

NEW AND LITTLE-KNOWN LOPHOPIDAE AND ISSIDAE
FROM AUSTRALASIA (HOMOPTERA : FULGOROIDEA).

By R. G. FENNAH, M.A., F.R.E.S.

THE Lophopidae and Issidae discussed below were mostly collected in the Solomon Islands by H. T. Pagden (H. T. P.) and R. A. Lever (R. A. L.) and form a useful contribution to our meagre knowledge of the fauna of this group, which appears to have been the first stepping stone on the main southern route of fulgoroid migration eastward into the Pacific as the Palau Islands have been the first on the northern.

As far as material has allowed the divergence of insular populations has been studied: the differences which have been recorded are the most obvious or the most easily described and are in no sense an exhaustive enumeration of those which are likely to be found on closer study of larger samples. The formal proposal of subspecific epithets has been deliberate and is intended to emphasise the relative magnitude and the "non-linearity" of changes in the characters examined.

The writer's thanks are tendered to the authorities of the British Museum (Nat. Hist.) and to Dr. W. E. China for the privilege of examining this material, all of which¹ including the holotypes, is the property of the Museum.

LOPHOPIDAE.

Painella Muir.

Muir, 1931, *Rec. Aust. Mus.* 18 : 77. Orthotype, *Painella harti* Muir.

Painella simmondsi Muir.

Muir, 1931, *loc. cit.* : 80.

7 ♂ and 8 ♀, SOLOMON IS. ; GUADALCANAL : Tenaru, 3.x.1938, 30.ix.1935 (R. A. L.); Suavati, 29.iv.1934 (R. A. L.); Ruavatu, 29.iv.1934; Kookoom, 7.xii.1933, (H. T. P.), xi.1932 (R. A. L.); Lunga, 9.vii.1933, xi.1932, 6.iii.1935 (R. A. L.); Kaukau, 22.viii.1934 (R. A. L.); Rere, 12.viii.1934 (R. A. L.); Tulagi, 19.xii.1931 (R. A. L.). 3 ♀, SAN CRISTOBAL, 12.x.1932 (R. A. L.); Waia, 8.v.1935 (R. A. L.). 1 ♀, VELLA LAVELLA : Parasso, 22.v.1935 (H. T. P.). 2 ♀, RUSSELL ID. : Pepesala, 19.ix.1934 (R. A. L.); Caramola, 20.ix.1934 (R. A. L.); Somata, 22.ii.1934 (R. A. L.). 1 ♀, ULAWA : 19.v.1934 (R. A. L.). 3 ♂ and 2 ♀, MALAITA : Supaina, 20.iv.1934 (R. A. L.); Ngela, 11.iii.1934 (R. A. L.). 1 ♂ and 2 ♀, SANTA ISABEL ID. : Fatua, iii.1932, iii.1933; Tatamba, 27.vi.1935 (R. A. L.).

Painella harti Muir.

Muir, 1931, *loc. cit.* : 78.

1 ♂ and 1 ♀, SOLOMON IS. ; GUADALCANAL : Popanu, 500 ft., 15.xii.1934 (R. A. L.); Lunga, 1.iv.1934 (R. A. L.). 1 ♂, SANTA ISABEL ID. : Tatamba, 11.vii.1935 (R. A. L.).

¹With the exception of *Clonaspe sanquinosus bougainvillei* ssp.n.

Clonaspe gen. n.

