

DERMAPTERA AND ORTHOPTERA FROM THE SOCIETY ISLANDS*

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In September to December, 1928, a valuable collection of 148 specimens in the orders Dermaptera and Orthoptera was made by E. P. Mumford and A. M. Adamson, most of it on the island of Tahiti and a few specimens on the island of Moorea. Twenty-one species, including a very remarkable new cricket, were secured. Of these species, 2 grouse-locusts (grasshoppers) and 1 cricket are endemic, 5 are peculiar to Oceania, 9 are found not only in Oceania, but also in Melanesia, Malaysia, or Australia, and 4 are cosmopolitan. A number of species which have previously been recorded from Tahiti are not represented in the present collection, and it is evident that the Society Islands are probably richer than the Marquesas Islands, though intensive collecting in the Marquesas now shows that 40 species are there present. Until further work is done in the Society Islands, therefore, we do not feel justified in making any detailed comparisons with the dermapteran and orthopteran fauna of other Oceanic island groups. We can say, however, that quite as their geographic position would suggest the Society Islands show nearest affinity in this fauna to the Marquesas Islands and probably have a larger number of species, the majority are probably of Melanesian, Malayan, or Australian origin. Even greater numbers of such species probably inhabit the island groups to the east.

ORDER DERMAPTERA

FAMILY LABIDURIDAE

Euborellia annulipes (Lucas).

Tahiti: Fautaua Valley, September 6-11, 1928, 2 females, 1 young female; Tuauru River, 1 mile from sea, September 5, 1928, 1 small young female.

This circumtropical species has been reported as common in Tahiti.

FAMILY LABIIDAE

Sphingolabis hawaiiensis Bormans.

Tahiti: Fautaua Valley, September 11, 1928, 1 male, 1 female, 2 young; Papenoo Valley, October 28, 1928, from dead petiole of *Angiopteris* species. 1 male.

* Pacific Entomological Survey Publication 6, article 11. Issued March 13, 1933.

Widespread in Oceania, this species is also known from Papuan and Malayan localities.

Labia pilicornis (Motschulsky).

Tahiti: Tiperui Valley, 3 miles from sea, September 12, 1928, in rotting banana stalk, 2 males, 1 female; Fautaua Valley, 2 miles from sea, September 13, 1928, in rotting banana stalk, 2 females.

These specimens agree fully with Hawaiian material before us, which is apparently typical. The insect was previously known in Oceania also from Samoa, and Caudell's record of *Labia* species from Fiji is probably referable to *pilicornis*. It was originally described from Ceylon.

Labia curvicauda (Motschulsky).

Moorea: Faaroa Valley, 3 miles from sea, altitude 1000 feet, December 4, 1928, in dead banana leaves, 3 males, 1 female.

Tahiti: Hitiaa, 3 miles from sea, altitude 1500 feet, December 20, 1928, 2 males, 2 females, 1 young; Fautaua Valley, 2 miles from sea, September 13, 1928, in decaying banana stalk, 3 males; Tipaerui Valley, 3 miles from sea, altitude 750 feet, September 12, 1928, in decaying banana stalk, 1 female.

These specimens of this circumtropical species all represent a very striking color phase, peculiar to Oceania, which was described as *flavicollis* by Bormans in Burr, but later synonymized by Burr.

SUBFAMILY CHELISOCHINAE

Hamaxas nigrorufus (Burr).

Tahiti: Vallée de la Reine, 3 miles from sea, altitude 460 feet, December 17, 1928, 1 male, 1 female.

Assigned correctly to *Hamaxas* by Burr in 1915, this species was originally placed in *Spongiphora* and incorrectly referred by us to *Sparattina* in 1922, we having corrected that error in 1927.¹ It is apparently not a common species, but is known from Hawaii, Samoa, New Guinea, and the Kei Islands.

Chelisoches morio (Fabricius).

