any pretence of authority upon the status of genera in this family but I can not refrain from expressing the suspicion that many of the genera named by Enderlein are based upon the most flimsy of grounds. The genus *Asphagidella* is said by him to differ from his genus *Asphagis* "durch das fehlen von  $r_1$  im Hinterflugel." It is true that this vein is lacking but in view of the extreme reduction of the venation in the hind wings and the faint development of such veins as are present such differences are likely to be of but little significance.

Enderlein states that *Phyllia floccosa* (Patch) and *P. astigmata* (Crawford) likewise belong to *Asphagidella*.

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