Vertex in male longer in middle line than broad, in female scarcely broader than long, posterior margin transverse, lateral margins subparallel, anterior margin shallowly convex, disc not depressed, medially carinate except at apex, carinae very little raised; frons in middle line, as seen in anterior view, slightly longer than broad at widest part (1.1 : 1), half as wide at narrowest point as at widest, apparent basal margin in anterior view convex-truncate, lateral margins diverging to below level of antennae, thence incurved to suture, laterodistal angles rounded, about 110°, basal portion of frons curving toward upper surface of head to meet vertex, amply visible in dorsal view, not traversed by a median carina, median discal area of frons demarcated by basal and lateral carinae and traversed by median carina; clypeus elongate, medially and laterally carinate; rostrum extending beyond mesotrochanters, penultimate segment about six times length of apical segment, antennae with first segment ring-like, second subovate, twice as long as broad. Pronotum in middle line very approximately half as long as vertex, disc slightly broader across base than long in middle, anteriorly obtusely rounded, distinctly tricarinate, mesonotum broader than long, subequal to length of head and pronotum combined, tricarinate; pro- and meso-femora and tibiae only moderately expanded, tibiae more so than femora; post-tibiae bispinose, with an irregular row of six spines at apex; basal metatarsal segment not swollen, with a group of seven spines near end at apex. Tegmina 2.5 times as long as broad, costal margin shallowly convex, apical margin evenly rounded with its most distal portion slightly flattened; costal area narrow, slightly wider distally with transverse veinlets beginning near middle, becoming of regular size two-thirds from base; apical veinlets long, parallel, about 25 cells around apical margin between node and apex of clavus, Sc + R forked near base, Sc, R, M and Cu₁ forking about level with a line from union of claval veins to node. Wings as in *Menosca*. Anal segment of female tubular, elongate, with a pair of small ceriferous plates at apex, each not greatly exceeding length of anal style. Ovipositor with third valvulae with ceriferous plates very large.

Type species: *Clonaspe sanguinosa* sp. n.

This genus is distinguished from *Katoma* Baker by the vertex being at least as long as broad in the male, the frons smooth and subtumid at base, and medially carinate distally, and the costal area of the tegmina traversed by only a few veinlets; from *Painella* it differs abundantly in the shape of the head and of the second antennal segment, and from *Menosca* Stål in the structure of the costal area of the tegmina and in the shape of the antennae.

Clonaspe sanguinosa sp. n. (Fig. 1, A-J).

Vertex of male 1.3 times as long in middle line as broad, in female 1.1 times as broad as long; subapical segment of rostrum 6.5 times length of apical.

Pygofer with dorsolateral angles produced in a bluntly-rounded lobe. Aedeagus U-shaped in profile, phallobase with a small finger-like lobe near base, directed ventrad, a deep cleft on each side apically, upper and lower limbs of cleft each with a pointed lobe on dorsal margin at middle and at apex; a pair of phallic appendages, each tubular, curved dorsad distally then reflexed and directed posteriorly near apex, a deeply curved process attached laterally near base, directed ventrad then cephalad; dorsal margin distally straight, apex acute. Genital styles about 2.6 times as long as broad with a small recurved spine on dorsal margin near apex.

Male: Length, 6.4 mm.; tegmen, 7.0 mm. Female: Length, 8.0 mm.; tegmen, 11.8 mm.

16 ♂ and 14 ♀ from localities as listed below. Holotype male from SOLOMON Is.: Shortland Id.

This species is represented in the archipelago by a number of forms differing slightly in the shape of the pygofer and in pigmentation; these are recognised here as geographical subspecies.

Clonaspe sanguinosa ulawana subsp. n. (Fig. 2A.)

Base of clypeus and smooth base of frons entirely red in both sexes, tegmina more or less uniformly brown, dorsal surface powdered brown or tawny in patches. Post-tibiae fuscous-piceous as figured.

1 ♂ and 6 ♀, ULAWA, 19.v.1934 (R. A. L.).

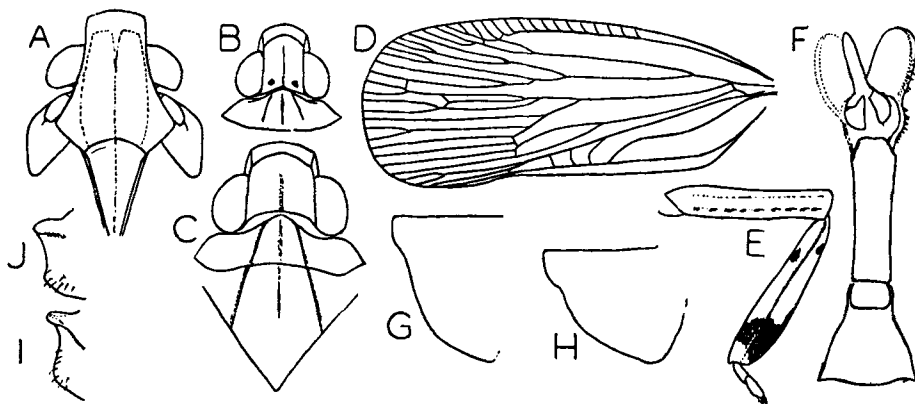


FIG. 1.—*Clonaspe sanguinosa* sp. n. A, Frons and clypeus; B, vertex and pronotum (male); C, ditto (female); D, tegmen; E, foreleg; F, anal segment of female; G, profile of ventral surface of pygofer (Shortland Id.); H, ditto (Vella Lavella); I, lateral process of pygofer (Shortland Id.); J, ditto (Vella Lavella).

