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THE BLATTIDÆ OF RODRIGUEZ.

BY

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The island of Rodriguez, the Blattid fauna of which I propose to describe in the following pages, forms the S.E. corner of the Malagasy sub-region. Through Saussure and Zehntner's *

* A. Grandidier, 'Histoire physique, naturelle et politique de Madagascar,' vol. xxiii., "Histoire naturelle des Orthoptères, 1ère partie, Blattides et Mantides," par MM. H. de Saussure et Zehntner (Paris, 1895)

"Orthoptera" in Grandidier's work on Madagascar, and through Bolivar's* "Orthoptera Dictyoptera (BLATTIDÆ and MANTIDÆ) of the Seychelles and adjacent Islands," the result of the Percy Sladen Trust Expedition in 1905 and 1908–9, we are already well informed of the Blattid fauna of this sub-region. Bolivar's paper covers, besides the Seychelles, practically all the islands to the S.W. as far as, but omitting, Comoro, to the S. as far as Cargados, and on the E. even includes the Chagos Archipelago, though the last-named lies outside the strict limits of this sub-region. Of Réunion and Mauritius we have only stray records of Cockroaches, viz., *Temnopteryx abbreviata*, Sauss., from Réunion (Mém. Soc. Genève, xvii. p. 149, pl. i. fig. 13 (1864)), and of Mauritius *Chorisoblatta liturifera*, Stål, *Lupparia insularis*, Sauss., *Supella supellectilium*, Serv., *Nauphœta cinerea*, Oliv., *Holocompsa cyanea*, Burm., and *H. nitidula*, Fabr. Of these only *Chorisoblatta liturifera* and *Lupparia insularis* can be regarded as indigenous to that island, as the two species of *Holocompsa* are New World forms and were, no doubt, accidentally introduced into Mauritius, whilst *Supella supellectilium* and *Nauphœta cinerea* are practically cosmopolitan.

The only published list of the Blattidæ of Rodriguez is that by Butler †, from material collected during the Transit of Venus Expedition, 1874–1875, in which he enumerates the following species:—

Panchlora corticum, Serville.
Phyllodromia germanica, L.
Periplaneta americana, L.
Periplaneta rhombifolia, Stoll.
Polyzosteria latipes, Walker.

The collection is preserved in the British Museum, where Dr. Uvarov has succeeded in tracing it, with the exception of *P. americana*. An examination of the collection by him and by myself shows that *Periplaneta rhombifolia* is, of course, *Stylopyga rhombifolia*, Stoll, and that both *Panchlora corticum* and *Polyzosteria latipes* are nothing but the cosmopolitan *Pycnoscelus* (*Leucophæa*) *surinamensis*, L. The

* Ign. Bolivar, "Orthoptera Dictyoptera (Blattidæ and Mantidæ), and Supplement to Gryllidæ of the Seychelles and adjacent Islands," Ann. & Mag. Nat. Hist. (9) vol. xiii. pp. 313–359 (1924).

† A. G. Butler, "Orthoptera and Hemiptera," in "An Account of the Petrological, Botanical, and Zoological Collections made in Kerguelen's Land and Rodriguez during the Transit of Venus Expedition, 1874–1875," Philos. Trans. Roy. Soc. vol. 168 (extra vol.), p. 545 (1879).

remaining one species, represented by a single example, has nothing to do with *Phyllodromia germanica*, L., and is described below under the name of *Margattea* (?) *gulliveri*, sp. n.

Butler's meagre list can now be supplemented (i.) by a few specimens collected by Messrs. H. P. Thomasset and H. J. Snell, August to November, 1918, besides *Periplaneta americana* and *Pycnoscelus surinamensis*, including three species of *Theganopteryx* (subfam. Ectobinæ), each represented by a single example only, and (ii.) by two species of *Margattea* (subfam. Phyllodromiinæ), each also represented by one example only—old material from the University Museum of Zoology, Cambridge, labelled "Rodriguez, F. Sinclair," concerning which no other particulars are obtainable. I am indebted to Dr. Hugh Scott for submitting to me all this material.

