

Lace Bug Genera of the World, II:
Subfamily Tinginae: Tribes Litadeini
and Ypsotingini (Heteroptera: Tingidae)

RICHARD C. FROESCHNER

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Richard C. Froeschner



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ABSTRACT

Froeschner, Richard C. Lace Bug Genera of the World, II: Subfamily Tinginae: Tribes Litadeini and Ypsotingini (Heteroptera: Tingidae). *Smithsonian Contributions to Zoology*, number 611, 28 pages, 20 figures, 2 tables, 2001.—This is the second of a planned series providing aids (keys and dorsal habitus drawings of the type species of each genus) for identifying the world's genera of Tingidae and in some cases their included species; it treats two tribes of the subfamily Tinginae: Litadeini Drake and Ruhoff and Ypsotingini Drake and Ruhoff (with tables of distribution of the genera).

For the tribe Litadeini, 14 genera are keyed. To the single genus, *Litadea* China, cataloged in this tribe by Drake and Ruhoff (1965a), subsequent literature added 10 genera and herein *Cephalidiosus* Guilbert, *Cottothucha* Drake and Poor, and *Palauella* Drake are transferred into the tribe. Keys are given to species of four genera: two in *Aristobyrssa*, two in *Cephalidiosus*, two in *Psilobyrssa*, and five in *Stragulotingis*; all other genera of Litadeini contain a single species.

For the tribe Ypsotingini, seven genera and two subgenera are keyed. In this paper *Euaulana austriana* Drake is made a junior synonym of *Chorotingis indigena* Drake, and *Ypsotingis chlaina* Drake and Ruhoff is transferred to the genus *Engyotingis*, in the tribe Tingini, and forms the new combination *Engyotingis chlaina* (Drake). Keys to species are given for three genera: two species in *Dictyotingis*, two in *Euaulana* Drake, and five in *Ypsotingis* Drake. Of the other four genera, *Chorotingis* has one species, *Derephysia* has 16 species, *Dictyonota* has 28 species, and *Kalama* has 28 species. Keys for the latter three genera were not included because of lack of specimens at hand.

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Lace Bug Genera of the World, II: Subfamily Tinginae: Tribes Litadeini and Ypsotingini (Heteroptera: Tingidae)

Richard C. Froeschner

Introduction

This is the second part of a planned series of papers offering aids for identifying the known genera of the Tingidae of the world and their included species (subject to specimen availability).

The family Tingidae contains two subfamilies: the Cantacaderinae and the Tinginae. The genera of the Cantacaderinae were treated by Froeschner (1996).

The present paper treats two of the three tribes in the subfamily Tinginae. As recognized herein, tribe Litadeini contains 13 genera, an increase of 12 genera over the original lone genus, the nominate *Litadea* China, cataloged by Drake and Ruhoff (1965a). The tribe Ypsotingini includes the seven genera listed in the Drake and Ruhoff (1965) catalog, but the concepts and definitions of some of those seven differ significantly from their catalog listing.

ACKNOWLEDGMENTS.—The acknowledgments and explanations given in the Introduction to Part I of this series (Froeschner, 1996) have general application here, except that 19 of the illustrations in this part are by Elsie Herbold Froeschner, and one is by G. Hodebert; the latter was lent by E. Guilbert, Muséum National d'Historie Naturelle, Paris, France. Helpful reviews of this manuscript were made by T.J. Henry, United

States Department of Agriculture (U.S.D.A.), Systematic Entomology Laboratory at the Smithsonian Institution, Washington, D.C.; S.L. Keffer, James Madison University, Harrisonburg, Virginia; and Alfred G. Wheeler, Department of Entomology, Clemson University, Clemson, South Carolina, and by John D. Lattin, Carl W. Schaefer, and Randall T. Schuh (see footnote). For consultations on the ICZN Rules of Nomenclature I am indebted to F.C. Thompson, U.S.D.A., Systematic Entomology Laboratory at the Smithsonian Institution, Washington, D.C., and the late C.W. Sabrosky. For matters of name translations I am indebted to the late George Steyskal.

Subfamily TINGINAE Laporte

TINGIDITES Laporte, 1833:47.

TINGINAE (Laporte).—Drake and Ruhoff, 1965a:42. [The synonymy given by Drake and Ruhoff (1965a:42) inadvertently omitted the name "Monanthiini" of Costa (1855:293) that Drake and Ruhoff (1960:31) had earlier listed under the subfamily Tinginae with the designation "new synonymy."]

DIAGNOSIS.—The depression of the clavi below the level of the mesocorium and their reduction in size so that they do not meet to form a claval suture distinguish this subfamily from the subfamily Cantacaderinae. In most species of the subfamily Tinginae these reduced clavi are obscured from view by the large, triangular extension of the pronotal posterior margin.

GEOGRAPHIC DISTRIBUTION.—The subfamily Tinginae is well represented in all major zoogeographic areas.

COMMENTS.—This subfamily, although strongly delimited by the derived condition of the depressed clavi, is otherwise extremely variable in external characters. This variability led to a number of efforts to subdivide it, at least tribally, as attested to by the many synonyms listed by Drake and Ruhoff (1965a:42). The tribes thus proposed were generally based on material from limited geographic areas and, when considered in the light of more extensive faunas, the defining characters of nearly all these groups graded into those of other groups so that they were untenable.

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Drake and Ruhoff's world catalog (1965a:17-18) offered a key to three tribes: Tingini (to be treated in a later part of the present series), Litadeini, and Ypsotingini, the latter two designated as "new." Unfortunately, a delay in publishing that catalog caused it to appear after a Drake (1964) paper on *Euaulana* Drake in which he was referring to that catalog when he wrote (page 37):

Drake and Ruhoff (1964, in press) have segregated the subfamily Tinginae into three tribes as follows: (1) Tingini with more than 200 genera; (2) Litadeini with only 1 genus; and (3) Ypsotingini with 7 genera.

Ypsotingini can be distinguished from the other two tribes by these features:

head very long, greatly extended in front of the eyes, usually surpassing apex of first antennal segment, sometimes even that of the second; all tarsi slender as in Tingini.

Thus, Ypsotingini was clearly characterized and established in Drake's 1964 paper and so is available as of that date. Litadeini was a nomen nudum in the 1964 paper because there was no statement of defining characters; its validity must date from Drake and Ruhoff (1965a:18-19) where it was first defined in the key (conclusions confirmed by F.C. Thompson).

A modified version of Drake and Ruhoff's (1965a:18-19) key is given below.

Key to Tribes of the Subfamily Tinginae

1. Head very long, prolonged in front of antennal insertions, subporrect; apex of antennal I (sometimes also that of II) not surpassing apex of clypeus **YPSOTINGINI** Drake and Ruhoff
 Head very short, little produced in front of antennal insertions, sharply declivent; antennal segment I with apical half or more of its length surpassing apex of clypeus 2
2. All tarsi slender, segment II at most only vaguely swollen **TINGINI** Laporte
 All tarsi with segment II distinctly broader than segment I, nearly ovate in outline, upper surface convex, lower surface flat or concave with bristle-like hairs **LITADEINI** Drake and Ruhoff

Tribe LITADEINI Drake and Ruhoff

LITADEINI Drake and Ruhoff, 1965a:18, 42.

DIAGNOSIS.—Litadeini is the only group of Tingidae in which the second tarsal segment is distinctly wider than the first.

GEOGRAPHIC DISTRIBUTION.—This tribe was originally proposed and cataloged for a single species from Rodriguez Island in the Indian Ocean. Subsequently added genera from South America, Africa, Fiji, New Guinea, and New Caledonia

show the tribe's range to be Pan-Tropical.

COMMENTS.—Drake and Ruhoff (1965a:42) cataloged only the nominate genus in this tribe, but later that same year (1965b) they added two more genera. Subsequent authors added seven more, and herein three more are transferred into the tribe—making a total of 13 genera.

The functional significance of the tarsal modification has not yet been reported from observations on living insects. It is interesting to note that in most of these genera the labium is rather short, often not reaching the metasternum.

TABLE 1.—Geographic distribution of species of modern genera in the tribe Litadeini (numbers = number of species).

Taxon	Neotropics	Nearctic	Palaearctic	Oriental	Ethiopian	Madagascan	Australian	New Zealand	Oceania
LITADEINI (20)	9	-	-	2	1	2	-	-	6
<i>Aeopelys</i> (1)	-	-	-	-	-	-	-	-	1
<i>Aristobyrsa</i> (2)	2	-	-	-	-	-	-	-	-
<i>Cephalidiosus</i> (2)	-	-	-	-	-	-	-	-	2
<i>Cottothucha</i> (1)	-	-	-	1	-	-	-	-	-
<i>Holophygdon</i> (1)	-	-	-	-	-	-	-	-	1
<i>Larotingis</i> (1)	-	-	-	1	-	-	-	-	-
<i>Litadea</i> (1)	-	-	-	-	-	1	-	-	-
<i>Oecharis</i> (1)	-	-	-	-	-	-	-	-	1
<i>Ogrygotingis</i> (1)	-	-	-	-	-	1	-	-	-
<i>Palauella</i> (1)	-	-	-	-	-	-	-	-	1
<i>Psilobyrsa</i> (2)	2	-	-	-	-	-	-	-	-
<i>Stragulotingis</i> (5)	5	-	-	-	-	-	-	-	-
<i>Tadelia</i> (1)	-	-	-	-	1	-	-	-	-

Key to Genera in the Tribe Litadeini

1. Pronotum with median carina elevated and inflated forming a cyst for virtually full length [Caution: Look carefully, for some genera reached by other half of couplet have a dorsal cyst formed by paranota being broadly reflexed and meeting dorsally].
 Paranota biseriate, closely reflexed against lower half of that cyst *Cottothucha* Drake and Poor
 Pronotum with cyst absent or formed by strongly reflexed and elevated paranota meeting above median line 2
2. Paranota absent or present and horizontal or vertical, never reflexed above pronotal surface, latter fully exposed (for reference, calli exposed) 3
 Paranota very broad, reflexed, and meeting each other above midline of pronotum, forming a bulbous cyst concealing dorsal surface of pronotum (for reference, calli not exposed) 11
3. Head with 3 long, slender processes (as long as length of head) extending horizontally forward from anterior margin of head [not to be confused with cephalic spines arising from dorsum of head (see figure 10)] *Palauella* Drake
 Head without such marginal processes 4
4. Head without cephalic spines or tubercles 5
 Head with 3 or more cephalic spines or tubercles 6
5. Antennal segments and anterior legs with numerous, small tubercles, each bearing an erect seta. Vertex each side of midline with a sharp, deep sulcus arising from dorsal margin of eye, extending about half way to midline, then curved abruptly forward to about midlength of eye *Tadelia* Linnavuori
 Antennal segments and tibiae without setigerous tubercles. Dorsum of head smooth, without such sulci *Litadea* China
6. Costal margin at base transversely concave with lateral end projecting cephalad of hemelytral articulation. Paranotum with 3 or more rows of cells anteriorly 7
 Costal margin not projecting cephalad of hemelytral articulation. Paranotum absent or uniseriate 8
7. Discoidal area strongly, obliquely, tumidly elevated, distinctly overhanging very narrow, uniseriate subcostal area. Peritreme absent *Aristobyrsa* Drake and Poor
 Discoidal area flat, not overhanging multiseriate (2 or more rows of cells) subcostal area. Peritreme present, elevated *Stragulotingis* Froeschner
8. Costal area expanded, wider than discoidal area, with three or more rows of large cells 9
 Costal area narrower than discoidal area, uni- or biseriate 10
9. Pronotal collar tumidly elevated above level of posterior pronotal lobe, projecting convexly above base of head. Antennal segment I less than twice as long as segment II *Psilobyrsa* Drake and Hambleton
 Pronotal collar not so elevated, not projecting above base of head. Antennal segment I elongate, 4–5 times as long as segment II *Cephalidiosus* Guilbert
10. Paranotum and costal area for full length expanded, uniseriate *Ogygotingis* Drake
 Paranotum and costal margin (except apical one-fourth of latter) reduced to a simple carina without cells *Larotingis* Drake
11. Antennal segment I very long, about 1.5 times as long as head. Hemelytral cells wholly hyaline *Holophygdon* Kirkaldy
 Antennal segment I shorter than head. Cells of hemelytra, at least in part, opaque 12
12. Hemelytron with basal two-thirds black (except for post-median lateral white blotch) with cells small, almost punctiform; apical one-third yellow, with cells abruptly much larger. In lateral view, dorsal outline of paranotal cyst smoothly rounding to collar *Aeopelys* Drake and Ruhoff
 Hemelytron not thus divided by cell size and color. In lateral view, dorsal outline of paranotal cyst abruptly decurved anteriorly, not reaching collar, i.e., cyst terminating above anterior coxae *Oecharis* Drake and Ruhoff

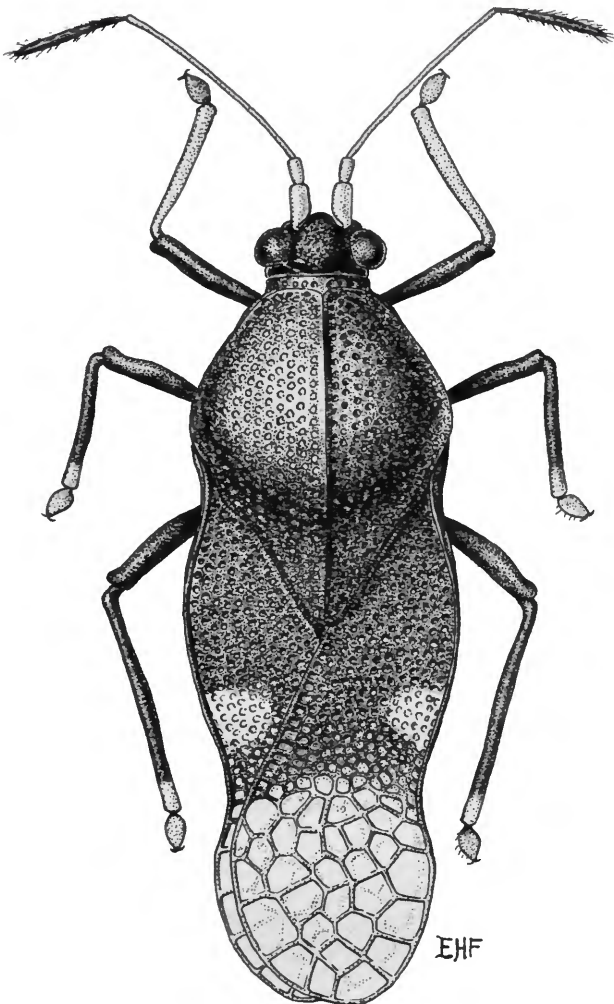


FIGURE 1.—*Aeopelys neata*, natural length 3.2 mm.