Clonaspe sanguinosa inusta subsp. n. (Fig. 2, B, G.)

Frons with laterobasal areas between apex of vertex and base of discal area of frons with V-shaped piceous markings with their apices almost meeting in middle line; clypeus red at base. Tegmina brown marked fuscous in short transverse bars on corium and in four areas on membrane in form of a broad chiasma; dorsal surface powdered brown.

7 ♂ and 4 ♀, VELLA LAVELLA: Parasso, 22.v, 1934 (H. T. P.); Sanggarama Est., 25.ix.1933 (H. T. P.).

Clonaspe sanguinosa tenaruana subsp. n. (Fig. 2, c.)

Base of clypeus and frons within median discal area red; base of frons brown, tegmina brown, coarsely striped with fuscous on corium, membrane more or less evenly suffused fuscous, margin darker. Protibiae marked as figured.

1 ♂, GUADALCANAL: Tenaru River, 17.xi.1935 (R. A. L.).

Clonaspe sanguinosa nggelana subsp. n. (Fig. 2, E.)

Clypeus and frons reddish-piceous, vertex mostly infuscate with a trapezoidal patch anteriorly and two spots posteriorly dark. Protibiae marked as figured. Tegmina reddish-fuscous.

1 ♀, MALAITA: Nggela, 20.iii.1934, on *Areca* (H. T. P.).

Clonaspes sanguinosa floridana subsp. n. (Fig. 2, E.)

Clypeus and frons reddish-piceous in male with two green transverse bars, vertex as in *nggelana* but fuscous markings fainter. Protibiae marked as figured. Tegmina brown with transverse paler bars slightly anastomosing; transverse veinlets on membrane pale; waxy secretion concolorous.

1 ♂ and 1 ♀, FLORIDA, ix. 1932 (R. A. L.).

This subspecies is very similar to that from Nggela and is most readily distinguished by the extent of the pallid tracts on the tegmina.

Clonaspes sanguinosa sanctae-isabellae subsp. n. (Fig. 2, F.)

Clypeus at base and most of frons red, smooth basal part of frons glistening piceous, vertex with a trapezoidal area and two spots fuscous, two small transverse lenticular areas on frons green. Tegmina pale brown with a few fuscous markings on corium, membrane mostly infuscate, transverse veinlets pale brown with reddish-brown waxy secretion.

2 ♂, SANTA ISABEL: Haivo, 6.vii.1935 (R. A. L.).

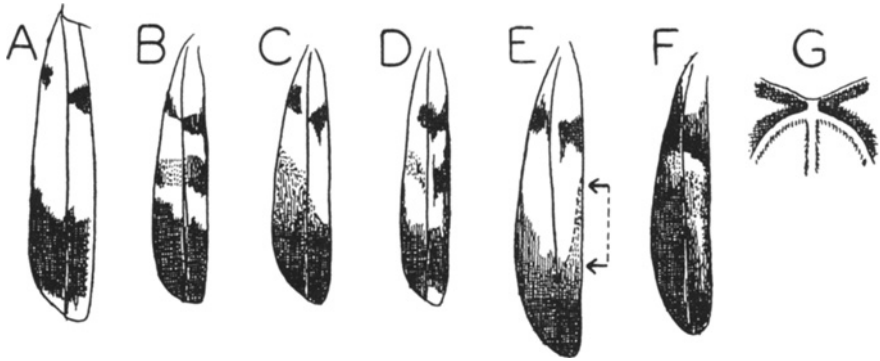


FIG. 2.—A, *Clonaspes sanguinosa ulawana* ssp. n., protibia; B, *C. sanguinosa inusta* ssp. n., protibia; C, *C. sanguinosa tenaruana* ssp. n., protibia; D, *C. sanguinosa sanguinosa* ssp. typ., protibia; E, *C. sanguinosa nggelana* ssp. n., protibia (portion of margin between arrows dark fuscous); F, *C. sanguinosa floridana* ssp. n., protibia (portion of margin between arrows red); G, *C. sanguinosa sanctae-isabellae* ssp. n., protibia; G, *C. sanguinosa inusta* ssp. n., laterobasal areas of frons and base of frontal disc.

Clonaspes sanguinosa bougainvillei subsp. n.

Base of clypeus, two transverse bars on frons, area between base of medial disc of frons and apex of vertex, carinae of vertex, and sides of head near margin crimson; two triangular areas between vertex and frontal medial disc piceous, disc of vertex with a trapezoidal area anteriorly and a pair of large round spots posteriorly fuscous; head otherwise pale green. Protibiae as in typical subspecies, but upper two transverse bands complete.

BOUGAINVILLE: 1 ♂, Siwai, 1.x.1922, and 1 ♀, Soraken, 9.ix.1922 (E. O. Pockley); a further (mutilated) specimen taken by the same collector, Banoni, x. 29, 1922, is a "melanic" form of reddish-piceous hue in all parts.

Clonaspes sanguinosa sanguinosa subsp. typ. (Fig. 2, D.)

Frons green, two transverse bars, base of discal area, and base of clypeus red; base of frons basad of discal area with an incomplete fuscous triangle on each side, vertex pale.

Tegmina mostly light brown, seven moderately large lenticular marks and a few small stripes on corium fuscous, membrane with a broad fascia of subparallel transverse narrow stripes, and distally a uniform sinuate band fuscous.

3 ♂ and 1 ♀, SHORTLAND ID. : Hisiai R., 22.x.1936 (R. A. L.).

Lophops Spinola.

Spinola, 1839, *Ann. Soc. ent. Fr.* 8 : 387. Haplotype, *Lophops servillei* Spin., 1839, *loc. cit.*: 388, pl. 10, fig.3.

Lophops tigris sp. n. (Fig. 3, B, E-J.)

Vertex in middle line longer than broad (1.5 : 1) and longer than basal portion of frons viewed from above (2.25 : 1), lateral carinae of discal area of frons almost in same line as lateral carinae of vertex, frons with lateral carinae distinct but disc not deeply sunken. Tegmina acute at apex, apical margin bent in M through 125° in female.

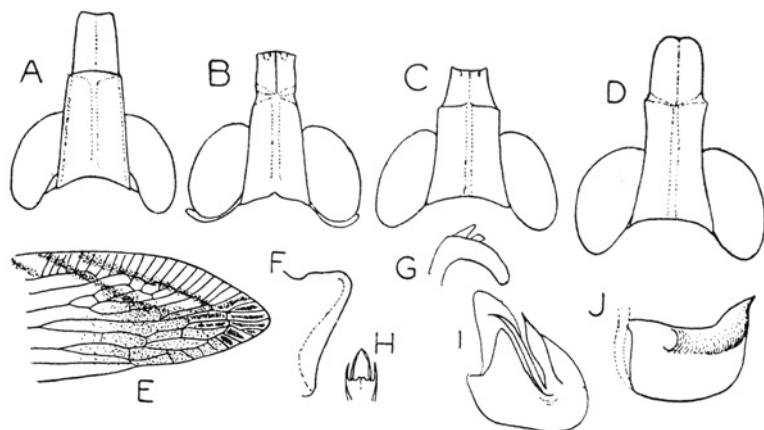


FIG. 3.—A, *Lophops saccharicida* (Kirk.), vertex ; B, *Lophops tigris* sp. n., vertex ; C, *Lophops zebra* Wlk., vertex of type specimen ; D, *Lophops servillei* Spin., vertex. *Lophops tigris* sp. n. ; E, apex of tegmen of female ; F, hind margin of pygofer, left side ; G, anal segment of male ; H, apex of aedeagus, ventral view ; I, aedeagus, left side ; J, right genital style, inner surface.

Pale dull yellow, vertex and intercarinal area of pronotal disc more or less infuscate with a few spots elsewhere. Tegmina dull stramineous, very sparsely flecked with fuscous, a series of parallel oblique bands across costal area, the distal pair extending into membrane, fuscous, apical cells near angle medially piceous.