The fact that the collection contains three species of *Theganopteryx* is very interesting. From Madagascar eight species* of this genus are known, and from the Seychelles six, but not a single one has been recorded from any of the intervening islands visited by the Percy Sladen Trust Expedition, viz. Coetivy, the Amirantes, Cosmoledo, Astove, Farquhar, Aldabra, Assumption, the Chagos Group, and Cargados. All these islands are small and low coralline atolls, differing greatly from the Seychelles and Rodriguez. Most of the material of *Theganopteryx* from the Seychelles is expressly recorded by Bolivar (from Scott's field-notes) as having been taken in high damp forest, at altitudes of 1000 to 2000 ft. Only one or two stray examples were taken in the drier, less endemic type of forest near the sea-level on Félicité Island. The island of Rodriguez, too, though only about 42 square miles in extent, rises to a comparatively considerable height, viz. 1300 ft., and was at one time clothed with virgin forest. Whilst it is thus explicable enough that *Theganopteryx* occurs in the Seychelles and on Rodriguez, and also in Madagascar—though in each case represented by different species,—but is absent from all the intervening coralline atolls, it is noteworthy that it has not yet been recorded from Réunion and Mauritius. Curiously enough, this agrees with the distribution of another group of insects on these islands. Hugh Scott, in his "Introductory Note" to F. W. Edwards's paper on the "Diptera Nematocera from Rodriguez Island" (Ann. & Mag. Nat. Hist.

* *T. conspersa*, S., *T. difficilis*, S., *T. punctata*, S., *T. bidentata*, S. and Z., *T. hova*, S. and Z., *T. malagassa*, S. and Z., *T. molesta*, S. and Z., and *T. tricolor*, S. and Z.; whilst *T. punctulata*, S. and Z., and *T. vœltzkowiana*, S. and Z., seem to belong to the Phyllodromiinæ.

(9) xii. p. 330 (1923)), says: "Nearly all of the Rodriguez genera [of Diptera Nematocera] are represented in the Seychelles, but by different species: e. g., *Simulium* has a single species in Rodriguez and a single, quite distinct, representative in the Seychelles; *Probezzia* is represented in the Seychelles by four species, and in the Rodriguez collection by one species, quite distinct from any of those four." And again: "One would naturally seek for affinities with the fauna of Rodriguez in Mauritius and Réunion, which lie between 350 and 500 miles to the west, but I am not aware that any data are forthcoming with regard to the Nematocera of the last-named islands."

The distribution of the genus *Margattea* is also interesting and recalls, at least in some respects, that of *Theganopteryx*. Bolivar describes three species of *Margattea* from the Seychelles, viz., *M. crassivenosa*, *M. parvula*, and *M. longicercata*. One of these, viz., *M. longicercata*, occurs also on the Amirantes, Coetivy, Farquhar, Aldabra, and Cargados, and *M. parvula* also on Farquhar and Aldabra. A further species, *M. laxiretis*, is known from the Chagos only. However, none of these forms reaches Rodriguez, and the genus is there represented by two or three other species. And, as in the case of *Theganopteryx*, no species of *Margattea* has yet been recorded from Réunion and Mauritius.

The distribution of the other species hardly calls for special remark. *Periplaneta americana*, L., *Stylopyga rhombifolia*, Stoll, and *Pycnoscelus* (*Leucophæa*) *surinamensis*, L., which were taken on Rodriguez during the Transit of Venus Expedition, and then again by Messrs. Thomasset and Snell, are cosmopolitan forms, and are known also from the Seychelles and most of the "adjacent islands," but seem, curiously enough, not to have been recorded as yet from either Réunion or Mauritius.

The TYPES of this collection will all be preserved in the British Museum (Natural History).

List of the Blattidæ known from Rodriguez.