Genus *Aeopelys* Drake and Ruhoff

FIGURE 1

Aeopelys Drake and Ruhoff, 1965b:247 [type species: *Aeopelys neata* Drake and Ruhoff, monobasic].

DIAGNOSIS.—The division of the hemelytral surface into basal two-thirds with small cells and apical one-third with contrastingly large, hyaline cells marks this genus from all others in the tribe. Length is 3.2 mm.

Key to *Aristobyrsa* Species

- Apex of head with lateral spines subequal in length to median spine
 *A. latipennis* (Champion)
 Apex of head with lateral spines less than one-half as long as median spine
 *A. uaupesensis* Carvalho and Costa

GEOGRAPHIC DISTRIBUTION.—New Guinea.

ETYMOLOGY.—*Aeopelys* (feminine): *aioretos*, Greek, suspended, plus *plyc*, *plykos*, Greek, bowl, in reference to the reflexed paranota forming an elevated, inverted bowl above and concealing the pronotal dorsum.

COMMENTS.—The original description of the type species, *A. neata*, described the labium as reaching only between the anterior coxae. Examination of the holotype, however, revealed that the tip of the labium is concealed in the body cavity. The first two and one-half segments are exposed and reach the anterior margin of the mesosternum; the apical one and one-half segments are covered but probably would lie on the mesosternum. Apparently the head and prothorax had become detached (a not uncommon happening in cabinet specimens of lace bugs) and in gluing them back on, the tip of the labium was accidentally inserted into the mesothoracic cavity.

List of *Aeopelys* Species

Aeopelys neata Drake and Ruhoff, 1965b:247 [New Guinea].

Genus *Aristobyrsa* Drake and Poor

FIGURE 2

Aristobyrsa Drake and Poor, 1937:164 [type species: *Leptobyrsa latipennis* Champion, monobasic].—Drake and Ruhoff, 1965a:91.

DIAGNOSIS.—The strongly elevated, tumidly swollen discoidal area coupled with the basal part of the costal margin projecting broadly cephalad of the hemelytral articulation distinguishes this genus within the tribe. Length ranges from 5.0 to 5.6 mm.

GEOGRAPHIC DISTRIBUTION.—Panama, Peru, and Brazil.

ETYMOLOGY.—*Aristobyrsa* (feminine): *arista*, Latin, hair-like extension of grain, plus *byrsa* Greek, skin, probably in reference to the numerous long hairs on the surface of the antenna.

COMMENTS.—In the Drake and Ruhoff catalog (1965a:91) this genus was listed in the tribe Tingini, but Froeschner (1969:129) transferred it to the tribe Litadeini on the basis of the expanded second tarsal segments.

List of *Aristobyrsa* Species

Aristobyrsa latipennis (Champion).—Drake and Ruhoff, 1965a:91.

Leptobyrsa latipennis Champion, 1897:25 [Panama].

Aristobyrsa uaupesensis Carvalho and Costa, 1992:443 [Brazil].

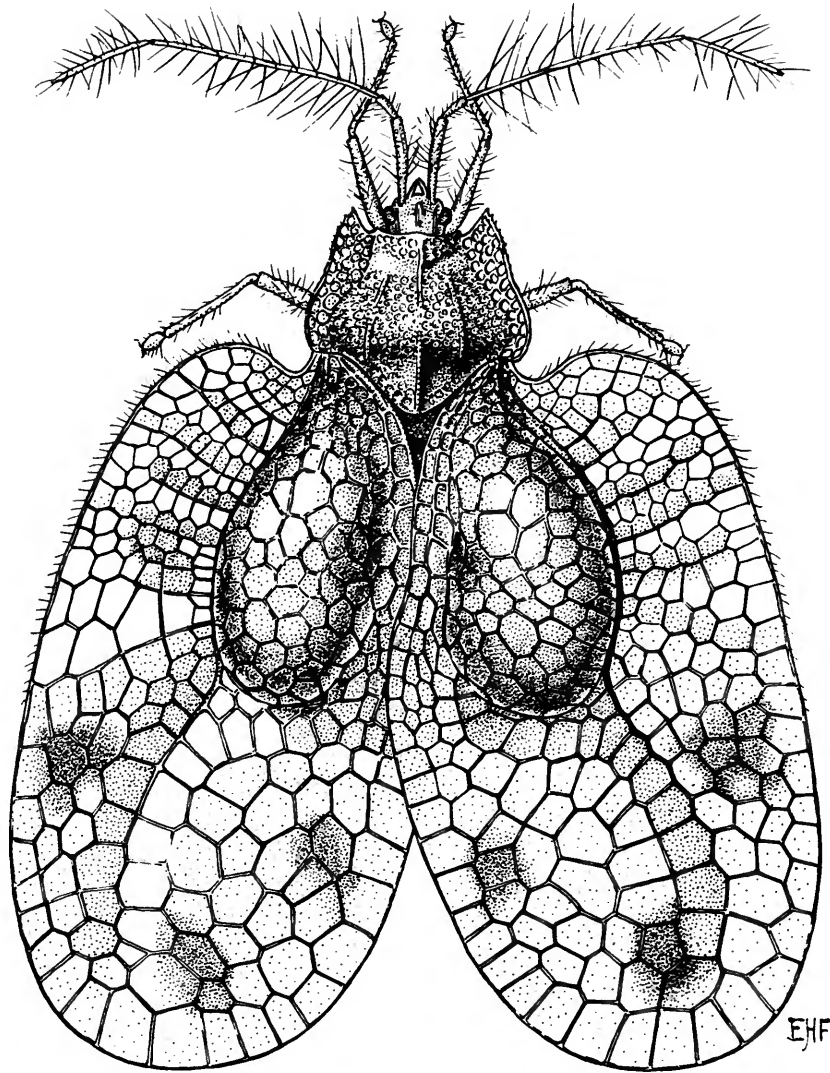


FIGURE 2.—*Aristobyrza latipennis*, natural length 5.3 mm.

Genus *Cephalidiosus* Guilbert, new tribal assignment

FIGURE 3

Stenotrachelus Guilbert, 1998:17, preoccupied [type species: *Stenotrachelus megapharsus* Guilbert, original designation].

Cephalidiosus Guilbert, 1999:15 [proposed as new name for preoccupied *Stenotrachelus*].

DIAGNOSIS.—Among the genera of this tribe with the greatly expanded, multiseriate (3 or more rows of cells) costal area, this genus can be recognized by the presence of three cephalic spines, first antennal segment 3 to 4 times as long as second, a simple uninflated collar, and narrow, uniseriate paranota.

GEOGRAPHIC DISTRIBUTION.—New Caledonia.

ETYMOLOGY.—*Cephalidiosus* (masculine): *cephalo*, Greek, head, *lus diosus*, *dios*, Greek, for Zeus, chief of the Greek gods.

COMMENT.—*Cephalidiosus* was originally described, with the preoccupied name *Stenotrachelus*, in the tribe Tingini. But the fine illustration with the original description shows the expanded second tarsal segment characteristic of this tribe and necessitates its reassignment here.

List of *Cephalidiosus* species

Cephalidiosus megapharsus (Guilbert).—Guilbert, 1999:15.

Stenotrachelus megapharsus Guilbert, 1998:19 [New Caledonia].

Cephalidiosus mesopharsus (Guilbert).—Guilbert, 1999:15.

Stenotrachelus mesopharsus Guilbert, 1998:20 [New Caledonia].

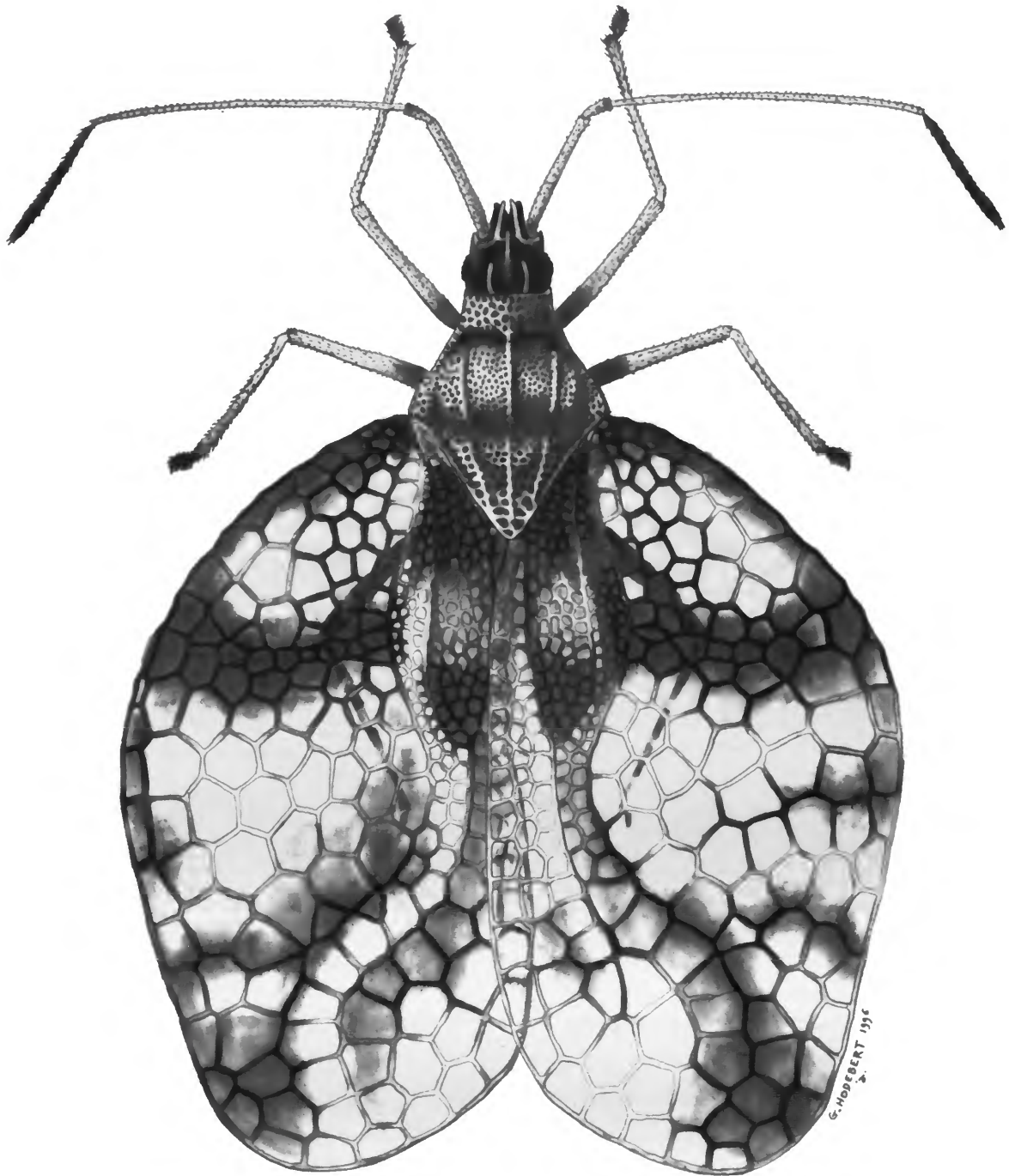


FIGURE 3.—*Cephalidiosus megapharsus*, natural length 4.1 mm. (Courtesy of E. Guilbert.)

Key to *Cephalidiosus* Species

- Lateral carinae on dorsal surface of pronotum extending from calli to posterior margin. Outline of costal margins very convex, almost semicircular *C. megapharsus* (Guilbert)
- Lateral carinae on pronotal surface distinct only posterior to line connecting humeral angles. Outline of costal margins almost straight *C. mesopharsus* (Guilbert)

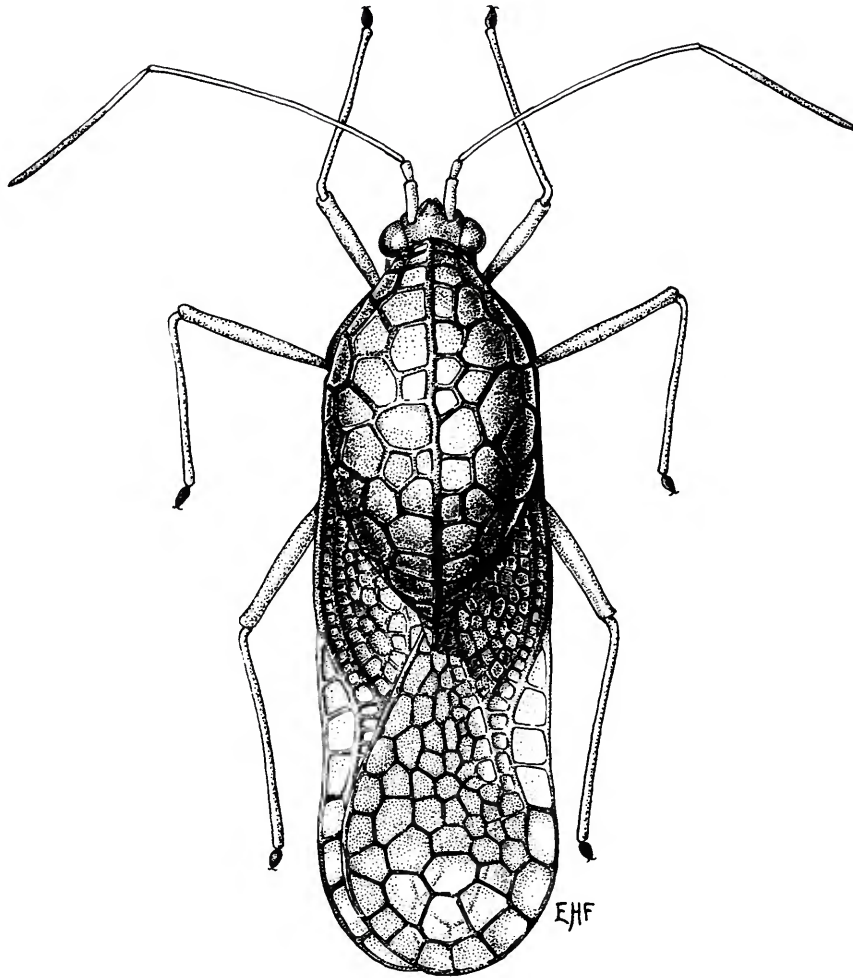


FIGURE 4.—*Cottothucha oceanae*, natural length 3.1 mm.