Anal segment of male short, strongly decurved, almost as broad as long. Pygofer tubular, dorsolateral angle 60°. Aedeagus in form of a tube with folded walls, a pair of broad sclerotised plates laterodorsally forming the roof ; laterally, on either side, a row of three processes, all directed dorsad, the basal process triangular, the second slender, subspinose, curved cephalad at apex, the third lanceolate ; ventral portion of aedeagus sclerotised in basal half, submembranous in distal half and folded fanwise in toward middle line, apical margin sinuate. Genital styles 1.5 times as long as broad at middle, ventral margin convex, dorsal margin shallowly concave, apical process subconical and feebly sclerotised.

Male : length 4.6 mm., tegmen 6.0 mm. ; *Female* : length, 6.0 mm., tegmen 8.1 mm.

5 ♀, GUADALCANAL : Lunga, v-vi.1935 (*R. A. L.*). Holotype and 1 ♂ and 2 ♀, VELLA LAVELLA ; Dobeli, Liani Estate, 23.ix.1933 (*H. T. P.*).

This species most closely resembles *L. saccharicida* (Kirkaldy) but differs in the shape of the vertex, in the relative lengths of vertex and base of frons as seen from above, in the markedly less sunken disc of the frons and in the more acute apex of the tegmina in corresponding sexes. For comparison with *L. tigris* figures are given of the head of *L. zebra* Walker, *L. saccharicida* (Kirkaldy) and *L. servillei* Spinola.

Zophiuma gen. n.

Vertex broader than long (about 1.25 : 1), posterior margin very shallowly excavate, lateral margins parallel, anterior margin broadly convex, disc very slightly depressed anteriorly, not at all depressed posteriorly, medially carinate in basal third, carinae not raised ; frons in middle line shorter than broad at widest part (1 : 1.2), widest part 1.75

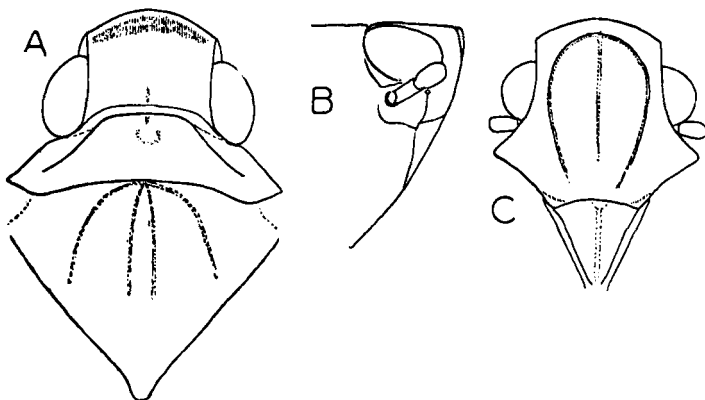


FIG. 4.—*Zophiuma pupillata* (Stål). A, head and thorax ; B, head in profile ; C, frons and clypeus.

times width across base, basal margin in facial view broadly convex, lateral margins diverging to below level of antennae, thence incurved to suture, latero-distal angles subacute, about 80°, base of frons meeting apex of vertex acutely, medial disc longer than broad (1.3 : 1), tricarinate, carinae not attaining frontoclypeal suture ; clypeus about two-thirds as long as frons, medially and laterally carinate, lateral areas slightly visible in anterior view ; rostrum long, apical segment 1.5 times as long as broad, subapical segment 8 or 9 times as long as apical, third segment twice as long as apical, antennae with basal segment cylindrical, slightly longer than second. Pronotum in middle line shorter than vertex (1 : 1.4), discal area 2.5 times as broad across base as long in middle line, median carina absent, lateral carinae widely divergent basad, not attaining hind margin ; mesonotum broader than long (1.2 : 1), longer than head and pronotum combined (1.3 : 1), lateral carinae of disc curved mesad anteriorly, submedially a pair of parallel carinae united anteriorly ; pro- and mesotibiae compressed but not widened, post-tibiae trispinose with nine spines at apex ; basal metatarsal segment with nine spines not forming a regular pad, second metatarsal segment small, ovoid, smooth. Tegmina about 3.5 times as long as broad, apical margin broadly rounded, costal area very narrowly present throughout, stigma not developed differently from apical costal veinlets, Sc+R, M, and Cu₁ forked almost at same level, membrane with more than 20 rows of cells, claval veins united distad of middle. Anal segment of female and third valvulae very large, ceriferous.