Ectobinæ:

Theganopteryx picturata, sp. n.
" *snelli*, sp. n.
" *thomasseti*, sp. n.

Phyllodromiinæ:

Margattea sinclairi, sp. n.
" *bilobata*, sp. n.
" (?) *gulliveri*, sp. n.

Blattinæ :

Periplaneta americana, L.
Stylopyga rhombifolia, Stoll.

Panchlorinæ :

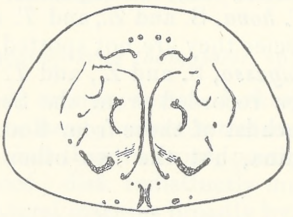
Pycnoscelus (*Leucophæa*) *surinamensis*, L.

Descriptions of the Six new Species.

1. *Theganopteryx picturata*, sp. n. (Fig. 1.)

♂. Head only slightly free, testaceous, a small brown spot on the vertex, a larger, broad, triangular, brown spot above the antennal sockets ; three narrow broken bands, also brown, across the face ; antennæ (mutilated) light testaceous ; eyes apart by $\frac{1}{3}$ the width of the head. Pronotum sub-elliptical, broadest behind the middle, slightly produced behind ; disk light testaceous, with intricate, slightly asymmetrical markings of brown lines and dots ; lateral margins broad, hyaline. Tegmina much exceeding the abdomen, pale testaceous, veins standing out as narrow

Fig. 1.



Theganopteryx picturata, sp. n., ♂.
Pronotum, × 9.

cream-white lines, interrupted by numerous small brown spots which are more crowded towards the apex ; costal area broad, 12 costals of which the tenth and eleventh are ramose ; 8 oblique discoidal sectors ; anal sulcus not prominent, 5 anals, each interstice with two rows of minute brown pits. Wings pale fuscous ; mediastinal vein bifurcate, 10 costals, the first eight simple, their ends somewhat incrassated, the 9th and 10th ramose ; median vein simple, straight ; ulnar 4-ramose ; apical triangle large, fuscous ; first axillary 4-ramose. Abdomen below testaceous. Subgenital lamina large, hexagonal. Cerci testaceous, the terminal joints alternating testaceous and black. Styles small, cylindrical, colourless. Legs pale testaceous ; front femora on the anterior margin with about 3 large spines, followed distally by a series of minute piliform spines (type B).

♂. Total length 13 mm.; body 11 mm.; pronotum 3×4 mm.; tegmina 11 mm.

Loc. Rodriguez (*Thomasset and Snell*, viii.–xi. 1918), 1 ♂.

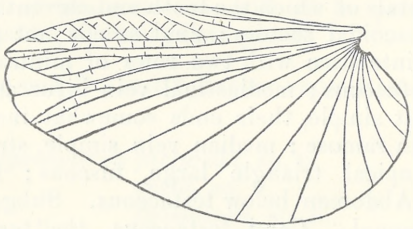
This species seems closely allied to *T. conspersa*, Saussure, from Madagascar ('Societas Entomologica,' vi. (1891) p. 26; and Grandidier, Hist. nat. Madagascar, Orthoptera, 1895, p. 10), the type of which, however, I have not been able to see. Saussure describes the disk of the pronotum of *T. conspersa* as "orné de points et de lignes en arabesques, avec deux lignes longitudinales médianes, brunes," and the tegmina as spotted, which would agree with the markings of the present species. However, the venation of the wings differs in the two cases: the ulnar of *T. conspersa* is bifurcate, but 4-ramose in *T. picturata*. Further: *T. picturata* has 10 costals, of which the first eight are simple, and the 9th and 10th ramose, whilst *T. conspersa* has 8 or 9 costals (according to Saussure's description), all simple (according to his illustration).

One interesting point has yet to be mentioned: of the eight species of *Theganopteryx*, known from Madagascar, five have spotted tegmina, viz., *T. conspersa*, S., *T. difficilis*, S., *T. punctata*, S., *T. hova*, S. and Z., and *T. molesta*, S. and Z., whilst in three species they are not spotted, viz., *T. bidentata*, S. and Z., *T. malagassa*, S. and Z., and *T. tricolor*, S. and Z. Of the six species recorded from the Seychelles none has spotted tegmina, whilst of those from Rodriguez *T. picturata* has spotted tegmina, but the two other species, described below, have not.

2. *Theganopteryx snelli*, sp. n. (Fig 2.)

♂. Head freely exposed, vertex deep orange, a dull white patch between vertex and antennal sockets, face pale orange;

Fig. 2.



Theganopteryx snelli, sp. n., ♂.
Left wing, × 6.

eyes apart ⅓ the width of the head; antennæ pale orange-fulvous. Pronotum broad-oval, anterior and posterior

margins almost straight ; disk dull orange, its right and left halves enclosed by dark brown lines ; lateral margins broad, fulvous. Tegmina exceeding body and cerci, hyaline, with a fulvous hue, except in the anal area ; veins delicate, fulvous, cross-venules well marked, producing a reticulate appearance ; 11 costals ; 7 somewhat oblique discoidal sectors ; anal area at its proximal border with a dark brown patch, and with a few brown dots following the anal veins. Wings fuscous, costal border whitish; mediastinal vein bifurcate; radial vein simple, almost straight, 11 costals ; median vein distally bifurcate; ulnar 3-ramose ; apical triangle well developed, anterior half uniform smoky, posterior half with a whitish patch ; first axillary 4-ramose. Abdomen above orange-testaceous, below pale testaceous. Cerci pale testaceous. Subgenital lamina large, hexagonal. Styles short, cylindrical. Legs yellowish testaceous; front femora on the anterior margin with 3 long spines, followed by a series of most minute piliform spines (type B).

♂. Total length 11 mm.; body 8 mm.; pronotum 2 × 3 mm.; tegmina 9 mm.

Loc. Rodriguez (*Thomasset and Snell*, viii.–xi. 1918), 1 ♂.

3. *Theganopteryx thomasseti*, sp. n.

♂. Head exposed, orange, vertex darker; eyes apart at least $\frac{1}{3}$ the width of the head ; antennæ testaceous. Pronotum suboval, broader behind than in front, posterior border only very slightly produced ; disk indistinctly mottled dark and light castaneous ; lateral margins broadly hyaline. Tegmina exceeding the abdomen, semi-hyaline testaceous, except the anal area; 10 costals, of which the 9th and 10th are ramose; 8 strongly oblique discoidal sectors ; proximal $\frac{1}{5}$ of anal area dark castaneous, the anal veins appearing as broken castaneous lines. Wings with the greater part of the costal area colourless, remainder fuscous; 9 costals, median vein simple, ulnar 3-ramose, apical triangle well marked, first axillary 4-ramose, the first two branches distally anastomosing. Abdomen below pale testaceous. Subgenital lamina large, hexagonal. Cerci pale testaceous. Styles short, cylindrical. Legs orange, anterior femora on the anterior margins with a few large spines, followed by a series of most minute piliform spines (type B).

♂. Total length 10 mm.; body 7·5 mm.; pronotum 2 × 3 mm.; tegmina 8 mm.

Loc. Rodriguez (*Thomasset and Snell*, viii.–xi. 1918), 1 ♂.

This species closely resembles the preceding one in general

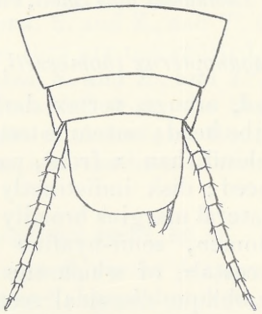
appearance and colouring, but shows certain differences in venation which may be tabulated as follows:—

T. snelli.	*T. thomasseti.*
Tegmina: 11 costals; 7 discoidal sectors.	Tegmina: 10 costals; 8 discoidal sectors.
Wings: 11 costals; median vein bifurcate; first axillary with the first two branches free.	Wings: 9 costals; median vein simple; first axillary with the first two branches anastomosing.