Genus *Cottothucha* Drake and Poor, new tribal assignment

FIGURE 4

Cottothucha Drake and Poor, 1941:162 [type species: *Cottothucha oceanae* Drake and Poor, monobasic].—Drake and Ruhoff, 1965a:162.

DIAGNOSIS.—The very long, high, median carina forming a pronotal cyst that is continuous to and abruptly constricted just before the tumidly tectate swollen apex of the posterior pronotal process separates this genus from other genera in the tribe. Length ranges from 3 to 3.1 mm.

GEOGRAPHIC DISTRIBUTION.—Philippine Islands and Moluccas.

ETYMOLOGY.—*Cottothucha* (feminine): *kotto*, Greek, head, plus *thucha*, a meaningless fragment of generic name *Corythucha*, probably to indicate the presence of a prominent pronotal cyst somewhat like that on *Corythucha*.

COMMENTS.—The genus *Cottothucha*, described before proposal of the tribe Litadeini, was originally placed in the tribe Tingini where it was also cataloged by Drake and Ruhoff (1965a:162); examination of specimens found the broadened second tarsal segment that necessitates its present transfer to the tribe Litadeini.

The only included species shows considerable variation in the size and number of cells on the pronotal cyst. The two paratypes at hand from Amboina have these cells small, their transverse diameter never more than one-half the width of the head, whereas a small series from the Philippine Islands has the dorsal surface of the cyst on each side of the median vein with a single row of very wide (more than three-fourths of head width), transverse cells occupying most of the dorsal surface. A somewhat larger series from New Guinea contains a graded variety of cell size from the broad, transverse ones to small cells

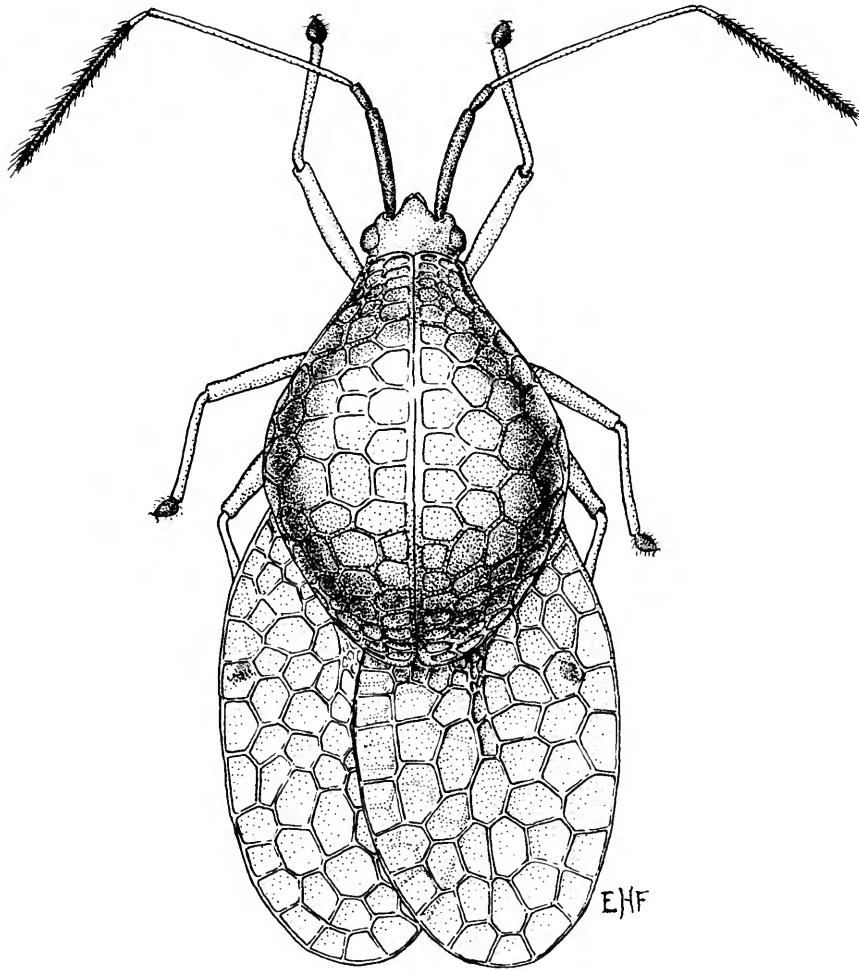


FIGURE 5.—*Holophygdon melanesica*, natural length 3.3 mm.

almost as small as those on the Amboina specimens. Examination of more specimens would be helpful.

List of *Cottothucha* Species

Cottothucha oceanæ Drake and Poor, 1941:163 [Amboina].—Drake and Ruhoff, 1965a:162.

Genus *Holophygdon* Kirkaldy

FIGURE 5

Holophygdon Kirkaldy, 1908:364 [type species: *Holophygdon melanesica* Kirkaldy, monobasic].—Drake and Ruhoff, 1965a:243.

DIAGNOSIS.—The broadly reflexed, strongly convex paranota (meeting in a straight line above the midline of the pronotum) coupled with the elongate first antennal segment (length equal to width of head across eyes) plus the uniformly large cells for the full length of the exposed, broad costal area permit

ready recognition of *Holophygdon* within the tribe Litadeini. Length ranges from 3.2 to 3.5 mm.

GEOGRAPHIC DISTRIBUTION.—Fiji Islands.

ETYMOLOGY.—*Holophygdon* (feminine): G.E. Steyskal interpreted this name as a modified spelling of *olophygdon* = *olophlectis*, a large pimple, undoubtedly referring to the large, hollow cyst formed by the reflexed paranota.

COMMENTS.—Drake and Ruhoff (1965a:243) cataloged this genus in the tribe Tingini, but in the same year (1965b:247) they transferred it to the tribe Litadeini.

List of *Holophygdon* Species

Holophygdon melanesica Kirkaldy, 1908:364 [Fiji].—Drake and Ruhoff, 1965a:243.

Holophygdon melanesica fusca Drake and Poor, 1943:205 [Fiji].—Drake and Ruhoff, 1965a:244.

Holophygdon melanesica melanesica Kirkaldy [see species above].—Drake and Poor, 1943:205.

Key to Subspecies of *Holophygdon melanesica*

- Antennal segments I, II, IV much darker than III *H. melanesica fusca* Drake and Poor
- Antennal segments I and II concolorous with III, only IV darkened
- *H. melanesica melanesica* Kirkaldy

Genus *Larotingis* Drake

FIGURE 6

Larotingis Drake, 1960:357 [type species: *Larotingis aporia* Drake, monobasically].—Drake and Ruhoff, 1965a:252.

DIAGNOSIS.—In contrast to all other members of this tribe, *Larotingis* is the only genus with the costal area so reduced on the basal three-fourths that the outer limiting vein of the subcostal area appears fused with the costal margin. Length ranges from 2.6 to 3.6 mm.

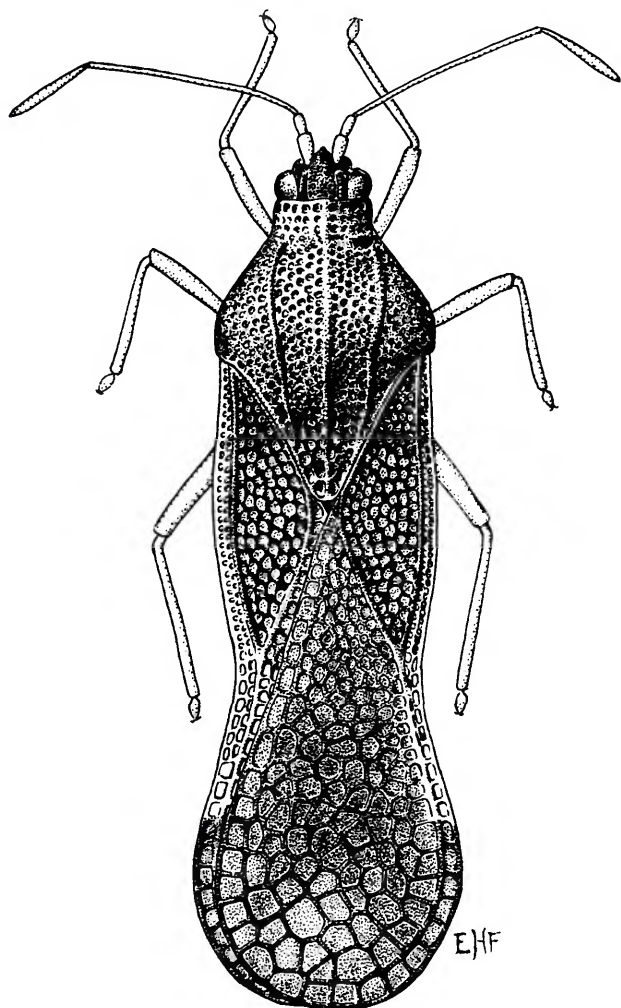


FIGURE 6.—*Larotingis aporia*, natural length 2.7 mm.

GEOGRAPHIC DISTRIBUTION.—New Guinea and Philippine Islands.

ETYMOLOGY.—*Larotingis* (feminine): *laros*, Greek, lovely, plus *tingis*, name of typical lace bug genus, reflecting the pleasant feeling created “in the eye” of the proposer of the name.

COMMENTS.—This genus was described before the currently accepted tribes Litadeini and Ypsotingini were erected; it was cataloged in the Tingini by Drake and Ruhoff (1965a:252) but was transferred to the Litadeini by Froeschner (1969:129).

List of *Larotingis* Species

Larotingis aporia Drake, 1960:357 [New Guinea].—Drake and Ruhoff, 1965a:252.

Larotingis etes Drake and Ruhoff, 1961:165 [Philippine Islands]; 1965a:252 [new synonymy]. [The above synonym resulted from comparison of holotypes of both “species” and a male and female collected in New Guinea in 1961. The characters described as differentiating the two are bridged. The occipital spines on the holotype of *L. aporia* reach a line connecting the anterior margins of the eyes, whereas in the other two New Guinea specimens they either reach about half way to the eye or they reach the posterior one-third of the eye; on the holotype of *L. etes* they are only about twice as long as wide and reach only the posterior one-fourth of the eye. The pale mark post-midlength on the costal area of the holotype of *L. aporia* extends across the subcostal vein onto the hemelytral membrane, but in the other two specimens that mark is much less extensive and is restricted to the costal area (not including the subcostal vein) as it is on the holotype of *L. etes*. The differences in antennal lengths described for the two holotypes (1 male, 1 female) show on the male and female of the 1961 New Guinea specimens and appear to represent a sexual dimorphism. The third labial segment of the holotype of *L. aporia* is deformed and the apex of the beak is bent away from the body, making it appear short and not reaching the middle of the metasternum; if the apex is projected as though the beak were lying against the sternum, it does reach almost to the basal one-third of the metasternum. Thus, the separation of the two “species” disappears and the synonymy results.]

Genus *Litadea* China

FIGURE 7

Litadea China, 1924:438 [type species: *Litadea delicatula* China, monobasically].—Drake and Ruhoff, 1965a:42.

DIAGNOSIS.—The reduction of the paranotum to a simple carina, the absence of cephalic spines or tubercles, and the lack of setigerous tubercles on the antennae and forelegs combine to mark this genus within the tribe. Length is 3.9 mm.

GEOGRAPHIC DISTRIBUTION.—Rodriguez Island of the Mascarene Islands.

ETYMOLOGY.—*Litadea* (used as feminine): G.E. Steyskal interpreted this for me as a newly coined word.

List of *Litadea* Species

Litadea delicatula China, 1924:439 [Rodriguez Island].—Drake and Ruhoff, 1965a:42.

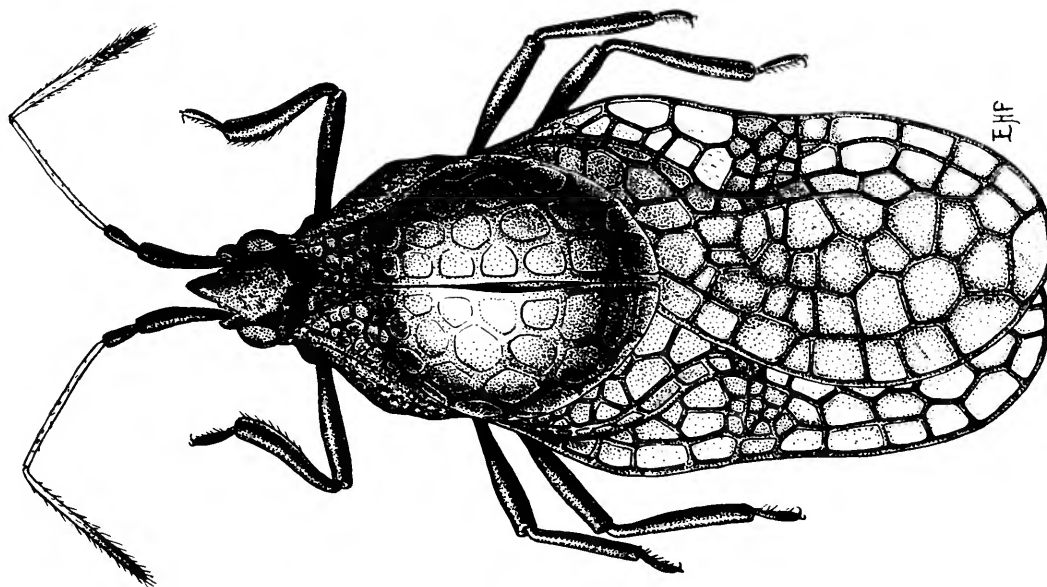


FIGURE 8.—*Oecharis apeuthes*, natural length 2.4 mm.

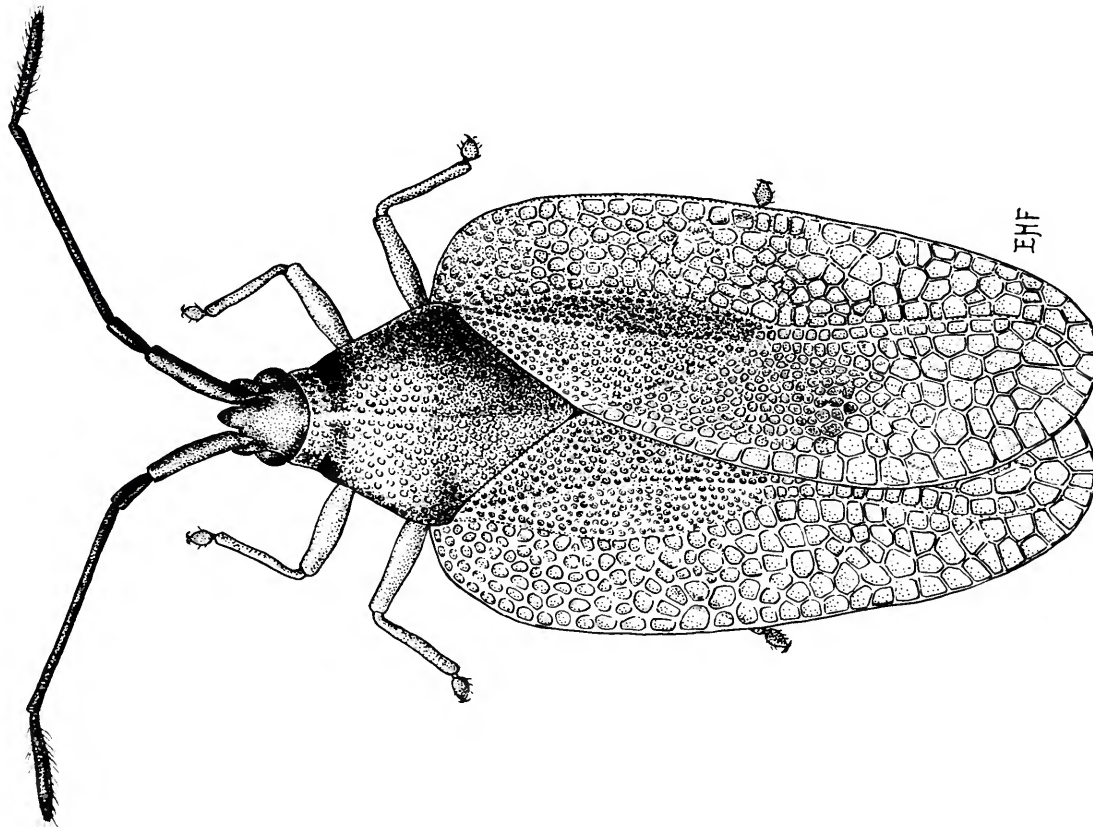


FIGURE 7.—*Litadea delicatula*, natural length 3.9 mm.

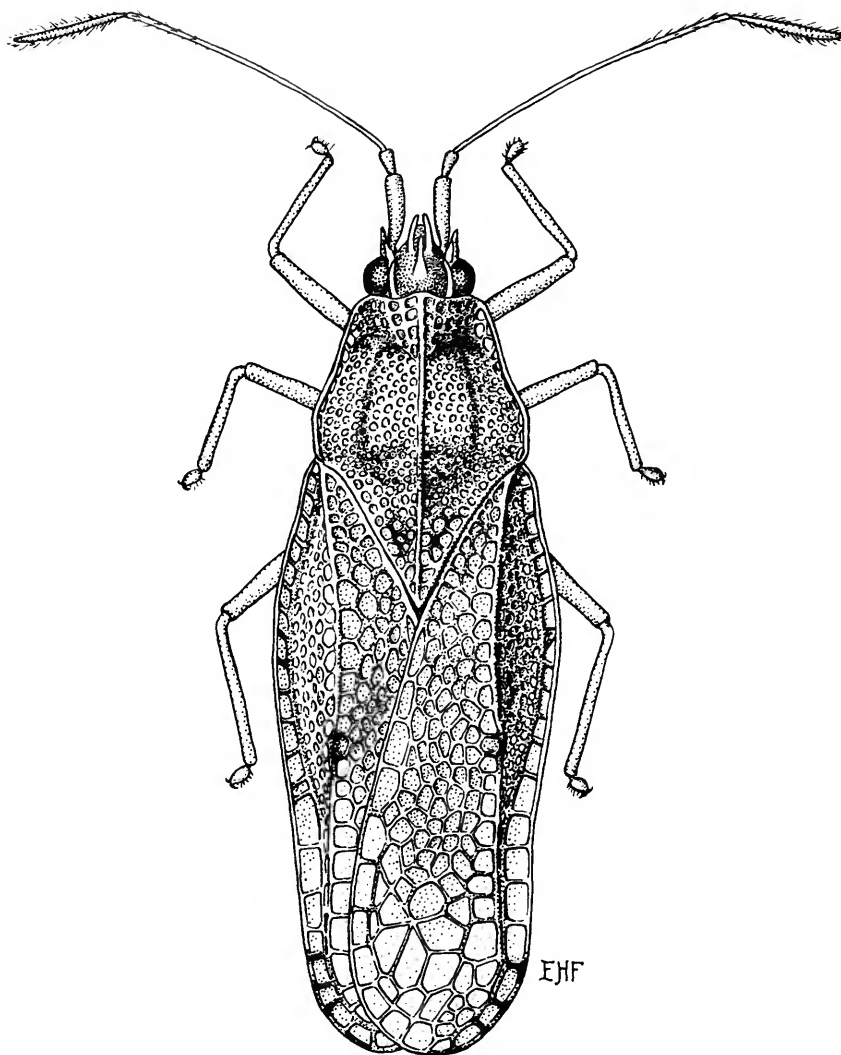


FIGURE 9.—*Ogygotingis insularis*, natural length 3.2 mm.

Genus *Oecharis* Drake and Ruhoff

FIGURE 8

Oecharis Drake and Ruhoff, 1965b:280 [type species: *Oecharis apeuthes* Drake and Ruhoff, monobasic].

DIAGNOSIS.—The prominent cyst formed by the broadly reflexed paranota that meet in a straight line above the midline of the pronotum plus the conical apex of the head combine to permit ready recognition of this genus within the tribe. Length is 2.4 mm.

GEOGRAPHIC DISTRIBUTION.—Georgia Island (one of the Solomon Islands).

ETYMOLOGY.—*Oecharis* (feminine): *oios*, Greek, unique, plus *charis*, Greek, grace, probably in recognition of the unusual structure of this insect.

COMMENTS.—This genus was originally described as a member of the tribe Tingini, but the second tarsal segment, even though it is somewhat elongate and not quite as wide as in genera such as *Holophygdon* and *Litadea*, is decidedly broader than the first tarsal segment and has the bristle-like hairs in a ventral concavity; thus, it must be assigned to the tribe Lita-deini, as it was by Froeschner (1969:129).

List of *Oecharis* Species

Oecharis apeuthes Drake and Ruhoff, 1965b:280 [Solomon Islands].

Genus *Ogygotingis* Drake

FIGURE 9

Ogygotingis Drake, 1948a:149 [type species: *Teleonemia insularis* China, monobasic].—Drake and Ruhoff, 1965a:308.

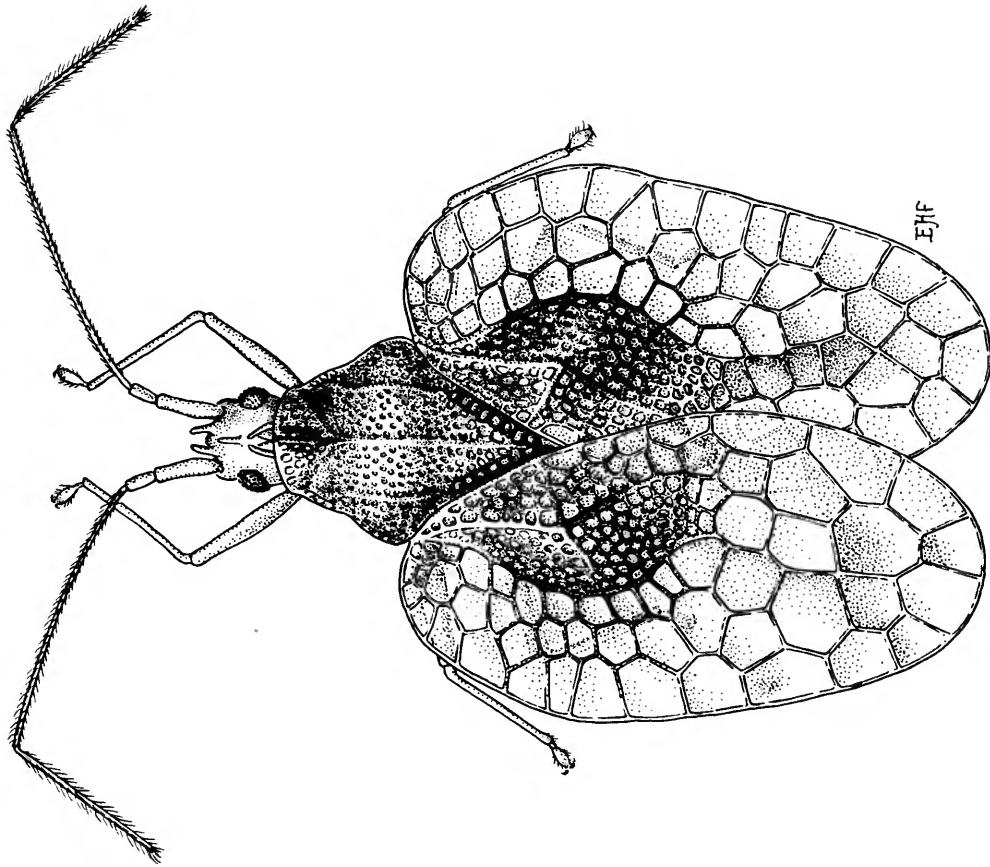


FIGURE 11.—*Psilobyrsa accheneae*, natural length 2.8 mm.

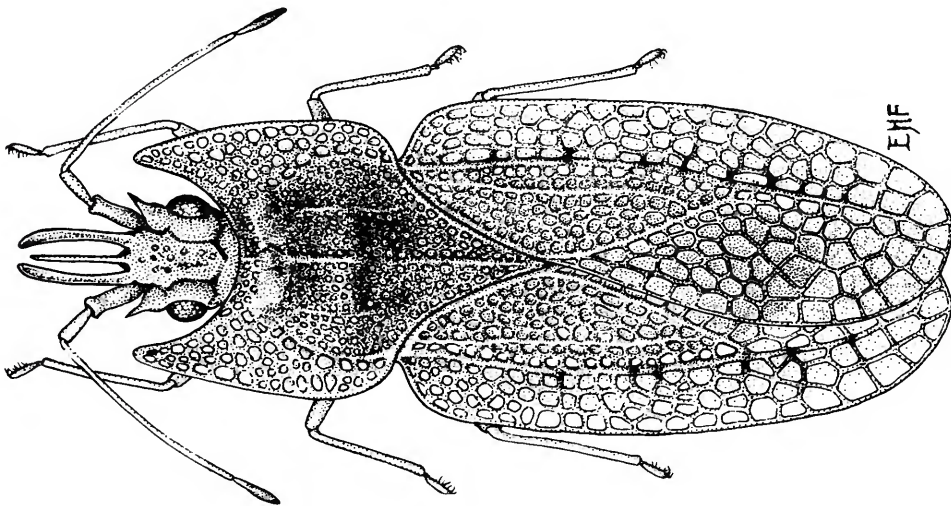


FIGURE 10.—*Palanella gressitti*, natural length 2.5 mm.

DIAGNOSIS.—The presence of seven cephalic spines plus the narrow, subparallel outline distinguish this genus from all others in the tribe. Length is 3.2 mm.

GEOGRAPHIC DISTRIBUTION.—Rodriguez Island of the Mascarene Islands.

ETYMOLOGY.—*Ogygotingis* (feminine): *ogygius*, Greek, ancient, plus *tingis*, generic name of the typical lace bug genus, of no special application to this group of insects.

COMMENTS.—The single species of this genus is interesting in possessing a pair of spines of which one arises at the anteromesal angle of each eye. Superficially, these spines appear to be an extension of the long occipitals that almost reach the base of the close-set frontals, but a lateral view reveals their separate origin. No comparably located pair of spines has been detected on any other species of Tingidae.

