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Systematic study of Megacrania species of Malo, New Hebrides (Cheleutoptera: Phasmatidae)

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Abstract

The identity of the subspecies *Megacrania batesi speiseri* Carl, 1915 (Carl spelled *batesii* as *batesi* in error) from Malo, New Hebrides is clarified. Carl's subspecies is elevated to the species *Megacrania speiseri* Carl, 1915 and morphological characters are redescribed with measurements. A key of the genus *Megacrania* is provided.

Key words

stick insects, taxonomy, Phasmatidae, *Megacrania*, asian pacific, species

Introduction

Carl (1915) described female specimens collected from Malo, New Hebrides as the subspecies *Megacrania batesi speiseri*. Hsiung (2007) doubted the identity of *M. batesi speiseri* but was unable to access any of Carl's type specimens for further study at that time. Hsiung (2007) went on to describe a specimen from Efate, New Hebrides as *Megacrania obscurus* and wondered whether Carl's subspecies might belong to *M. obscurus*.

Willemse (1926) described three females and a nymph collected in New Hebrides, Espir.-Santo Isl. as a new species, *Megacrania bakeri*, originating from the same region as Carl's subspecies. He gave only a brief description with simple measurements of antennae, thorax, femur and subgenital plate and did not give critical information on the wings; the species has been only rarely mentioned since his publication.

Hsiung (2007) misrepresented "Fidji" island as the locality of Willemse's *M. bakeri* and Carl's subspecies *M. batesi speiseri* when he cited Gunter's (1931) paper. Actually there was no record indicating *Megacrania* species to occur in Fidji. Gunter (1931) listed *M. batesi speiseri* occuring in New Hebriden. Shiraki (1932) followed Günther's reference and made a key to known world species of *Megacrania* which included five species; *M. bakeri* Willemse was one of them.

The author finally received a syntype specimen of Carl's *Megacaenia batesi speiseri* from Naturhistorisches Museum Basel in 2008 and compared it with the type specimen of *M. batesii* from the Solomon Islands and Hsiung's (2007) species of *M. obscurus* from Efate, New Hebrides (see Tables 1 to 3); it was found that they were distinctly different species and it was concluded that Carl's type specimen was not a subspecies of *M. batesii* and should be accorded full species status as *Megacrania speiseri* Carl, 1915. Since Carl did not give a detailed description of this species, a complete description and measurements are given. The author also updates here the key to the species of *Megacrania* (Hsiung 2007).

A revised key to the species of *Megacrania*

1. Mesonotum granulose 2
— Mesonotum smooth 12

2. Mesonotum sparsely granulose; cerci short, not reaching apex of operculum. Philippines ("Ceylon" probably erroneous). . . . . *alpheus* (Westwood)
— Mesonotum densely granulose; cerci long, reaching or surpassing apex of operculum. 3

3. Lateral margins of pronotum and mesonotum slightly spinose 4
— Lateral margins of pronotum and mesonotum conspicuously spiny 10

4. Subgenital plate not surpassing extremities of cerci 5
— Subgenital plate surpassing extremities of cerci 8

5. Subgenital plate just reaching extremities of cerci. Admiralty Is . . . . . *vickeri* Hsiung
— Subgenital plate not reaching extremities of cerci 6

6. Granules of mesonotum robust and sharp; hind wing reaching a little beyond hind margin of 3rd abdominal tergum. Taiwan . . . . . *tsudai* Shiraki
— Granules of mesonotum slightly elongate not quite sharp; hind wing reaching a little beyond hind margin of 3rd abdominal tergum 7

7. Mesonotum with >60 granules, the lateral margin slightly spiny; tegmina ovate, shorter than mesonotum; posterior margin of anal segment nearly rounded. Solomon Is, Australia, New Guinea . . . . . *batesii* Kirby
— Mesonotum with 60 granules, the lateral margin not spiny; tegmina ovate, slightly longer than mesonotum; posterior margin of anal segment nearly square. Borneo . . . . . *rentzi* Hsiung