4. *Margattea sinclairi*, sp. n. (Fig. 3.)

♂. Head exposed, mottled fuscous and ferruginous; eyes apart by at least $\frac{1}{3}$ the width of the head; antennæ (mutilated) ferruginous. Pronotum with the anterior margin parabolic, posterior margin slightly produced; disk mottled dull orange and ferruginous; lateral margins broad, hyaline. Tegmina exceeding body and cerci, uniform pale amber, semi-hyaline; radial bifurcate at $\frac{3}{5}$ its length, its posterior branch ramose; 13 costals; 8 longitudinal discoidal sectors; anal area narrow, elongate, anal sulcus ending

Fig. 3.



Margattea sinclairi, sp. n., ♂.
End of abdomen from below, × 9.

in the middle of the sutural margin, 6 anals. Wings pale fulvous, middle of the costal margin brownish; mediastinal vein 5-ramose; radial vein bifurcate at $\frac{3}{5}$ its length; 11 costals, the first five stout, dark brown, terminally lighter; posterior branch of radial 3-ramose; median vein simple, only slightly sinuous; ulnar 4-ramose; no apical triangle; first axillary 4-ramose. Abdomen below ferruginous-testaceous; subgenital lamina large, produced, longer than broad, apex rounded. Cerci ferruginous. Styles asymmetrical, shifted to the left, bearing a few fine hairs apically. Legs testaceous, front femora on their anterior margins with

4 stout spines, followed distally by a series of minute piliform spines (type B).

♂. Total length 16 mm.; body 13 mm.; pronotum 3 × 4 mm.; tegmina 12·5 mm.

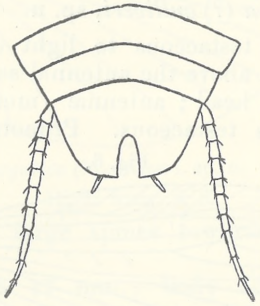
Loc. Rodriguez (*F. Sinclair*, no date), 1 ♂.

The large size of the subgenital lamina, with its asymmetrical styles, will distinguish this from allied species.

5. *Margattea bilobata* *, sp. n. (Fig. 4.)

♂. Head exposed, fusco-testaceous; eyes apart ⅓ the width of the head; (antennæ missing). Pronotum broad, suboval, posterior margin slightly rounded; disk mottled testaceous and fuscous; lateral margins broad, hyaline. Tegmina exceeding the body, reaching to the tip of the cerci, pale testaceous, semi-hyaline; 11 costals, the first eight simple, the ninth, tenth, and eleventh ramose; 7 longitudinal discoidal sectors; anal sulcus ending at ⅓ of

Fig. 4.



Margattea bilobata, sp. n., ♂.
End of abdomen from below, × 9.

the sutural margin; 5 anals. Wings hyaline, veins delicate and pale, costals with a faint fulvous tinge; mediastinal bifurcate; radial straight, simple; 5 costals, the first three of which are simple, the fourth and fifth ramose; median vein simple; ulnar 5-ramose; apical triangle only slightly developed; first axillary 4-ramose. Abdomen below rufo-testaceous; sub-genital lamina produced, with a broad median cleft, dividing the lamina down to nearly its centre into two sub-triangular lobes, to the outer margins of which the short and stout styles are attached. Cerci long, rufo-testaceous, hirsute. Legs testaceous, strongly armed; front femora on their anterior margin with 2 or 3 long spines, followed by a

* From the two lobes of the sub-genital lamina.

series of piliform spines, extending over more than half the length of the femur (type B).

♂. Total length 13·5 mm.; body 10 mm.; pronotum 2·8 × 4·5 mm.; tegmina 10 mm.

Loc. Rodriguez (*F. Sinclair*, no date), 1 ♂.