Tahiti: Fautaua Valley, altitude 1500 feet, September 11, 1928, from *Freycinetia* species, 13 males, 5 females, 11 young; Hitiaa, 3 miles from sea, altitude 1500 feet, November 20, 1928, from *Freycinetia* species, 1 male, 1 female, 3 young; Papenoo Valley, October 23, 1928, 1 female, 5 young; Vaipuarui Valley, altitude 600 feet, from *Freycinetia* species, 2 males; Pa-pearu, November 9, 1928, altitude 900 feet, from *Pandanus* species, 3 young; Faraura Valley, 2 miles from sea, altitude 200 feet, 1928, 1 young.

¹ Acad. Nat. Sci., Phil., Proc., vol. 79, p. 37, 1927.

Moorea: Faaroa Valley, 3 miles from sea, altitude 1000 feet, December 4, 1928, in dead banana leaves, 1 female, 2 young.

In several immature instars the caudal margin of the pronotum and inner margins of the tegminal and wing pads are usually whitish.

Very common in Oceania, this species is also found in Papua and Malaysia and has been introduced on the coast of California.

ORDER ORTHOPTERA

FAMILY BLATTIDAE

SUBFAMILY ECTOBIINAE

Graptoblatta notulata (Stål).

Tahiti: Hitiaa, Faraura Valley, 1 to 4 miles from sea, altitude 150 to 1500 feet, 1 on *Freycinetia* species, 3 males; Te Aroa Pass, 7 miles from sea, altitude 3480 feet, October 31, 1928, 1 male; Papenoo Valley, 6 miles from sea, altitude 500 feet, October 23, November 9, 1928, 2 males, 1 large young female.

Though *Phyllodromia hieroglyphica*, also originally described from Tahiti, was correctly placed as a synonym by Kirby in 1904, that name was again used for the species by Holdhaus in reporting Samoan material in 1908. Moreover, the description and figures of Chopard's *Margattea scripta*, described in 1924 from New Caledonia, shows that name to be also a synonym.

SUBFAMILY PSEUDOMOPINAE

Kuchinga remota Hebard.

Moorea: Faaroa Valley, altitude 1000 feet, December 4, 1928, in dead banana leaves, 1 female allotype, A. M. Adamson.

Tahiti: Hitiaa, 3 miles from sea, altitude 1500 feet, 1928, 3 male types and paratypes, Adamson; Papeari, altitude 900 feet, November 9, 1928, in *Freycinetia* species, 1 male paratype, A. M. Adamson.

We have very recently described this diminutive buffy cockroach in a study of the Orthoptera of the Marquesas Islands, where it also occurs. The Society Islands material was there reported.

SUBFAMILY BLATTINAE

Periplaneta australasiae (Fabricius).

Moorea: Faaroa Valley, 3 miles from sea, 1000 feet, December 4, 1928, 1 female.

This insect is a pest throughout the tropical and subtropical regions of the world.

Cutilia soror (Brunner).

Tahiti: Papenoo Valley, 3.5 miles from sea, altitude 500 feet, October 28, 1928, 1 young.

Widespread through Oceania, this species is found also in the Papuan and Malayan regions.

SUBFAMILY PANCHLORINAE

Pycnoscelus surinamensis (Linnaeus).

Tahiti: Fautaua Valley, 2 miles from sea, September 3, 1928, 1 large young female; Papenoo Valley, 6 miles from sea, altitude 500 feet, October 25, 1928, 1 large young female.

This is another circumtropical species, often found in subtropical regions as well.

FAMILY ACRIDIDAE

SUBFAMILY ACRYDIINAE

Hydrotetrix aspera Uvarov.

Moorea: Faaroa Valley, altitude 1000 feet, December 4, 1928, 4 males, 7 females.

These specimens agree closely with the original description except that they are even smoother than the examples of *H. cheesmanae*. Rugosity in grouse locusts is often subject to great individual variation and separation of the present series from *aspera* on such grounds would be ill advised. The lateral margins of the pronotal process round broadly to the truncate or very broadly convex apex (the median carina there faintly projecting in two males only). Length: males, 6.3 to 7.8 mm.; females, 9 to 10 mm.

Hydrotetrix cheesmanae Uvarov.

Tahiti: Papenoo Valley, altitude 550 feet, October 25, 1928, 2 males, 4 females, 2 young.