8. Hind wing extending a little beyond posterior margin of 2nd abdominal tergum; mesonotum with 80 oval granules; posterior margin of anal segment nearly round, slightly concave medially. Malo, New Hebrides . . . . . *speiseri* Carl
— Hind wing reaching or extending beyond posterior margin of 3rd abdominal tergum, mesonotum with more or less 80 granules. Posterior margin of anal segment nearly round, slightly or not concave medially 9

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Table 1. Morphological differences between Carl's female syntype of *Megacrania batesi speiseri* (Malo) (now *Megacrania speiseri*) and the lectotype of *M. batesii* (Solomon Ils).

Characters	*M. batesi speiseri*	*M. batesii* (Solomon Ils)
Mesonotum	With about 40 oval granules, its lateral margin with weak needle-like spines	With 67 nearly round and distinct granules, its lateral margin but little spiny, the first 3 spines of the lateral margin stronger than the rest
Wings	Elongate-ovate, as long as mesonotum; hind wing 1.93× as long as tegmina	Elongate-ovate, shorter than mesonotum, hind wings 1.89× as long as tegmina
Anal segment	Posterior margin of anal segment nearly round, slightly concave medially	Posterior margin of anal segment smooth, not concave medially

Table 2. Morphological differences between Carl's female syntype of *M. batesi speiseri* (Malo, New Hebrides) and female type specimen of *M. obscurus* (Efate, New Hebrides).

Characters	*M. batesi speiseri*	*M. obscurus*
Mesonotum	2× length of pronotum, its surface with about 40 distinct oval granules	2.7× length of pronotum, its surface with 70 indistinct granules evenly distributed over the anterior 0.65 of its length
Wings	Hind wing 1.93× as long as tegmina, extending a little beyond the posterior margin of 2nd abdominal tergum	Hind wing 2× as long as tegmina, extending a little beyond the posterior margin of third abdominal tergum
Legs	Anterior femora about 1.98× as long as mesonotum	Anterior femora about 1.75× longer than mesonotum
Coloration	Brownish-testaceous	Generally pale green, mesonotum and abdomen light brown

Table 3. Morphological differences between Carl's female syntype of *M. batesi speiseri* from Malo and *M. batesii* species from Kala, New Guinea.

Characters	*M. batesi speiseri*	*M. batesii*
Mesonotum	Surface with about 40 oval granules, its lateral margin with needle-like spine	Surface with 80 rather strong granules, its lateral margins moderately spiny
Hind wing	1.9× as long as mesonotum, extending a little beyond the posterior margin of 2nd abdominal tergum	1.2× as long as mesonotum, reaching the posterior margin of the 2nd abdominal tergum
Coloration	Brownish-testaceous	Head, pronotum, legs and wings pale green, rest of body reddish-brown

9. Hind wing nearly reaching posterior margin of 3rd abdominal tergum; mesonotum with 70 narrow small distinct granules; posterior margin of anal segment slightly cleft medially. Admiralty Is . . . . . *artis* Hsiung
— Hind wing surpassing posterior margin of 3rd abdominal tergum; mesonotum with 86 small, elongate and distinct granules; posterior margin rounded, smooth and not cleft medially. Efate, New Hebrides . . . . . *obscurus* Hsiung

10. Lateral margin of mesonotum spiny, the first few anterior teeth not expanded basally; anal segment not cleft medially. Indonesia, New Guinea, Pelew Id . . . . . *wegneri* Willemse
— Lateral margin of mesonotum spiny, the first few anterior teeth closely expanded basally and closely connected; anal segment cleft medially 11

11. Mesonotal surface with 60 granules, the lateral margin spiny, the first three anterior teeth closely connected; hind wing reaching only to center of 3rd abdominal tergum. Indonesia (Key Inseln, Obi Id, Boeroe) . . . . . *brocki* Hsiung
— Mesonotal surface with 95 granules, lateral margin very spiny, first two anterior teeth closely connected; hind wing reaching 4th abdominal tergum. New Guinea . . . . . *spina* