

his paper before the Zoological Society, but for some reason withdrew the name before his paper appeared in print, and subsequently carefully avoided all reference to it. Under these circumstances it is perhaps better not to hold Owen responsible for *Thylacomys*, but to adopt it on the authority of Blyth, by whom it was published as a perfectly valid name one year prior to the appearance of *Paragalia*, Gray.

Thus, of the three names based on the rabbit-bandicoot (*Perameles lagotis*), *Macrotis* is preoccupied, *Paragalia* or *Peragale* is antedated, and *Thylacomys*, the first tenable name for the genus, should be adopted on the ground of priority.

XXXII.—Notes on the Orthopterous Genus *Phyllophora*.

By W. F. KIRBY, F.L.S., F.E.S.

[Plate VI.]

THE *Phyllophorinæ* are a small subfamily of *Mecopodidæ* distinguished by the prothorax being produced backwards triangularly into a large and more or less pointed hood, always spinose, dentated, or crenulated on the sides.

The number of species described is not large, and I do not at present propose to break up the old genus *Phyllophora*, but only to enumerate the described species, clearing up the synonymy as far as possible and describing some new forms.

It should be noted that most of the species, if not all, are probably green when alive, unless the same species may be either green or brown when living, as is the case in some *Orthoptera*.

Genus PHYLLOPHORA.

Phyllophora, Thunb. Mém. Acad. Pétersb. v. pp. 219, 286 (1815).

“*Thorax* rhombeo-planus, marginatus, deflexus, acuminatus. *Hemelytra* elliptico-ovata, deflexa, grandia, nervosa, alas et abdomen tegentia.”

Hyperhomala, Serv. Ann. Sci. Nat. xxii. p. 161 (1831).

Hyperomala, Boisd. Voy. Astrolabe, Ent. ii. p. 649 (1835); Serv. Ins. Orth. p. 544 (1839).

The types of all the above names belong to the second section of the genus.

Species not yet represented in the Natural History Museum are marked with an asterisk.

SECTION I.

Spines long and sharp, not numbering more than 20 on each side behind the central spine, which is almost always longer than the others in this genus.

*1. *Phyllophora spinosa*.

Phyllophora spinosa, Brunner von Wattenwyl, Abhandl. senckenb. Ges. xxiv. p. 261, pl. xix. fig. 47 (1898).

Hab. Kaiser Wilhelm's Land, New Guinea.

*2. *Phyllophora truncata*.

Phyllophora truncata, Brunner, Abhandl. senckenb. Ges. xxiv. p. 262, pl. xix. fig. 48 (1898).

Hab. South coast of New Guinea.

3. *Phyllophora aruana*, sp. n. (Pl. VI. fig. 7.)

? || *Phyllophora speciosa*, Blanch. (nec Thunb.) Voy. Pôle Sud, Zool. iv. p. 363, pl. iii. figs. 1, 2 (1853) (from Triton Bay, New Guinea).

Hab. Aru.

Long. corp. 50 millim., cum app. 59 millim.; exp. tegm. 152 millim., lat. 32 millim.

Male.—Green (type discoloured); front of head slightly waved; hood pointed, with long strong conical spines, gradually diminishing in length hindwards, but without alternately larger and smaller ones; lateral spines much longer than the others; front lobe with 3, middle lobe with 2 teeth; the division between the middle and hind lobe, as well as the central carina of the last, very slightly marked; tegmina gradually widening for three fourths of their length, when the costa bends obliquely, and the inner margin at rather more than a right angle to the apex, which is rounded off; the three terminal branches of the principal nervure separating close together, the upper and second nearly straight, gradually diverging, the lower one bending downwards, and forking just on the upperside of the apex. Front femora with 5–6 spines on the outer carina and 3–4 on the inner; intermediate femora with 5 pairs (the middle spine wanting on the inner carina of the right middle femur); hind femora with 8 or 9 spines (not counting the terminal ones) on the outer carina and 5 on the inner.

This specimen is considerably smaller than Brunner's type of *P. truncata*; but I should not be surprised if it ultimately proves to be the male of that insect. It also much resembles the figure of *P. speciosa*, Blanch. (nec Thunb.).

SECTION II.

A sharp shoulder-spine at the broadest part of the hood, behind which the converging sides are armed with very numerous short spines or blunt teeth, and are sometimes hardly more than crenulated.

4. *Phyllophora philippinica*. (Pl. VI. fig. 3.)

Phyllophora philippinica, Brunner, Abhandl. senckenb. Ges. xxiv. p. 262 (1898).

|| *Phyllophora speciosa*, Walk. Cat. Derm. Salt. iii. p. 430. n. 1 (1870), excl. syn.

Hab. Philippines.

Long. corp. cum tegm. 44 millim.; lat. tegm. 15 millim.

Male.—Yellow, brown, or of a rich russet colour; front of head waved, always distinctly indented in the middle. Hood with the lateral angles strongly projecting and the lateral spines large; apex of hood pointed. Front lobe with 3 teeth, the first broad, sometimes divided in two, making 4; middle lobe with 2 teeth and sometimes a small one between; hinder lobe with each alternate tooth before the lateral angles, and generally each third tooth behind the angles, larger than the others; hinder lobe with a smooth central carina, obsolete behind; tegmina short, with the apex rounded off; nervures broad, the third cell below the mediastinal nervure from the base with a large black ring surrounding a paler space, and sometimes a few small white dots in black rings beyond. (In the russet-coloured specimen every trace of the spots is obliterated and even the neuration obscured; but I see no reason to consider it a distinct species.) Cerci long, slender beyond the middle, and curved up at the extremities; subgenital plate nearly as long, broad, cleft at the extremity, and the pointed ends upcurved.

This is the species which Walker considered to represent *P. speciosa*, Thunb., which it resembles in the sharp lateral spines and pointed hood; but it is a much smaller insect and the shape of the tegmina is quite different.

It is a variable species, and in this, as in several others of which we have a series, I notice that the shape of the hood is broader compared to its width in some specimens than in others, showing that this is not a character of real importance.

The Museum possesses four specimens, one immature. Brunner's description is so short that I was at first in doubt as to the identity of the species, and have therefore redescribed it at greater length.

5. *Phyllophora keyica*.

Phyllophora keyica, Brunn. Abhandl. senckenb. Ges. xxiv. p. 263 (1898).

Hab. Ké.

There is an immature female specimen in the Natural History Museum from Ké Dulan which appears to be referable to *A. keyica*.

6. *Phyllophora amplifolia*. (Pl. VI. fig. 1.)

Phyllophora amplifolia, Walk. Cat. Derm. Salt. iii. p. 431. n. 6 (1870).

Hab. Tringany (Malay Peninsula).

Long. corp. cum ovip. 70 millim.; exp. tegm. 170 millim.; lat. tegm. 40 millim.

Female.—Green; front of head slightly indented in the middle; hood pointed at the extremity; the teeth rather large, pointed, and well separated at the base; front lobe with 4, middle lobe with 2, hinder lobe with the alternate spines distinctly larger than the others, or, behind the lateral spines, frequently 2 short spines, instead of 1 between the longer ones; central carina only indicated before the middle; tegmina quite half as broad as long; costa oblique towards the apex, which is completely rounded off; a number of small scattered white dots, generally surrounded with darker; nervures greener than the rest of the tegmina, principal nervure with the first of the three terminal branches nearly straight, the two lower ones separating distinctly beyond; none of the three forked except slightly at their tips, and even the branches of the lowest running to the margin distinctly above the apex.

Front femora with 4 spines on each carina; middle with 5 (not symmetrical); hind femora with about 10.

A very broad-winged species resembling *P. spinosa*, Brunn., but with very numerous short teeth behind the middle spines, one or two shorter spines being placed between each pair of rather longer ones.

7. *Phyllophora speciosa*.

Phyllophora speciosa, Thunb. Mém. Acad. Imp. Sci. St. Pétersb. v. p. 286, pl. iii. (1815).

Hab. —?

Thunberg has not mentioned the locality of his type, and therefore the name of *speciosa* has been applied to several different species of *Phyllophora*. His figures, however,

represent a *Phyllophora* very similar to *P. media*, Walk., but with the sides of the pronotum rather more strongly toothed, and the apex more pointed.

8. *Phyllophora virescens*.

Hyperhomala virescens, Serv. Ann. Sci. Nat. xxii. p. 163 (1831).

Hyperomala virescens, Boisd. Voy. Astrolabe, Ent. ii. p. 649, pl. x. fig. 1 (1835); Serv. Ins. Orth. p. 545 (1839).

Hab. New Ireland.

This species is founded on immature specimens, and cannot be identified till fully developed ones are received from the same locality. An immature *Phyllophora* from Ceram, which Walker regarded as *H. virescens*, is likewise indeterminable at present, the head resembling *P. philippinica* and the hood *P. brunnea*. It is not unlike the figure of *P. speciosa*, Thunb., with which some authors have considered *P. virescens* to be identical.

9. *Phyllophora media*.

Phyllophora media, Walk. Cat. Derm. Salt. iii. p. 431. n. 5 (1870).

Hab. Ceylon.

Long. corp. cum tegm. 72 millim.; lat. tegm. 24 millim.

Male.—Uniform green; hind femora inclining to reddish; front of head entire; hood closely and uniformly punctured, the crenulated borders whitish, and a long spine at the lateral angles; front with two shallow transverse carinæ dividing the hood into three lobes; front lobe with 5 teeth, second with 3, the hindmost in each case rather larger than the others; a longitudinal carina very slightly marked on the front half of the hind lobe; apex of hood rounded off, not dentated; cerci long, slender, upcurved, subgenital plate nearly as long, bifid, the extremities narrow and pointed; tegmina rather broad, the costa and inner margin curving together in a point; mediastinal nervure throwing off a short oblique branch to the costa at about two thirds of its length, and immediately afterwards dividing into two longer branches, the uppermost running obliquely towards the costa, and the principal branch of the lower one reaching the extreme apex of the wing; all these three branches subdivide towards their extremity. Inner margin of tegmina narrowly bordered at two thirds of its length with a ferruginous line, which, after continuing for a short distance, is replaced by small ferruginous spots at the end of the nervures. (The first two lobes of the hood are

testaceous above and on the sides in the specimen before me, but this may be simply due to discoloration.)

Front femora with 3 to 5 spines on each carina; middle femora with at most 5, some of which are extremely small; hind femora with 11 on the outer and 6 on the inner carina.

10. *Phyllophora brunnea*, sp. n.

Phyllophora media ♀ (?), Walker, Cat. Derm. Salt. iii. p. 431. n. 5 (1870).

Hab. Ceram.

Long. corp. cum tegm. 73 millim.; lat. tegm. 28 millim.

Shape and size of *P. media*, but of a uniform brown (dead-leaf-colour) and with broader tegmina. Hood with rather larger teeth, the front lobe with 4, the middle with 2; the spines at the lateral angles larger and stouter. Hinder lobe with a smooth longitudinal carina throughout its whole length, and with smaller undulating carinæ on other portions of its surface; extremity of the hood somewhat more obtuse than in *P. media*. Tegmina with the upper branch of the mediastinal nervure nearly straight, instead of being angulated upwards as in *P. media*, and the two lower branches separate at some distance beyond the origin of the upper one; these are all branched towards the edges. Ovipositor very long, but not extending as far as the tips of the closed tegmina.

Front femora with 3 spines on the outer and 5 on the inner carina; middle femora with 6-8; hind femora with 12-14 on the outer and 7 on the inner side.

11. *Phyllophora eburneiguttata*, sp. n.
(Pl. VI. fig. 5.)

Hab. Fly River, New Guinea.

Long. corp. 40 millim., cum ovip. 51 millim.; exp. tegm. 123 millim., lat. tegm. 23 millim.

Female.—Front of head entire; head, hood, legs, and ovipositor brown (dead-leaf-colour), pleura and sides of abdomen inclining to greenish; hood rather long, the apex rounded off, 4 or 5 teeth on the front lobe, 3 on the middle; lateral angles prominent, with strong spines, the intermediate teeth more distinctly larger than the others before than behind the angle; hinder lobe with the central smooth carina well-marked in front, obsolete behind; tegmina yellow, shaped nearly as in *P. media*; radial nervure running straight to the point where

its upper branch (which is very short) ends in a fork just below the point where the costa begins to curve downwards; the lower branch forks soon afterwards and the upper fork curves outwards and upwards, forking again to the costa just above the apex; the lower fork curves downwards and outwards, ending in three forks, the uppermost extending to the apex; on the basal half of the costal area is a row of 5 round ivory-white spots; below the radial nervure, in the fourth cell from the base, is a large square white blotch, followed by two smaller spots, and there are some smaller white dots near the outer half of the inner margin. Wings subhyaline.

Front femora with 3-4 small spines on each carina; middle femora with 6-7 spines on the front and 5 on the hind carina; hind femora with 10-12 on the outer and 6-7 on the inner carina.

12. *Phyllophora ovalifolia*. (Pl. VI. fig. 4.)

Phyllophora ovalifolia, Sauss., MS. (?).

Hab. Torres Straits.

Long. corp. cum tegm. 55 millim.; lat. tegm. 20 millim.

Female.—Yellowish brown; tegmina varied with yellowish, especially along the course of the nervures; front of head entire; hood with the front lobe with 4 and the middle with 3 teeth, the hindmost in each case much the larger; lateral spines long, slender, and pointed; central carina only slightly marked on the front of the hinder lobe; tegmina rather short and broad, the costa and inner margin curving regularly to the apex, which is not very acute; the three principal branches of the radial nervure branching close together, the upper and lower only forking at their extremities, but the middle one forked again about halfway between its base and the apex, the upper one throwing up several branches above the apex, and the lower one ending in several short branches at the apex.

Front femora with 3 spines on each carina; middle femora with 7 on the hinder carina and only 2 or 3 on the front carina; hind femora with 12 on the outer and 4 on the inner carina.

Resembles *P. philippinica*, but the front is entire and the tegmina are very different in shape and neurulation.

SECTION III.

Lateral angles of the pronotum more or less obsolete, but frequently indicated by the presence of a tubercle larger than the others.

13. *Phyllophora lanceolata*.

Phyllophora lanceolata, Brunn. Abhandl. senckenb. Ges. xxiv. p. 263, pl. xix. fig. 49 (1898).

Hab. Halmahera (Gilolo), Amboina, New Guinea (Stephan-sort), New Britain, Duke of York Island.

Specimens in the Museum from New Guinea, Murray Island, Torres Straits, and New Ireland appear to belong to *P. lanceolata*. In these the tubercle on each side of the pronotum at the broadest point is distinctly larger than the others; but there are several other specimens from New Ireland, New Georgia, Sydney, and the Solomon Islands in which the sides of the pronotum are regularly tuberculated (more coarsely than in *P. inermis*), with no tubercle distinctly larger than the rest.

I regard these specimens as probably varieties of *P. lanceolata*.

14. *Phyllophora Woodfordi*, sp. n. (Pl. VI. fig. 6.)

Hab. Solomon Islands.

Long. corp. cum tegm. 60–74 millim.; lat. tegm. 21–26 millim.

Green, or brownish testaceous; head slightly waved in front, hood long, narrow, slightly rounded off at the extremity, the surface with a more or less reticulated appearance; central carina very slightly marked, the borders whitish, with well-marked tubercles, front lobe with 4 (first and fourth largest), second with 3 (third largest), lateral angles slightly marked, and furnished with a larger tubercle than the others; tegmina moderately broad, tapering at the extremity, apex rounded off, inner margin edged and slightly spotted with blackish. Neuration nearly as in *P. inermis*.

Front femora with 4–7 spines on each carina; middle with 5–8; hind femora with 9–14.

Allied to the last species.

*15. *Phyllophora variegata*.

Phyllophora variegata, Brunn. Abhandl. senckenb. Ges. xxiv. p. 264 (1898).

Hab. New Guinea.

A species probably allied to the last.

16. *Phyllophora inermis*. (Pl. VI. fig. 2.)*Phyllophora inermis*, Walk. Cat. Derm. Salt. iii. p. 431. n. 4 (1870).*Hab.* —?

Long. corp. cum tegm. 60 millim. ; lat. tegm. 20 millim.

Male.—Green ; head slightly waved in front ; hood long, narrow, moderately pointed, minutely tuberculated or crenulated ; 5 teeth on the front lobe, 4 on the middle ; surface with a reticulated appearance ; central carina very slightly marked ; tegmina moderately broad, tapering at both ends, apex rather long and moderately pointed ; a round blackish spot below the radial nervure in the sixth cell from the base, and the inner margin edged and slightly spotted with blackish nearly to the apex ; principal nervure with the upper of the three terminal branches nearly straight, the other two separating a little beyond its origin and curving downwards ; they are only forked at their extremities, and the lowest runs into the apex.

Front femora with only 2 or 3 very small spines on each carina towards the extremity ; middle legs with 5–7, also very small ; hind femora with 14 larger ones on the outer and 7 on the inner carina.

*17. *Phyllophora angustata*.*Phyllophora angustata*, Brunn. Abhandl. senckenb. Ges. xxiv. p. 264 (1898).*Hab.* New Guinea (Kaiser Wilhelm's Land).

Appears to be allied to the last species.

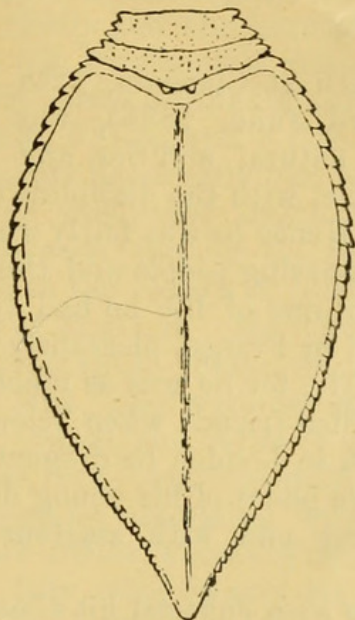
SECTION IV.

Size very large. Pronotum regularly dentated, almost spinose in front, but the tubercles regularly diminishing in size to the extremity.

18. *Phyllophora grandis*.? *Phyllophora habasqui*, Le Guillon, Rev. Zool. 1841, p. 294.*Phyllophora grandis*, Blanch. Voy. Pôle Sud, Zool. iv. p. 364, pl. iii. fig. 3 (1853).|| *Megalodon ensifer*, Wallace, Malay Arch. ii. p. 434, fig. (1869).♂ || *Hyperomala virescens*, Brunn. Abhandl. senckenb. Ges. xxiv. p. 265, pl. xx. fig. 50 (1898).*Hab.* Triton Bay, New Guinea.Exp. tegm. 7–9 unc. ; lat. tegm. $1\frac{1}{4}$ – $1\frac{1}{2}$ unc.

Brown or green ; front of head indented in the female ; hood

pointed behind, with small teeth gradually diminishing in size, front lobe with 3 or 4, middle lobe with 2; central carina of hinder lobe slightly marked; tegmina of nearly equal breadth throughout, the hind margin gradually rounded



Hood of *Phyllophora grandis*, ♀.

off and exhibiting no projecting apex, principal nervure nearly straight and forming only two short terminal forks about the point where the costa begins to curve.

This is one of the largest grasshoppers of the Old World, and is easily known by its great size (the female expands about 9 inches) and the rounded tegmina. The hood is also of enormous size, measuring 2 inches in length; Wallace says $2\frac{1}{2}$ inches.

I am not sure whether this species is *P. habasqui*, Le Guill., in which case it should take that name, or whether *P. habasqui* is a species allied to *P. lanceolata*.

EXPLANATION OF PLATE VI.

- Fig. 1. *Phyllophora amplifolia*, p. 305.
- Fig. 2. — *inermis*, p. 310.
- Fig. 3. — *philippinica*, p. 304.
- Fig. 4. — *ovalifolia*, p. 308.
- Fig. 5. — *eburneiguttata*, p. 307.
- Fig. 6. — *Woodfordi* (hood), p. 309.
- Fig. 7. — *aruana*, p. 303.

The hood and fore wing of each species is represented, except in the case of *P. Woodfordi*.



Kirby, W. F. 1899. "Notes on the orthopterous genus Phyllophora." *The Annals and magazine of natural history; zoology, botany, and geology* 4, 302–311.

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