The males are smaller (male, 9 mm.; female, 12 mm.), agreeing otherwise closely with the female, which sex alone was previously known. In the present series the pronotum is not as strongly elevated between the shoulders as in the figure of the type, and the lateral margins of the caudal process round broadly to a sharp apical angle (rectangulate in one, but moderately acute in the others). The species is readily separated from *aspera* by the remarkably long caudal tarsi.

Both of these species are endemic and apparently are peculiar to the Society Islands.

FAMILY TETTIGONIIDAE

SUBFAMILY COPIPHORINAE

Euconocephalus roberti (LeGuillou).

Tahiti: Papenoo Valley, altitude 1000 feet, October 26, 1928, 1 young male (green); Mataiea, sea level, December 25, 1928, 1 female (brown).

Widespread in Oceania, this species is known from the Malayan regions and probably occurs also in Papua.

SUBFAMILY LISTROSCELINAE

Xiphidiopsis lita Hebard.

Tahiti: Papenoo Valley, 6 miles from sea, October 23 to 26, 1928, 5 females, 4 young females; Fautaua Valley, 1 mile from sea, altitude 50 feet, September 6-11, 1928, 2 females, 2 young females.

Widespread in Oceania, this is almost certainly the species recorded from Papeete, Tahiti, and Raiatea by Uvarov and Cheesman as *Xiphidiopsis* species in 1927. A large series from the Marquesas and Hawaii is also before us.

Phisis species.

Tahiti: Fautaua Valley, altitude 1500 feet, September 11, 1928, 1 small young male.

Cheesman and Uvarov in 1927 recorded *pectinata* from the Society Islands and Tuamotus. Holdhaus was, however, correct in 1908 in considering material from Tahiti and Samoa as distinct from *pectinata* and recognizing *pallida* as distinct from that species and properly applicable to the Samoan insect. Chopard's figures for these species, published in 1929, when he recorded a Samoan series of *pallida*, show how very distinct they are.

Males from Tahiti must, however, be studied to determine whether *pallida* or an allied species we are describing from the Marquesas occurs there.

FAMILY GRYLLIDAE

SUBFAMILY GRYLLINAE

Gryllus oceanicus LeGuillou.

Tahiti: Fautaua Valley, 2 miles from sea, September 13, 1928, 1 female; Papenoo Valley, 6 miles from sea, altitude 500 feet, October 23 and 27, 1928, 2 young.

Widespread through Oceania, this common species is known also from Japan and Malaysia.

SUBFAMILY NEMOBIINAE

Genus TAHITINA, new genus

Head strongly vertical, occiput elevated and convex, eyes little projecting, ocelli absent, palpi very elongate with last joint very little enlarged. Pronotum in dorsal aspect about as long as wide. Apterous. Ovipositor moderately elongate, very slender, apex unarmed but slightly widened only ventrad so that in dorsal aspect no widening is shown. Cephalic tibiae without foramina, these and median tibiae armed at apex with a minute pair of ventral spines. Caudal femora moderately robust. Caudal tibiae with three pairs of spines and three pairs of apical spurs, the ventral pair of the latter very minute and of unequal size. Caudal metatarsus elongate dorsad with three external and two internal and a distal pair of extremely small spinulae, and with a pair of distal spurs.

This genus is erected to include the single species, *mumfordi*, which presents such an array of varied characters that it could almost as well be placed as a nemobioid pentacentrid as a pentacentroid nemobiid. The form of the head is certainly pentacentroid, but the armament of the caudal tibiae and tarsi is nemobiid. The extremely elongate and slender palpi, complete lack of ocelli, auditory foramina and organs of flight, and very unusual specialization of the apex of the ovipositor present wide differences from any other gryllid known to us.

A female in the author's collection of *Speonemobius tigrinus* (Saussure)² from Tahiti shows that species to be a much more typical nemobiid. From the figures of the genotype, *S. decoloratus* Chopard, that insect is seen to have the fourth palpal joint much shorter, the fifth more enlarged distad, the caudal tarsi with shorter spines and spurs and only five of the former and five of the latter and caudal metatarsus much shorter and without spinulae.³

It is evident that this genus agrees closely with the Samoan *Cophonemobius* Chopard in many respects, but the shape of the head, presence of ocelli and normal palpi show *C. buxtoni* to be easily separable and clearly a true nemobiid.

Tahitina mumfordi, new species (fig. 1).

Size small, form medium. Apterous. Head almost twice as deep as broad. Occiput glabrous but exceedingly finely and thickly impresso-punctulate. Interantennal protuberance low, convex and about one and one-half times as broad as proximal antennal joint. Palpi very elongate, with fifth joint longer than third and very weakly enlarging to its suddenly slightly obliquely truncate apex, fourth joint considerably longer than fifth. Pronotum and abdomen very heavily hirsute, the former with lateral lobes having the

² Ann. Mag. Nat. Hist., 10th ser., vol. 6, p. 381, 1930.

³ Indian Mus., Rec., vol. 26, pl. 4, figs. 15-17, 1924.

ventro-cephalic angle broadly rounded rectangulate, the ventro-caudal angle very broadly rounded obtuse-angulate and there with surface moderately and narrowly impressed within the margin. Ovipositor distinctly shorter than caudal femur, feebly and evenly curved dorsad, dorsal surface finely sulcate medio-longitudinally throughout, ventrad slightly enlarged thence gradually tapering to the acute apex. Cerci elongate, hirsute, considerably surpassing ovipositor. Femora moderately stout. Caudal metatarsus slender, nearly twice as long as the combined length of the succeeding joints.

General appearance blackish brown. Face, palpi, limbs and underparts slightly paler, deep chestnut brown. Caudal femora inconspicuously darkest in a large pre-genicular area. Abdominal tergites with chestnut weakly showing through the dark hairs under magnification.

Length of body, 6.5 mm.; length of pronotum, 1.8 mm.; length of caudal femur, 5 mm.; greatest width of caudal femur, 1.6 mm.; length of ovipositor, 4 mm.

Tahiti: Anaroi Plateau, altitude 1600 feet, October 31, 1928, type female (B. P. Bishop Museum), A. M. Adamson.

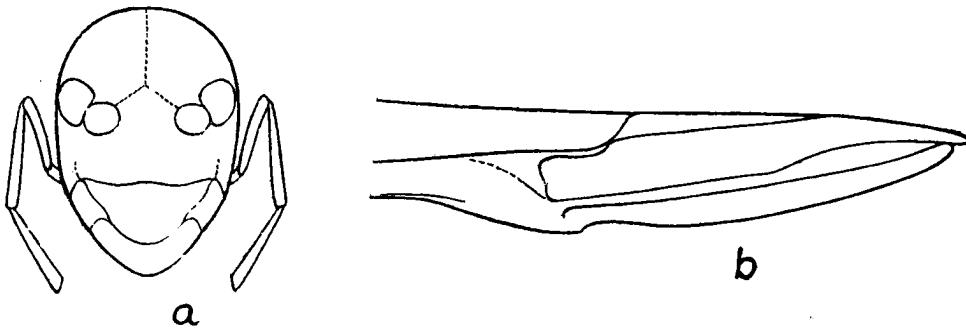


FIGURE 1.—*Tahitina mumfordi*, new genus and new species, type female, Tahiti, Anaroi Plateau: *a*, cephalic outline of head and palpi $\times 8$; *b*, lateral view of apex of ovipositor, greatly enlarged.

This insignificant dark brown apterous cricket shows a most unusual array of important characters and is one of the most distinctive species we have encountered.

Named in honor of the Director of the Pacific Entomological Survey, Mr. E. P. Mumford, who has placed these collections and a representative collection of the Dermaptera and Orthoptera of the Marquesas Islands in our hands for study.

SUBFAMILY TRIGONIDIINAE

Metioche tahitensis (Saussure).

Specimens larger than any of *M. flavipes* before us, with longer and less decidedly curved ovipositors. The tegmina are slightly more coriaceous and convex with dorsal veins heavier than in the typical condition of that insect. Thus definite convergence toward *Rhicnogryllus* Chopard is shown, the present insect distinguishable by the less prominent eyes and presence of tegminal cross-veinlets.

Four specimens testaceous, the face with two narrow vertical lines convergent ventrad and clypeal suture heavily embrowned, the latter marking spreading dorso-laterad. The fifth specimen darker with occiput and pronotal disk marked with brown. the pronotal lateral lobes dark brown and tegmina dark brown particularly laterad with dorsal veins alone testaceous.

Length of body: male, 4.7 mm.; female, 5.1 to 5.8 mm. Length of ovipositor, 2.75 to 2.8 mm. The female of the species was previously unknown.

Tahiti: Fautaua Valley, altitude 1500 feet, September 11, 1928, 1 male, 2 females; Papara Valley, altitude 750 feet, December 21, 1928, 1 female; Anaroi Valley, 5 miles from sea, altitude 1500 feet, October 31, 1928, 1 female.

In our paper on the Orthoptera of the Marquesas⁴ we are placing our *Litogryllus*, to which genus we referred the present species in 1926, as a synonym of *Metioche*. Chopard⁵ placed *tahitensis* in his *Rhincogryllus* in 1930, but though we believe that genus to be valid we consider *tahitensis* referable to *Metioche*. Moreover, we believe that it was ill advised on Chopard's part to name as a variety *decorus*, as there is strong evidence to indicate that merely one of the many color phases developed in the present species is represented. We therefore place *decorus* in the present synonymy.

SUBFAMILY MOGOPLISTINAE

Cycloptilum novarae (Saussure).

Tahiti: Hitiaa, Faraura Valley, 2 miles from sea, altitude 200 feet, 1929, 1 female; Fautaua Valley, 1 mile from sea, altitude 100 feet, September 4-11, 1928, 1 female, 1 young female, 2 very small young; Paea, August 29, 1928, on *Hibiscus tiliaceus*, 1 female; Faa, altitude 900 feet, November 7, 1928, on *Inocarpus edulis*, 1 large young male; Papeari, November 29, 1928, 1 young male, 1 very small young; Tuauru River, 1 mile from sea, altitude 50 feet, September 5, 1928, 1 very small young.

Moorea: Opunohu Valley, 3 miles from sea, altitude 500 feet, December 3, 1928, 1 young male, 1 young female.

In our paper on the Orthoptera of the Marquesas Islands we will explain the present generic assignment. This species has the two processes projecting from beneath the male supra-anal plate erect, adjacent fingers diverging and very slightly enlarging to their rounded apices, each armed there cephalad with a very minute tooth. They are very different from the processes present in the Japanese and Philippine species before us.

This insect is apparently peculiar to Oceania, where it has been recorded from Samoa, Tonga, and Fiji. It was described from Tahiti.

⁴ Manuscript to be published by Bernice P. Bishop Museum.

⁵ Ann. Mag. Nat. Hist., 10th ser., vol. 6, p. 381, 1930.

SUBFAMILY MYRMECOPHILINAE

Myrmecophila hebari W. M. Mann.

Tahiti: Tuauru River, 1 mile from sea, altitude 50 feet, September 5, 1928, 4 females.

Compared with four Fijian paratypes in the author's collection these individuals agree fully. All are as intensive as the maximum shown by that series, with pronotum yellowish buff (given as lemon yellow by Mann) with the large suffused pair of generic spots (given as an interrupted fuscous band by Mann) much darker, Prout's brown.

In the Hawaiian *quadrispina* Perkins the structure is very similar, though that insect is larger and easily recognized by the uniform dark brown head and the entire dorsal surface dark brown except that the generic spots are occasionally indicated in a slightly paler shade than the ground coloration.

It appears probable that Chopard missed Mann's description⁶ and so recorded imperfect material of *hebari* as *quadrispina*⁷ from Samoa in 1929.⁸

We believe that *quadrispina* has as yet been correctly recorded only from Hawaii, whereas *hebari* is known from Fiji, Tahiti, Samoa (probably), the Santa Cruz Archipelago, and the Solomon Islands.

⁶ Ent. Soc. America, Ann., vol. 13, p. 60, 1920. The sole ant host known was given as *Plagiolepis longipes* Jerd.

⁷ Hebard, Morgan, Dermaptera and Orthoptera of Hawaii: B. P. Bishop Mus., Occ. Papers, vol. 7, p. 351, 1922.

⁸ Insects of Samoa, Orthoptera, pt. 1, fasc. 2, p. 35, 1929.