Type species : *Acarina pupillata* Stål, 1863, *Trans. ent. Soc. Lond.* **3** : 586.

This genus, which also includes *Kasserota doreyensis* Distant, is separated from *Kasserota* by tegminal venation and from *Megacarna* by the shape of the head, antennae and female genitalia.

Onycta gen. n.

Vertex 1.27 times as broad as long ; medial area of frons between sublateral carinae 1.8 times longer than broad, measured between frontoclypeal suture and union of sublateral and median carinae. Antennae with basal segment very short, ring-like. Head and thorax otherwise as in *Zophiuma*. Tegmina 3.2 times longer than broad, hyaline between veins, costal vein at anterior margin, stigma elongate, six-celled, Sc+R fork distad of Cu 1 fork, about nine cells between base of stigma and apex of clavus, counted along a straight line between these points, claval veins united at middle of clavus. Anal segment of female moderately large, third valvulae very large.

Type species : *Kasserota tessellata* Distant, 1888, *Trans. ent. Soc. Lond.* **1888** : 488, pl. 13, fig. 7.

In the shape of the head and limbs this genus is very similar to *Zophiuma* and, while slight differences are discernible (as described), would scarcely have been considered worthy of separate recognition but for the strikingly different tegmina and female genitalia as well as the entire facies of the colour-pattern.

ISSIDAE.

Lollius Stål.

Stål, 1866, *Hem. Afr.* **4** : 209 ; 1870, *Öfv. vet. akad. Förh.* : 762. Orthotype, *Lollius australicus* Stål, 1870, *loc. cit.* : 763.

Lollius acis sp. n. (Fig. 5, A-C.)

Greenish-yellow, heavily marbled and speckled fuscous ; most of lateral fields of pronotum behind eyes, and lateral fields of mesonotum, castaneous-fuscous ; clypeus and a transverse band at middle and apex of pro- and mesofemora and tibiae more heavily mottled fuscous than elsewhere. Tegmina greenish-yellow, moderately translucent, veins more or less concolorous, veins and veinlets raised, the areas between the veins lightly suffused fuscous ; about thirteen dark spots along costal margin and six intervenally on apical margin. Wings fuscous, veins concolorous but edged darker.

Anal segment, pygofer and genital styles of usual pattern for the genus, as figured. Aedeagus with phallobase (periandrium) with a pair of weakly sinuate stout spines arising from middle of dorsal margin ; distad of these a paired pad-like membrane with a transverse U-shaped strut from which arises a stout spine ; laterally, a deep cleft ; arising at apex of lower margin of this cleft a pair of processes which are dilated in their apical third and thence narrow to a short curved spine. Phallus with lateral dorsal margin hollowed, each limb terminating distally in a small leaf-like membranous lobe, a long strap-like process, distally pointed, arising from each side before apex.

Male : length, 7.7 mm. ; tegmen, 9.8 mm.

Holotype ♂, SOLOMON IS.: GUADALCANAL: Oreke, 700 ft., 14.xii.1934 (R.A.L.)

This species differs from all other described species in the shape of the male genitalia. In the type specimen each tegmen bears two broad and parallel fasciae of white wax, one from the basal cell to the apical margin, the other from the middle of the sutural margin of the clavus to the apical margin.

Lollius evadne sp. n. (Fig. 5, D-F.)

Testaceous-yellow, mottled fuscous: vertex and middle of pronotal and mesonotal discs uniformly testaceous, lateral angles of mesonotum narrowly fuscous, lateral pronotal fields lightly infuscate, but mostly testaceous; legs distinctly transversely banded fuscous and testaceous. Tegmina translucent, greenish testaceous; a large triangular area between base and humeral eminence, a short stripe at base of clavus and a broad vitta between M and Cu, beginning at middle of claval suture, dark fuscous; veins brown, costal vein yellow.