This genus was cataloged in the tribe Tingini by Drake and Ruhoff (1965a:308) but was transferred to the Litadeini by Froeschner (1969:129).

List of *Ogygotingis* Species

- Ogygotingis insularis* (China).—Drake and Ruhoff, 1965a:308.
- Teleonemia insularis* China, 1924:436 [Rodriguez Island].

Genus *Palauella* Drake, new tribal assignment

FIGURE 10

Palauella Drake, 1956a:110 [type species: *Palauella gressitti* Drake, monobasic].—Drake and Ruhoff, 1965a:313.

DIAGNOSIS.—The three elongate, finger-like processes projecting horizontally forward from the anterior margin of the head differentiate this genus from all others in the family. Length is 2.5 mm.

GEOGRAPHIC DISTRIBUTION.—Palau Islands.

ETYMOLOGY.—*Palauella* (feminine): derived from the name of the Palau Islands with the feminine diminutive suffix *-ella*.

COMMENTS.—This genus was described before the significance of the dilated second tarsal segment (originally described as “moderately enlarged”) was realized, and it was cataloged in

the tribe Tingini. The long second tarsal segment of the holotype (only specimen available) is distinctly widened and provided with numerous hairs ventrally; the genus must be transferred to the tribe Litadeini, as it is here.

List of *Palauella* Species

- Palauella gressitti* Drake, 1956a:112 [Palau Islands].—Drake and Ruhoff, 1965a:313.

Genus *Psilobyrsa* Drake and Hambleton

FIGURE 11

Psilobyrsa Drake and Hambleton, 1935:148 [type species: *Psilobyrsa aechemeae* Drake and Hambleton, original designation].—Drake and Ruhoff, 1965a:236.

DIAGNOSIS.—Within the tribe, this genus may be recognized by the presence of three to five prominent cephalic spines and the very broad costal area. Length is 2.8 mm.

GEOGRAPHIC DISTRIBUTION.—Brazil.

ETYMOLOGY.—*Psilobyrsa* (feminine): *psilos* Greek, bare, plus *byrsa*, Greek, skin, probably suggested by the bare, shining dorsal surface.

COMMENTS.—Nearly all specimens examined had the frontal spines prominent, blunt at apex, and parallel or slightly diverging from the base, but a few had them converging.

Psilobyrsa was cataloged in the tribe Tingini by Drake and Ruhoff (1965a:149); it was transferred to the Litadeini by Froeschner (1969:129).

Recently, specimens of *Psilobyrsa aechaemeae* Drake and Hambleton have been intercepted on unidentified plants of the genus *Tillandsia* (Bromeliaceae) being imported into the United States from Brazil.

List of *Psilobyrsa* Species

- Psilobyrsa aechemeae* Drake and Hambleton, 1935:149 [Brazil].—Drake and Ruhoff, 1965a:346.
- Psilobyrsa vriesiae* Drake and Hambleton, 1935:149 [Brazil].—Drake and Ruhoff, 1965a:347.

Key to *Psilobyrsa* Species

- Head with a pair of long, slender occipital spines reaching base of dorsocentral spine. Fuscous color of discoidal and subcostal area widely separated from base of wing *P. aechemeae* Drake and Hambleton
- Head without or with only vestigial occipital spines. Fuscous coloration of discoidal and subcostal areas continuous to base of wing *P. vriesiae* Drake and Hambleton

Genus *Stragulotingis* Froeschner

FIGURE 12

Stragulotingis Froeschner, 1969:129 [type species: *Pleseobyrsa plicata* Champion, original designation].

DIAGNOSIS.—Within the tribe Litadeini *Stragulotingis* is recognizable by the combination of costal margins projecting cephalad of the hemelytral articulation, the paranotum being

broad, flat, horizontal, and the discoidal area flat. Length ranges from 3 to 3.7 mm.

GEOGRAPHIC DISTRIBUTION.—Costa Rica south to Brazil.

ETYMOLOGY.—*Stragulotingis* (feminine): *stragulus*, Latin, a spreading out, plus *tingis*, name of the typical lace bug genus, implying a lace bug with paranota and costal areas widely spread out anteriorly as well as laterally.

COMMENTS.—This genus was reviewed by Froeschner

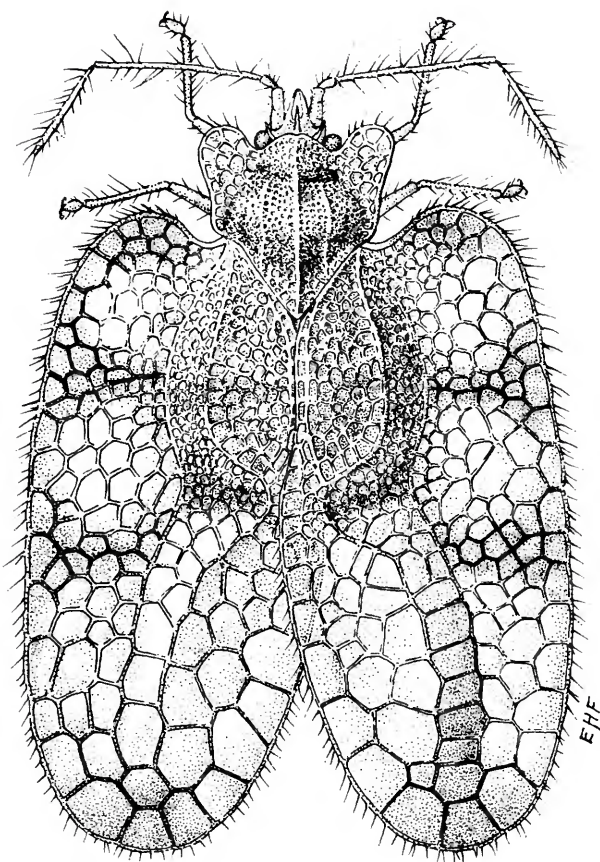


FIGURE 12.—*Stragulotingis plicata*, natural length 3.3 mm.

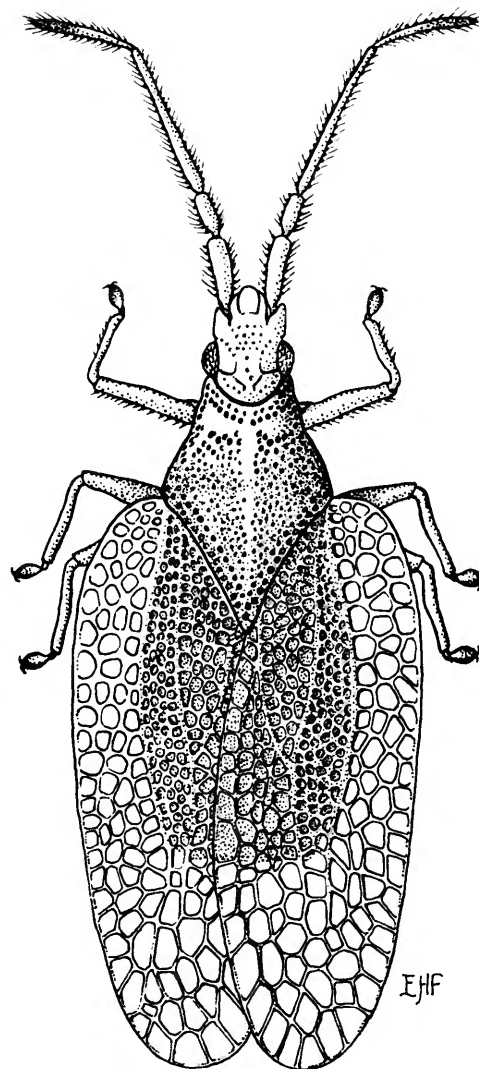


FIGURE 13.—*Tadelia tamarindi*, natural length 3.2 mm.

(1991), who offered a key to its species (see modified version below).

List of *Stragulotingis* Species

- Stragulotingis atratarsis* (Drake and Hambleton).—Froeschner, 1969:132.
- Pleseobyrsa atratarsis* Drake and Hambleton, 1946:124 [Peru].—Drake and Ruhoff, 1965a:341.
- Stragulotingis bicincta* (Monte).—Froeschner, 1991:769.
- Pleseobyrsa bicincta* Monte, 1946:283 [Brazil].—Drake and Ruhoff, 1965a:342.
- Stragulotingis englemanni* Froeschner, 1991:770 [Panama].
- Stragulotingis lichyi* (Monte).—Froeschner, 1991:769.
- Pleseobyrsa lichyi* Monte, 1945:251 [Venezuela].—Drake and Ruhoff, 1965a:342.

- Stragulotingis plicata* (Champion).—Froeschner, 1969:132.
- Leptobyrsa plicata* Champion, 1897:26 [Panama].
- Pleseobyrsa parana* Drake and Hambleton, 1944:95 [Brazil]. [Synonymized by Drake and Ruhoff, 1965a:342.]
- Pleseobyrsa plicata*.—Drake and Ruhoff, 1965a:343.

Key to *Stragulotingis* Species

(modified from Froeschner, 1991:770)

1. Strongly tectate elevation on collar (in lateral view) distinctly higher than carina over convex pronotal disc. Outer limiting vein of discoidal area prominently tectately elevated, in lateral view distinctly higher than median carina on triangular posterior projection of pronotum 2
- Tectation of collar low, not higher than median carina over convex pronotal disc. Outer limiting vein of discoidal area low, in lateral view lower than median carina on triangular posterior projection of pronotum 3

- 2. Paranotum with anterior lobe at least as wide as width of vertex plus 1 eye. Discoidal area on posterior half wider than subcostal area *S. englemanni* Froeschner
 Paranotum with anterior lobe distinctly less than width of vertex. Discoidal area on posterior half narrower than subcostal area *S. bicincta* (Monte)
- 3. Lateral carinae on pronotum moderately elevated into a low lamina containing a row of small but distinct cells, at least anteriorly. Tarsus yellow, concolorous with tibiae, sometimes slightly darkened apically *S. plicata* (Champion)
 Lateral carinae on pronotum absent or obsoletely developed but without cells. Tarsus black 4
- 4. Convex anterior margin of pronotum projecting to imaginary line connecting anterior margins of eyes. Overlapping margins of hemelytra beyond apex of discoidal area noticeably convex for full length *S. atratarsis* (Drake and Hambleton)
 Convex anterior margin of pronotum projecting only to an imaginary line connecting midpoints of eyes. Overlapping margins of hemelytra beyond apex of discoidal area distinctly straight for much of their length *S. lichyi* (Monte)

Genus *Tadelia* Linnavuori

FIGURE 13

Tadelia Linnavuori, 1977:7 [type species: *Tadelia tamarindi* Linnavuori, monobasic].

DIAGNOSIS.—In the tribe Litadeini this is the only genus with setigerous tubercles on antennae and forelegs. Length ranges from 3.2 to 3.5 mm.

GEOGRAPHIC DISTRIBUTION.—Cameroon and Equatoria.

ETYMOLOGY.—*Tadelia* (feminine): This generic name is an anagram of the generic name *Litadea*.

List of *Tadelia* Species

Tadelia tamarindi Linnavuori, 1977:7 [Cameroon; Equatoria; *Tamarindus indicus*].

Tribe YPSOTINGINI Drake

YPSOTINGINI Drake, 1964:37.

DIAGNOSIS.—This tribe is recognized within the family by the combination of the reduced, depressed clavi coupled with the porrect, elongate head reaching or almost reaching apex of antennal segment I.

Key to Genera in the Tribe Ypsotingini

- 1. Paranota broadly, strongly recurved, their free margins turned downward above pronotal disc, each paranotum forming an elevated, inflated cyst 2
 Paranota not reflexed, not forming cysts 3
- 2. Paranotum with free margin in contact with dorsum of pronotum, forming a separate, closed cyst. Subcostal area nearly horizontal, with 4 or 5 rows of cells at widest point *Dictyotingis* Drake
 Paranotum with free margin not in contact with dorsum of pronotum, the cyst not closed medially. Subcostal area nearly vertical, with only 2 rows of cells *Ypsotingis* Drake
- 3. Pronotum with a distinctly elevated, inflated anteromedian cyst projecting above basal one-half or more of head *Derephysia* Spinola
 3A. Pronotum 3-carinate subgenus *Derephysia* Spinola
 Pronotum 1-carinate subgenus *Paraderephysia* Péricart
 Pronotum without or with a weakly inflated bulbous anteromedian cyst that does not extend more than a short angle above basal one-fourth of head 4
- 4. Head with a distinct (sometimes decurved) medicentral spine 5
 Head without a mediocentral spine 6
- 5. Venter of abdomen with mediolongitudinal groove deep, abruptly vertical-sided, reaching to or beyond apex of third visible segment *Euaulana* Drake
 Venter of abdomen without a groove or with a very shallow, mediolongitudinal impression confined to basal 2 visible segments *Chorotingis* Drake
- 6. Head without occipital spines *Kalama* Puton
 Head with occipital spines *Dictyonota* Curtis

TABLE 2.—Geographic distribution of species of modern genera in the tribe Ypsotingini (numbers in columns = number of species; * = extension of existing species to new world; numbers in parentheses = total number of species in taxon).

Taxon	Neotropics	Nearctic	Palaearctic	Oriental	Ethiopian	Madagascan	Australian	New Zealand	Oceania
YPSOTINGINI (76)	-	3*	51	21	1	-	3	-	-
<i>Chorotingis</i> (1)	-	-	-	-	-	-	1	-	-
<i>Derephysia</i> (13)	-	1*	10	3	-	-	-	-	-
<i>Dictyonota</i> (27)	-	1*	20	7	-	-	-	-	-
<i>Dictyotingis</i> (2)	-	-	-	2	-	-	-	-	-
<i>Euaulana</i> (2)	-	-	-	-	-	-	2	-	-
<i>Kalama</i> (26)	-	1*	21	4	1	-	-	-	-
<i>Ypsotingis</i> (5)	-	-	-	5	-	-	-	-	-

Genus *Chorotingis* Drake

FIGURE 14

Chorotingis Drake, 1961:111 [type species: *Chorotingis indigena* Drake, monobasic].