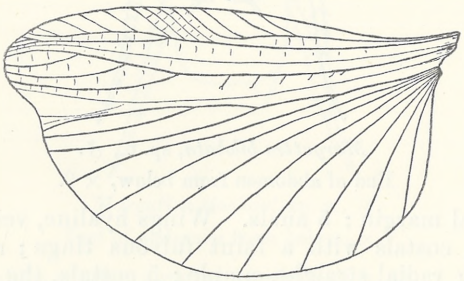
This species is closely allied to *M. longicercata*, Bolivar, from the Seychelles. It differs from it by the fissure of the subgenital lamina of the ♂ being much wider, and by the venation of the wings. The veins of *M. longicercata* are stout and fulvous in colour, those of *M. bilobata* delicate and pale. The ulnar vein of the wing of either species is 5-ramose, but whilst in *M. longicercata* the main branch gives off four branches, in *M. bilobata* the five branches are produced by repeated bifurcation.

Two other allied forms are *M. fissa*, Sauss., from Madagascar, and *M. parvula*, Bol., from the Seychelles, the differences of which from *M. longicercata* are given in Bolivar's paper.

6. *Margattea* (?) *gulliveri*, sp. n. (Figs. 5 & 6.)

♀. Head free, testaceous to light castaneous, a large darker blotch just above the antennal sockets; eyes apart $\frac{1}{3}$ the width of the head; antennæ (mutilated) castaneous, their basal joints testaceous. Pronotum large, anterior

Fig. 5.

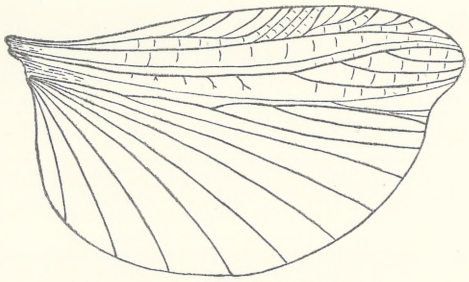


Margattea (?) *gulliveri*, sp. n., ♀.
Left wing, × 5.

margin parabolic, posterior margin slightly produced; disk rufo-castaneous, with a few darker blotches; lateral margins broad, pale fulvous. Tegmina exceeding the abdomen, pale amber, unicolorous; 12 costals, the first nine simple, the 10th and 11th very long, multi-ramose, the 12th simple; 9 longitudinal discoidal sectors; anal area long and narrow, 6 anal veins. Wings hyaline, with the anterior border and the apex fulvous; mediastinal vein very long, reaching to quite $\frac{3}{5}$ the length of the wing, 4-ramose; radial

(left) bifurcate at ¾ from its base, anterior branch with 8 simple costals, posterior branch 3-ramose; radial (right) simple, with 6 costals, the 4th and 5th of which are ramose; median vein simple, slightly sinuous; ulnar 4-ramose; 1st axillary 4-ramose; transverse venules strongly developed, some of those arising from the middle of the ulnar vein being especially long and directed forwards, reminding of *Ischnoptera*. Abdomen above and below fusco-testaceous. Supra-anal lamina transverse rhomboidal (in poor condition, shrivelled up). Sub-genital lamina rounded (cerci missing). (Legs missing, with the exception of the right mid-coxa and femur, and the right hind coxa, femur, and tibia.) Posterior femur not armed on the anterior

Fig. 6.



Margattea (?) *gulliveri*, sp. n., ♀.
Right wing, × 5.

margin, with two large spines towards the end of the posterior margin.

♀. Total length 17 mm.; body 12 mm.; pronotum 3·5 × 5 mm.; tegmina 14 mm.

Loc. Rodriguez (*G. Gulliver*, Transit of Venus Expedition, 1874–5), 1 ♀.

This species, which Butler recorded under the name of *Phyllodromia germanica*, L., can on account of its large size and light castaneous colour readily be distinguished from the other species of *Margattea* recorded from Rodriguez and the Seychelles. Its generic position must remain uncertain, (1) as the ♂ is unknown, (2) as both fore-legs are missing.