Male genitalia basically similar to those of *L. acis*, differing as follows: phallobase with basal part of dorsal margin subtriangularly produced, the concavity distad of this lobe broad, not narrow; the first pair of spines on the dorsal margin more sinuate, and each of the distal pair more asymmetrically dilated distally, and with apical spine directed dorsad. Phallus with apical pair of spines narrow and sinuate, but relatively broader in basal half. Genital styles with the indentation on posterior margin of apical process situated farther from apex than in *L. acis*.

Male: length, 8.0 mm., tegmen, 10.0 mm.

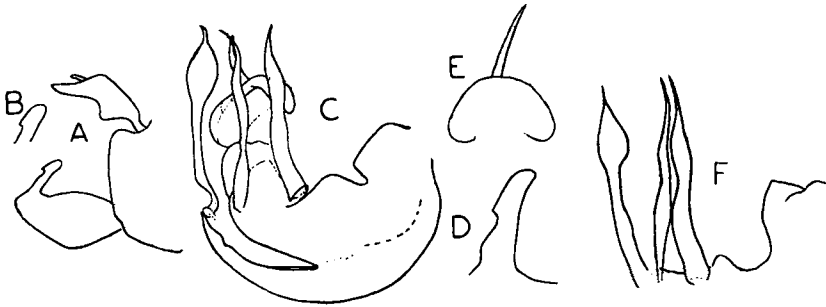


FIG. 5.—*Lollius acis* sp. n. A, Anal segment, pygofer and right genital style; B, distal part of apical process of genital style; C, aedeagus, right side. *Lollius evadne* sp. n.: D, distal part of apical process of genital style; E, median spine at apex of aedeagus, posterior view; F, upper margin and spines of aedeagus, right side (for comparison with C).

Holotype ♂, SOLOMON IS.: KOLOMBANGARA: Jack Harbour, Karikona Estate, 9. vi. 1934 (*H. T. P.*).

The differences between this species and its nearest described relative, *L. acis*, are more numerous than given above. It is quite evident that both species have been derived from the same immigrant stock, but it is difficult to decide whether or not they should be treated as species or subspecies. The differences appear to the writer to be rather too numerous for *evadne* to be considered as merely a geographical subspecies.

Hemisphaerius Schaum.

Schaum, 1850, *Ersch. u. Grub. Enc.* 1: 71. Haplotype, *Issus coccinelloides* Burm., 1833, *Mey. Reise Nov. Act.* 16: 305, t. 41, fig. 11.

Hemisphaerius penumbrosus sp. n. (Fig. 6, A-F.)

Integument of dorsal surface polished, very finely granulate.

Piceous; a bar overlying frontoclypeal suture, vertex, pro and mesofemora except for a bar across middle and a stripe near apex, pro- and mesotibiae except for a longitudinal

stripe, and post-tibiae, yellow. Tegmina piceous in basal half, distal half and a broad zone along costal margin, yellow, the latter becoming orange at base.

Anal segment of male in dorsal view subtrapezoidal, only slightly longer than broad, widest at apex. Aedeagus tubular, U-shaped, dorsal margin produced at base in a strongly convex lobe; dorsal surface strongly convex, submembranous, expanded distally in a pair of semicircular lobes; a long narrow sclerotised plate expanded into a lobe distally, the expanded portion curved mesad and terminating in a point; ventral surface of aedeagus



FIG. 6.—*Hemisphaerius penumbrosus* sp. n. A, Anal segment of male, dorsal view; B, ditto, lateral view; C, aedeagus, left side; D, apical part of aedeagus, ventral view; E, genital style; F, tegmen (freshhand sketch).

scoop-like, distally deeply rounded. Genital styles broad, subtriangulate, apical process short, broad and bicuspidate.

Male: length, 4.1 mm.; tegmen, 3.8 mm.

Holotype ♂, SOLOMON IS.: SANTA ISABEL: iii. 1932 (*R. A. L.*).

This species differs from the type specimens of *H. plagiatus* Walker (Sula), *H. nigrolineatus* Walker (Morty), *H. tristis* Walker (Batchian) and *H. collaris* Walker (New Guinea) strongly in colour pattern. It is, at least superficially, closest to *H. concolor* Walker from New Guinea, but differs in the brighter and more definite band on the frontoclypeal suture and in the colour of the tegmina.