DIAGNOSIS.—The narrow, non-reflexed paranota, the presence of a mediodorsal head tubercle or spine, plus the gently

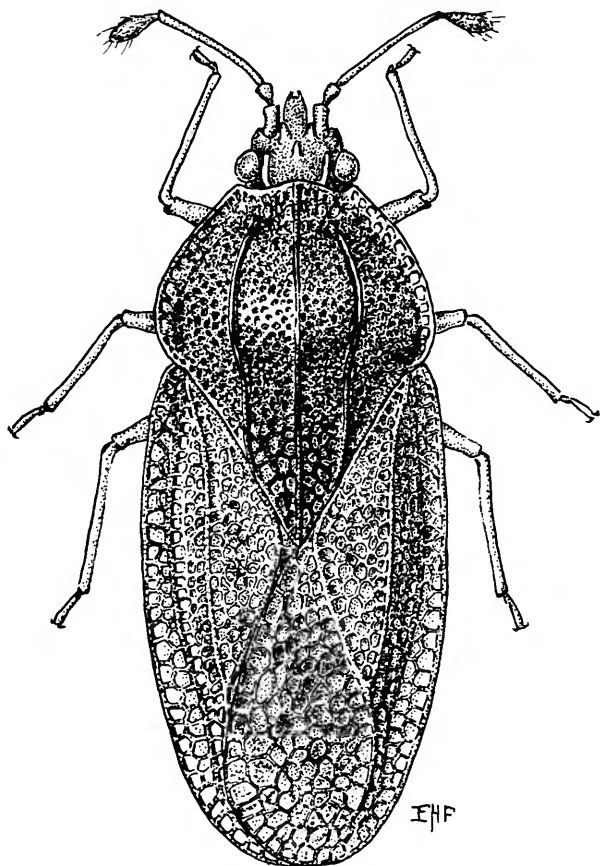


FIGURE 14.—*Chorotingis indigena*, natural length 4.0 mm.

convex anterior pronotal margin extending over the base of the head combine to permit recognition of this genus within its tribe. Length is 4 mm.

GEOGRAPHIC DISTRIBUTION.—Australia and possibly from South Africa (see "Comments" below).

ETYMOLOGY.—*Chorotingis* (feminine): *choris*, Greek, apart, plus *tingis*, name of the typical genus, together implying no special feature, just another kind.

COMMENTS.—Specimens of this genus have been intercepted frequently on plants or plant parts of "*Banksia* sp." (Proteaceae) that were being imported into the United States from Australia; one such specimen was labeled as being from *Banksia attenuata* R. Brown. One specimen, however, was labeled as being intercepted on *Protea* plants [Proteaceae] from South Africa; whether this is an unfortunate case of mislabeling of locality or represents a colony that has become established in South Africa cannot be decided at this time.

The present action of making *Euaulana austrina* Drake a junior synonym of *Chorosoma indigena* Drake is based on the examination of two dozen specimens, including 11 paratypes of *E. austrina*, and their original proposals. The only possibly significant difference between the two was the number of rows of cells in the subcostal area—three or four. This character proved to be sexual—four in the female, three in the male, with that difference obscured in some specimens (with identical labels) having irregular rows of cells and some cells of uneven size. Without separating characters the two species could not be justified.

List of *Chorotingis* Species

Chorotingis indigena Drake, 1961:111 [Australia].—Drake and Ruhoff, 1965a:430.

Euaulana austrina Drake, 1964:37 [Australia] [new synonymy].

Genus *Derephysia* Spinola

FIGURE 15

Derephysia Spinola, 1837:166 [type species: *Tingis foliacea* Fallén, designated by Oshanin, 1912:43].—Drake and Ruhoff, 1965a:430.

Physodera Marshall, 1868:281 [unnecessary emendation for *Derephysia* Spinola. "*Physodera*" was omitted from the Drake and Ruhoff (1965a) catalog].

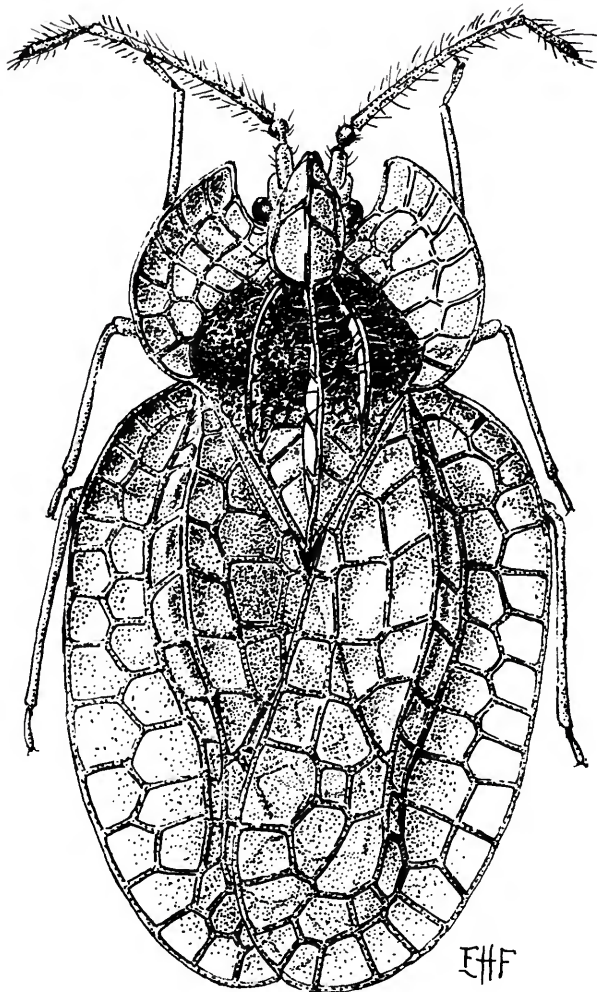


FIGURE 15.—*Derephysia foliacea*, natural length 2.9 mm.

Derephysia (Derephysia) (Spinola).—Péricart, 1983:194.

Derephysia (Paraderephysia) Péricart, 1983:192, 201 [type species: *Tingis cristata* Panzer, original designation].

DIAGNOSIS.—The combination of the outstretched paranota coupled with the anterior median cyst of the pronotum extending over the basal one-third or more of the head distinguishes this genus within the tribe. Length ranges from 1.5 to 4.1 mm.

GEOGRAPHIC DISTRIBUTION.—Europe east to India and Japan; United States (see “Comments” below).

ETYMOLOGY.—*Derephysia* (feminine): *dere*, Greek, neck, plus *physa*, Greek, bubble, plus *is*, a feminine ending. Clearly this name calls attention to the inflated, somewhat bubble-like anteromedian cyst extending over the “neck” and base of the head.

COMMENTS.—The first occurrence of this genus for North America was published by Lattin (1987:77), who reported

specimens of *Derephysia foliacea* (Fallén) collected in Oregon as early as 1968 and who considered (page 76) it to be “native to the Pacific Northwest rather than being an introduction and thus it joins a rather distinct group of palaeartic extensions into the Pacific Northwest.”

Péricart (1983, above) arranged the Euro-Mediterranean species of this genus in two subgenera; for the two species with a single longitudinal carina on the disc of the pronotum (*cristata* (Panzer) and *longispina* Golub) he erected the subgenus *Paraderephysia*, and those with three longitudinal carinae he placed in the nominate subgenus. For convenience of reference, all the species are arranged in the following list in alphabetic order under the generic name. An entry is added to assign each species to show its subgenus. Those species not so assigned by Péricart are herein placed in a subgenus by a subsequent publications or by examining the illustration accompanying the original description or, in the case of *D. gardneri* Drake, by examination of the holotype.

List of *Derephysia* Species

- Derephysia bucharensis* Josifov, 1969:62 [Uzbekistan].
Derephysia (Derephysia) bucharensis.—Péricart and Golub, 1996:28.
Derephysia cristata (Panzer).—Drake and Ruhoff, 1965a:430.
Tingis cristatus Panzer, 1806, heft 99, table 19 [Germany].
Derephysia (Paraderephysia) cristata.—Péricart, 1983:201.
Derephysia fijijsana Takeya, 1962:70 [Japan].
Derephysia (Derephysia) fijijsana.—Péricart and Golub, 1996:29.
Derephysia foliacea (Fallén).—Drake and Ruhoff, 1965a:431.
Tingis foliacea Fallén, 1807:39 [Sweden].
Derephysia brevicornis Reuter, 1888:224 [Greece]. [Synonymized by Péricart, 1978:90.]
Derephysia foliacea var. *biroi* Horváth, 1896:326 [Yugoslavia]. [Synonymized by Péricart, 1978:90.]
Derephysia lugens Horváth, 1902:593 [Yugoslavia]. [Synonymized by Péricart, 1978:90.]
Derephysia emmanueli Ribes, 1967:35 [Spain]. [Synonymized by Péricart, 1978:90.]
Derephysia (Derephysia) foliacea.—Péricart, 1983:194.
Derephysia gardneri Drake and Poor, 1936:148 [India].—Drake and Ruhoff, 1965a:431.
Derephysia (Derephysia) gardneri.—New subgeneric assignment.
Derephysia gracilicornis Josifov, 1969:65 [Armenia].
Derephysia (Derephysia) gracilicornis.—Péricart, 1983:199.
Derephysia longirostrata Jing, 1980:399 [China].
Derephysia (Derephysia) longirostrata.—New subgeneric assignment.
Derephysia longispina Golub, 1974:799 [Russia].
Derephysia (Paraderephysia) longispina.—Péricart, 1983:204.
Derephysia minuta Josifov, 1969:63 [Tadshikistan].
Derephysia (Derephysia) minuta.—Péricart, 1983:200.
Derephysia nigricosta Horváth, 1905a:272 [Spain].—Drake and Ruhoff, 1965a:432.
Derephysia (Derephysia) nigricosta.—Péricart, 1983:199.
Derephysia ovata Takeya, 1962:72 [Japan].
Derephysia (Derephysia) ovata.—Péricart and Golub, 1996:29.
Derephysia rectinervis Puton, 1887:304 [Algeria].—Drake and Ruhoff, 1965a:433.
Derephysia (Derephysia) rectinervis.—Péricart, 1983:198.
Derephysia rectinervis kiritshenkoi Josifov. —Péricart, 1978:92.
Derephysia kiritshenkoi Josifov, 1969:59 [Iran].
Derephysia (Derephysia) rectinervis kiritshenkoi.—Péricart, 1983:198.
Derephysia rectinervis rectinervis Puton. —Péricart, 1978:92.
Derephysia (Derephysia) rectinervis rectinervis.—Péricart, 1983:198.

Derephysia sinuocollis Puton, 1879a:104 [France].—Drake and Ruhoff, 1965a:433.

Derephysia (*Derephysia*) *sinuocollis*.—Péricart, 1983:200.

Derephysia tibetensis Jing, 1981:165 [with English summary, 166] [China].

Derephysia (*Derephysia*) *tibetensis*.—Péricart and Golub, 1996:30.

Genus *Dictyonota* Curtis

FIGURE 16

Dictyonota Curtis, 1827, table 54 [type species: *Dictyonota strichnocera* Fieber, fixed by Opinion 251 (1954) International Commission on Zoological Nomenclature].—Drake and Ruhoff, 1965a:433.

Derephysia (*Biskria*) Puton, 1874:440 [type species: *Dictyonota gracilicornis* Puton, monobasic]. [Synonymized by Golub, 1975:59.]

Biskria (*Notosima*) Kerzhner, 1964:119 [type species: *Biskria ephedrae* Kerzhner, monobasic. Synonymized by Golub, 1975:59.]

DIAGNOSIS.—This genus is recognizable within the tribe by the combination of the paranotum being horizontal or only slightly oblique, the anteromedian cyst (when present) not or only very slightly extended over base of head, and the head with frontal and occipital spines but no dorsomedial spine. Length ranges from 2.3 to 5.0 mm.

GEOGRAPHIC DISTRIBUTION.—Europe, Asia, Africa, and North America (see “Comments” below).

ETYMOLOGY.—*Dictyonota* (feminine): *dictyon*, Greek, net, plus *nota*, mark, describing the evident net-like markings.

COMMENTS.—The European species, *D. fuliginosa* Costa, was first added to the North American list by Scudder (1960) and later treated by Waloff (1966); both considered it to be a form brought into the Pacific Northwest on the introduced broom plant *Sarothamnus scoparius* (Linnaeus).

List of *Dictyonota* Species

Dictyonota albipennis Baerensprung, 1858:207 [Italy].

Dictyonota (*Dictyonota*) *albipennis* Drake and Ruhoff, 1965a:433.

Dictyonota astragali Stusak and Onder, 1982:67 [Turkey].

Dictyonota atlantica Péricart.

Dictyonota (*Dictyonota*) *atlantica* Péricart, 1981:85 [Canary Islands].

Dictyonota atraphaxius Golub.

Dictyonota (*Dictyonota*) *atraphaxius* Golub, 1975:63 [Kazakhstan].

Dictyonota bisharensis (Linnavuori).—Golub, 1975:63.

Biskria bisharensis Linnavuori, 1965:240 [Israel].

Dictyonota dlabolai Hoberlandt.

Dictyonota (*Dictyonota*) *dlabolai* Hoberlandt, 1974:133 [Mongolia].

Dictyonota xilingola Jing, 1980:397, 402 [China]. [Synonymized by Golub, 1987:52. Golub (1975:72) reported that before establishment of the name *D. dlabolai*, this species was reported in literature under two nomina nuda: *Dictyonota* (*D.*) *breviuscula* Kiritshenko, 1964:186; and *Dictyonota* (*D.*) *brevispina* Kerzhner, 1973:82, 90.]

Dictyonota ephedrae (Kerzhner).—Golub, 1975:66.

Biskria (*Notosima*) *ephedrae* Kerzhner, 1964:119 [Kazakhstan]. [This species was also marked “Kerz., n. sp.” in Kerzhner and Jaczewski, 1964:768. The above assignment of original publication follows Golub, 1975:66.]

Dictyonota fuliginosa Costa.—Drake and Ruhoff, 1965a:434.

Dyctionota [sic] *fuliginosa* Costa, 1855:10 [Italy].

Dictyonota gobica Golub.

Dictyonota (*Dictyonota*) *gobica* Golub, 1975:64 [Mongolia].

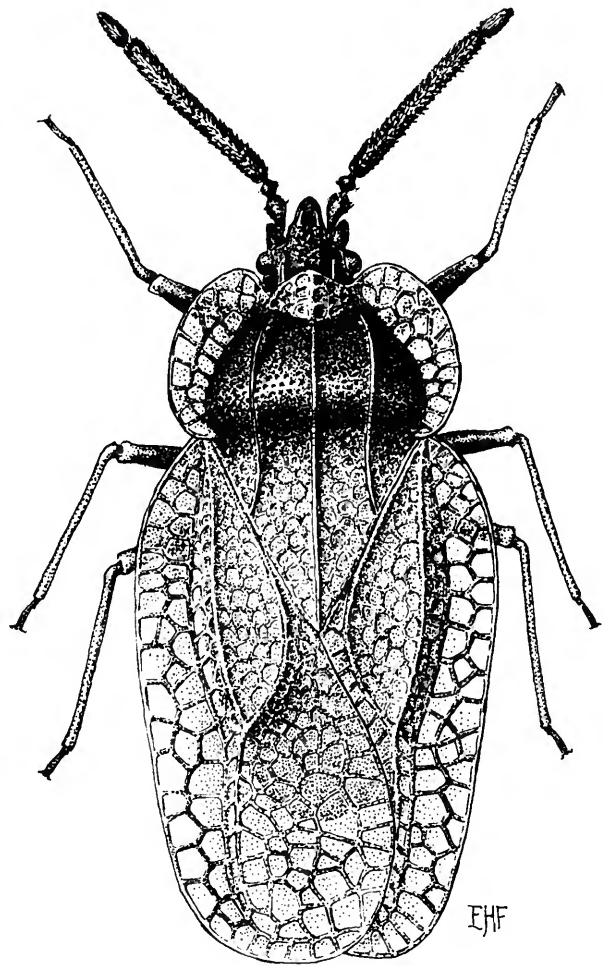


FIGURE 16.—*Dictyonota strichnocera*, natural length 3.8 mm.

Dictyonota gracilicornis Puton.—Péricart, 1983:159.

Dictyonota (*Biskria*) *gracilicornis* Puton, 1874:440 [Algeria].

Biskria gracilicornis.—Drake and Ruhoff, 1965a:429.

Dictyonota halimodendri Golub.

Dictyonota (*Dictyonota*) *halimodendri* Golub, 1975:69 [Mongolia].

Dictyonota hispanica (Gomes-Menor).—Golub, 1975:63.

Biskria hispanica Gomez-Menor, 1955:250 [Spain].—Drake and Ruhoff, 1965a:420.

Dictyonota horvathi (Kiritshenko).—Golub, 1975:70.

Biskria [sic] *horvathi* Kiritshenko, 1913:413 [Turkestan].

Biskria horvathi.—Drake and Ruhoff, 1965a:429.

Dictyonota kerzhneri Golub.

Dictyonota (*Dictyonota*) *kerzhneri* Golub, 1975:66 [Kazakhstan].

Dictyonota koreana Lee, 1967:93 [Korea].

Dictyonota lepida (Horváth).—Golub, 1975:63.

Biskria lepida Horváth, 1905b:562 [Tunisia].—Drake and Ruhoff, 1965a:429.

Biskria josifovi Seidenstücker, 1968:267 [Iraq]. [Synonymized by Péricart, 1982:353.]

Dictyonota marmorea Baerensprung, 1858:206 [France].—Drake and Ruhoff, 1965a:434.
Dictyonota aubei Signoret, 1865:118 [France]. [Synonymy after Péricart, 1983:154.]
Dictyonota pulchella Costa, 1863:9 [Italy].—Drake and Ruhoff, 1965a:435. [Synonymized by Péricart, 1979:190.]
Dictyonota nigricosta (Kerzhner and Josifov).—Golub, 1975:67.
Biskria nigricosta Kerzhner and Josifov, 1966:629 [Mongolia].
Dictyonota oblita Péricart.—Péricart, 1983:161.
Dictyonota (Dictyonota) oblita Péricart, 1981:82 [France].
Dictyonota opaca (Linnavuori).—Golub, 1975:67.
Biskria opaca Linnavuori. 1965:240 [Israel].
Biskria josifovi Seidenstücker, 1968:267 [Iraq]. [Synonymized by Péricart, 1982:352.]
Dictyonota pakistani Drake and Maldonado.—Drake and Maldonado, 1959:25 [Pakistan].—Drake and Ruhoff, 1965a:435. [By synonymizing *Biskria* under *Dictyonota*, Golub (1975) indirectly implied this present combination.]
Dictyonota phoenicea Seidenstücker, 1963:117 [Syria].
Dictyonota latior Wagner, 1962:283 [Lebanon]. [Synonymized by Golub, 1975:63.]
Dictyonota pulchricornis (Kerzhner and Josifov).—Golub, 1975:71.
Biskria pulchricornis Kerzhner and Josifov, 1966:630 [Mongolia].
Biskria guentheri Wagner, 1967:67 [Mongolia]. [Synonymized by Golub, 1975:71.]
Dictyonota rectipilis (Asanova).—Golub, 1975:65.
Biskria rectipilis Asanova, 1970:57 [Kazakhstan].
Dictyonota salsolae Golub.
Dictyonota (Dictyonota) salsolae Golub, 1975:67 [Kazakhstan].
Dictyonota sareptana Jakovlev, 1876:67 [Russia].—Drake and Ruhoff, 1965a:429.

Biskria sareptana var. *adelpha* Horváth, 1905b:563 [Crimea]. [Synonymized by Golub, 1975:71.]
Dictyonota strichnocera Fieber, 1844:95 [Czechoslovakia, Austria, Yugoslavia].—Drake and Ruhoff, 1965a:435.
Dictyonota idonea Jakovlev, 1903:291 [Ukraine]. [Synonymized by Oshinin, 1908:414.]
Dictyonota teydensis Lindberg, 1936:29 [Canary Islands].—Drake and Ruhoff, 1965a:436.

Genus *Dictyotingis* Drake

FIGURE 17

Dictyotingis Drake, 1942:8 [type species: *Dictyotingis gibberis* Drake, monobasic].—Drake and Ruhoff, 1965a:442.

DIAGNOSIS.—The broadly reflexed paranota that extend over the surface of the pronotum plus the nearly horizontal, multiseriate subcostal area separates this genus within its tribe. Length is 5 mm.

GEOGRAPHIC DISTRIBUTION.—India.

ETYMOLOGY.—*Dictyotingis* (feminine): *diktyon*, Greek, net, plus the generic name *Tingis*, apparently in reference to the fine reticulations on a genus belonging to the same group as the genus *Tingis*.

List of *Dictyotingis* Species

Dictyotingis gibberis Drake, 1942:8 [India].—Drake and Ruhoff, 1965a:442.
Dictyotingis monticula Drake, 1956b:21 [India].—Drake and Ruhoff, 1965a:442.

Key to *Dictyotingis* Species

Collar with distinctly elevated, swollen cyst. Paranota (in dorsal view) forming strongly C-shaped cysts with posterior ends incurved, virtually reaching median carina *D. gibberis* Drake
 *D. gibberis* Drake
 Collar without cyst. Paranotal cysts bulbous, parallel, not C-shaped *D. monticula* Drake

Genus *Euaulana* Drake

FIGURE 18

Euaulana Drake, 1945:96 [type species: *Euaulana ferritincta* Drake, original designation].—Drake and Ruhoff, 1965a:442.

DIAGNOSIS.—Within the tribe, *Euaulana* can be recognized by the combination of the simple paranota (not reflexed to form cysts) and the deep, vertical-sided medioventral groove on the basal three abdominal segments. Length ranges from 3.4 to 3.5 mm.

GEOGRAPHIC DISTRIBUTION.—Australia and Tasmania.

ETYMOLOGY.—*Euaulana* (feminine): *eu*, Greek, beautiful, plus *aule*, Greek, courtyard, *anus* Latin, having the nature of, plus *a*, Latin suffix designating female gender.

COMMENTS.—*Euaulana austrina* Drake is herein newly transferred to the genus *Chorotingis* as a junior synonym of *C. indigena* Drake (see “Discussion” under *Chorotingis*).

List of *Euaulana* Species

Euaulana ferritincta Drake, 1945:96 [Tasmania].—Drake and Ruhoff, 1965a:442.
Euaulana tasmaniae Drake, 1945:97 [Tasmania].—Drake and Ruhoff, 1965a:442.

Key to *Euaulana* Species

Costal area 2-seriate along most of length of discoidal area *E. tasmaniae* Drake
 Costal area mostly 1-seriate, often 2-seriate opposite apex of discoidal area
 *E. ferritincta* Drake

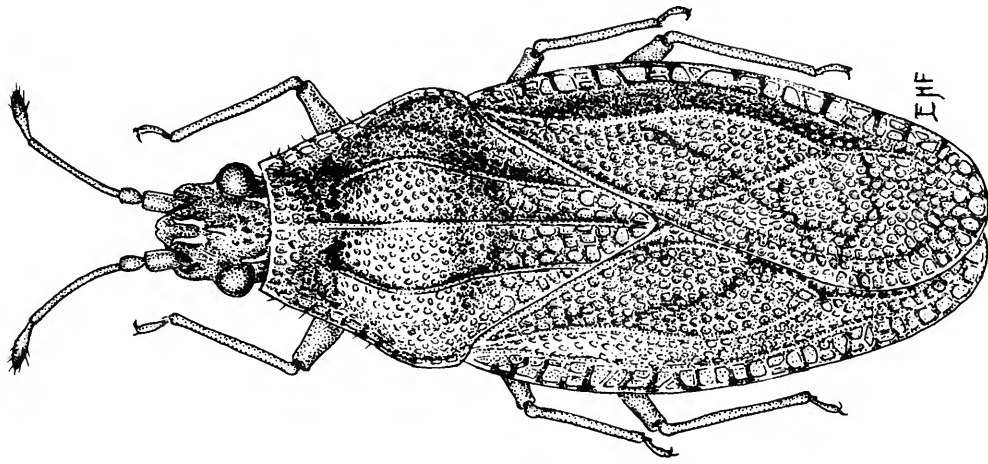


FIGURE 18.—*Euaulana ferritincta*, natural length 3.4 mm.

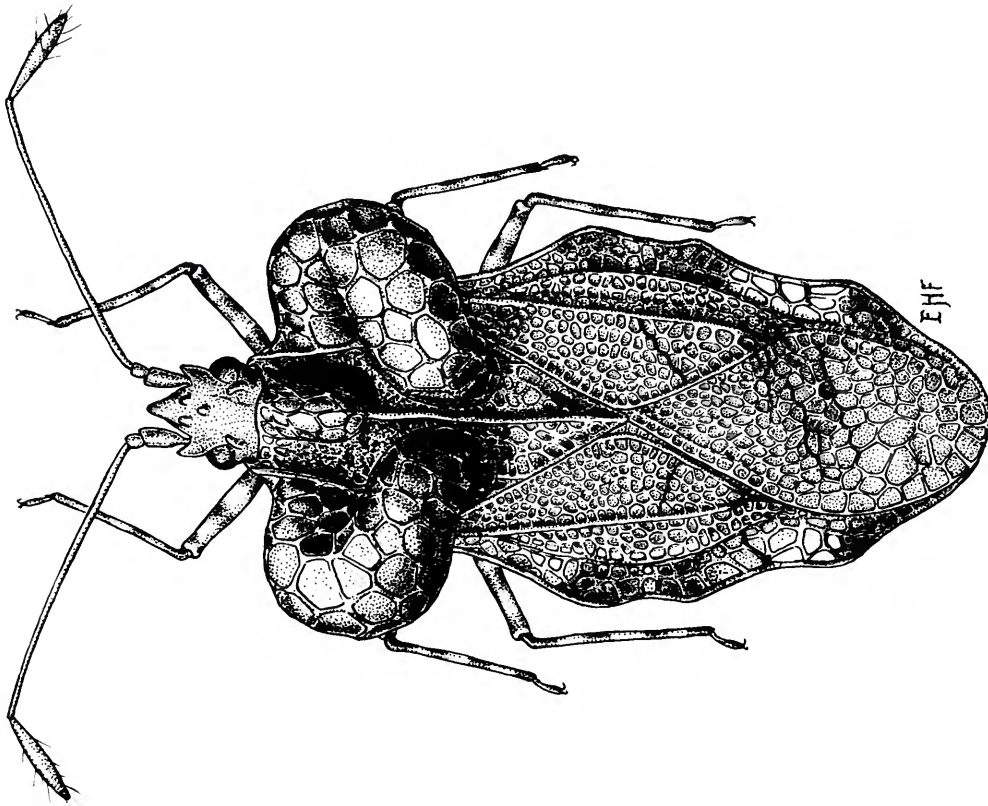


FIGURE 17.—*Dicyptingis gibberis*, natural length 5.0 mm.

Genus *Kalama* Puton

FIGURE 19

Campylostira (*Kalama*) Puton, 1876:34 [type species: *Campylostira* (*Kalama*) *coquereli* Puton, designated by Oshanin, 1912:43].

Dictyonota (*Kalama*).—Horváth, 1906:42.—Drake and Ruhoff, 1965a:441.

Dictyonota (*Elina*) Ferrari, 1878:84.—Drake and Ruhoff, 1965a:439 [type species: *Dictyonota beckeri* Jakovlev, monobasic]. [Synonymized by Golub, 1975:73.]

Alcetha Kirkaldy, 1900:241 [type species: *Acanthia tricornis* Schrank, original designation. Synonymized by Golub, 1975:73].

Kalama.—Péricart, 1982:353. [*Kalama* was originally proposed as a subgenus of *Campylostira* when Puton wrote, "un sous-genre des *Campylostira*, pour lequel je propose le nom *Kalama*." Then he followed with the description of a new species with the binomen of *Kalama coquereli*." When Péricart (1982:353) elevated *Kalama* to generic status, he did not list all the new combinations that would result; herein, however, he is credited with all the new combinations implied by that action.]

DIAGNOSIS.—This genus can be recognized within its tribe by the rows of distinct setigerous spines on the antennae, especially on segment III and basal half of segment IV, coupled with the anterior pronotal cyst not extending over the head. Length ranges from 1.7 to 3.4 mm.

GEOGRAPHIC DISTRIBUTION.—Spain to Korea and south into India and North Africa; introduced into the United States (see "Comments" below).

ETYMOLOGY.—*Kalama* (feminine): *kalamos*, Greek, reed, plus feminine suffix *-a*, possibly suggesting an appearance of woven reeds.

COMMENTS.—The common *K. tricornis* has been introduced and established in eastern North America where specimens collected from 1906 to 1909 were described by Parshley (1916: 164) under the synonymic name *Dictyonota tricornis* variety *americana*.

List of *Kalama* species

Kalama acalyptoides (Golub).

Dictyonota (*Alcetha*) *acalyptoides* [nomen nudum] Kiritschenko, 1964:186.

Dictyonota (*Kalama*) *acalyptoides* Golub, 1975:75 [Tadzhikistan].

Kalama aethiops (Horváth).—Péricart, 1982:353.

Dictyonota aethiops Horváth, 1905b:563 [Algeria].

Dictyonota (*Alcetha*) *coquereli*.—Drake and Ruhoff, 1965a:436.

Kalama beckeri (Jakovlev).—Péricart, 1982:353.

Dictyonota beckeri Jakovlev, 1871:25 [Russia].

Dictyonota (*Elina*) *beckeri*.—Drake and Ruhoff, 1965a:439.

Kalama brevicornis (Ferrari).—Péricart, 1982:353.

Dictyonota (*Kalama*) *putonii* var. *brevicornis* Ferrari, 1884:474 [Tunisia].

Dictyonota (*Kalama*) *brevicornis*.—Drake and Ruhoff, 1965a:441.

Kalama coquereli Puton, 1876:34 [Algeria].—Péricart, 1982:353.

Dictyonota (*Alcetha*) *coquereli*.—Drake and Ruhoff, 1965a:441.

Dictyonota (*Kalama*) *pardoi* Ribes, 1975:108 [Morocco]. [Synonymized by Péricart, 1979:197.]

Kalama coriacea (Asanova).—Péricart, 1982:353.

Campylostira coriacea Asanova, 1970:58 [Kazakhstan].

Dictyonota (*Kalama*) *coriacea*.—Golub, 1975:76.

Kalama cretica (Péricart).—Péricart, 1982:353.

Dictyonota (*Kalama*) *cretica* Péricart, 1979:203 [Crete].

Kalama froeschneri (Duarte-Rodrigues).—Péricart, 1982:353.

Dictyonota (*Elina*) *froeschneri* Duarte-Rodrigues, 1970:XLIV [Portugal].

Kalama fuentei (Puton).—Péricart, 1982:353.

Dictyonota (*Elina*) *fuentei* Puton, 1895:86 [Spain].

FIGURE 19.—*Kalama coquereli*, natural length 2.1 mm.

Dictyonota (*Elina*) *nevadensis* Gomez-Menor, 1955:254.—Drake and Ruhoff, 1965a:440. [Synonymized by Péricart, 1979:199.]

Kalama henschi (Puton).—Péricart, 1982:353.

Dictyonota (*Elina*) *henschi* Puton, 1892:72 [Italy].—Drake and Ruhoff, 1965a:440.

Kalama iberica (Horváth).—Péricart, 1982:353.

Dictyonota (*Elina*) *iberica* Horváth, 1905b:564 [Spain].—Drake and Ruhoff, 1965a:440.

Kalama inermis (Golub).—Péricart, 1982:353.

Dictyonota (*Kalama*) *inermis* Golub, 1975:76 [Mongolia].

Kalama josifovi Péricart, 1992:64 [Nepal].

Kalama koreana (Lee).—Péricart, 1982:353.

Dictyonota koreana Lee, 1967:93 [Korea].

Kalama levantina (Péricart).—Péricart, 1982:353.

Dictyonota (*Kalama*) *levantina* Péricart, 1981:87 [Syria].

Kalama lugubris (Fieber).—Péricart, 1982:353.

Dictyonota lugubris Fieber, 1861:126 [Yugoslavia].

Dictyonota (*Alcetha*) *lugubris*.—Drake and Ruhoff, 1965a:437.

Dictyonota (*Kalama*) *eckerleini* Péricart, 1979:205 [Cyprus]. [Synonymized by Péricart, 1982:354.]

Kalama marqueti (Puton).—Péricart, 1982:353.

Dictyonota (*Elina*) *marqueti* Puton, 1879b:297 [France].—Drake and Ruhoff, 1965a:440.

- Kalama morales* (Ribes).—Péricart, 1982:353.
Dictyonota (Kalama) morales Ribes, 1975:111 [Canary Islands].
Kalama oromii (Ribes).—Péricart, 1982:353.
Dictyonota (Kalama) oromii Ribes, 1978:110 [Canary Islands].
Kalama pusana (Drake and Maa).—Péricart, 1982:353.
Dictyonota (Alcletha) pusana Drake and Maa, 1955:6 [India].—Drake and Ruhoff, 1965a:437.
Kalama putonii (Stål).—Péricart, 1982:353.
Dictyonota putonii Stål, 1874:50 [Algeria].
Dictyonota (Kalama) putonii.—Drake and Ruhoff, 1965a:441.
Kalama reuteri (Horváth).—Péricart, 1982:353.
Dictyonota (Kalama) reuteri Horváth, 1906:42 ["Syria: Kaifa," now Israel].—Drake and Ruhoff, 1965a:441.
Kalama ribesi (Péricart).—Péricart, 1982:353.
Dictyonota (Kalama) ribesi Péricart, 1979:199 [Spain].
Kalama scutellaris (Linnavuori).—Péricart, 1982:353.
Dictyonota (Elina) scutellaris Linnavuori, 1977:8 [Chad, Eritrea, Sudan].
Kalama sicardi (Puton).—Péricart, 1982:353.
Dictyonota (Elina) sicardi Puton, 1894:115 [Tunisia].—Drake and Ruhoff, 1965a:441.
Kalama theryi Montandon, 1897:99 [Algeria].—Péricart, 1982:353.
Dictyonota (Kalama) theryi.—Drake and Ruhoff, 1965a:441.
Kalama tricornis (Schrank).—Péricart, 1982:353.
Acanthia tricornis Schrank, 1801:67 [Bohemia].
Tingis erythrophthalma Germar and Kaulfuss, 1817, tab. 25 [Germany].
Dictyonota erythrocephala Garbiglietti, 1869:275 [Italy].
Dictyonota aridula Jakovlev, 1902:66 [Crimea]. [Synonymized by Kerzhner and Jaczewski, 1964:768.]
Dictyonota tricornis var. *cicur* Horváth, 1905b:563 [Hungary]. [Synonymized by Péricart, 1983:187.]
Dictyonota maroccana Ribaut, 1939:186 [Morocco]. [Synonymized by Drake and Ruhoff, 1962:141, with *D. aridula* Jakovlev, 1902, and it follows *aridula* into synonymy under *K. tricornis*. See third entry above under *tricornis*.]
Dictyonota (Alcletha) aridula.—Drake and Ruhoff, 1965a:437.
Dictyonota (Alcletha) tricornis.—Drake and Ruhoff, 1965a:437.
Dictyonota (Alcletha) tricornis var. *cicur*.—Drake and Ruhoff, 1965a:439.
Kalama vinokurovi (Golub).—Péricart, 1982:353.
Dictyonota (Kalama) vinokurovi Golub, 1979:18 [Russian SFSR].

Genus *Ypsotingis* Drake

FIGURE 20

Ypsotingis Drake, 1947:229 [type species: *Ypsotingis sideris* Drake, monobasic].

DIAGNOSIS.—The combination of the broadly reflexed paranotum with free margin nearing the median carina but in most part not touching the surface of the pronotum distinguishes this genus within the tribe. Length ranges from 3.5 to 6.8 mm.

GEOGRAPHIC DISTRIBUTION.—Southeastern Asia and Philippine Islands.

ETYMOLOGY.—*Ypsotingis* (feminine): *hypsos*, Greek, height, plus the genus name *Tingis*, feminine, apparently in reference to a tingid with very tall paranotal cysts.

COMMENTS.—Because of the very few specimens available, no effort was made to remove a paranotal cyst to see the exact form of the lateral discal carinae of the pronotum.

The description of the species *Y. chlaina* Drake and Ruhoff (1965b:287) said the head is "short, scarcely prolonged in front of eyes." This head shape would exclude the species from a tribe that is defined as having the head elongate and reaching or almost reaching the apex of the first antennal segment. Apparently the large paranotal cysts misled those authors into this placement. Study of the type series found the species must be transferred to the genus *Engyotingis* Drake and Ruhoff in the

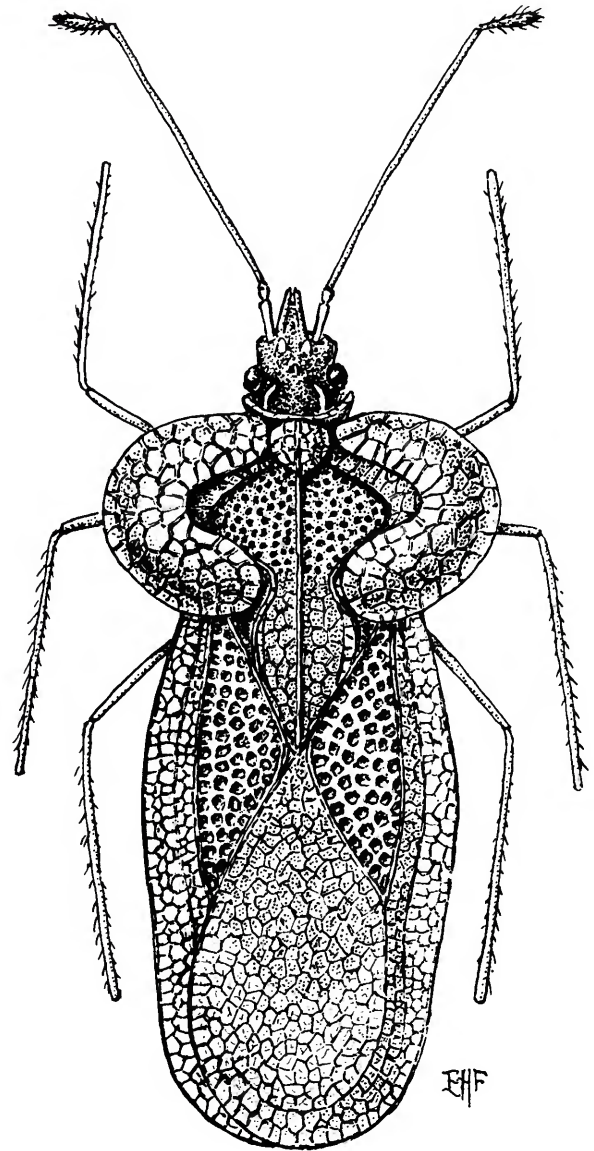


FIGURE 20.—*Ypsotingis sideris*, natural length 6.8 mm. Adapted from original description and subsequently published illustration of holotype.

tribe Tingini where it forms the new combination *Engyotingis chlaina* (Drake and Ruhoff).

List of *Ypsotingis* Species

- Ypsotingis bakeri* Drake, 1958:149 [Borneo].—Drake and Ruhoff, 1965a:442.
Ypsotingis bornea Drake, 1958:152 [Borneo].—Drake and Ruhoff, 1965a:443.
Ypsotingis luzonana Drake, 1958:150 [Philippine Islands].—Drake and Ruhoff, 1965a:443.
Ypsotingis sideris Drake, 1947:230 [Viet Nam] [illustration of the holotype appeared the following year, Drake, 1948c:45].—Drake and Ruhoff, 1965a:433.
Ypsotingis vicinitas.—Drake and Ruhoff, 1965a:443.
Ypsotingis vicinatis [sic].—Drake, 1948b:74 [Netherlands East Indies].

Key to *Ypsotingis* Species

1. Costal area 1-seriate to apex of discoidal area, 2-seriate beyond *Y. bakeri* Drake
 Costal area multiseriate almost from base 2
2. Paranotal cysts inflated, subspherical, almost contiguous for full length mesally, exposing only median pronotal carinae *Y. bornea* Drake
 Paranotal cysts more-or-less C-shaped, at least at midlength widely separated, exposing broad area of pronotal surface each side of median carina 3
3. In dorsal view, lateral pronotal carina largely or wholly covered by paranotal cyst *Y. luzonana* Drake
 In dorsal view, lateral carina visible 4
4. Costal area distinctly wider than discoidal area. Lateral pronotal carina with anterior one-fourth strongly incurved and then slightly recurved *Y. vicinitas* Drake
 Costal area narrower than discoidal area. Lateral pronotal carina with anterior one-fourth simply curved inward, not recurved *Y. sideris* Drake

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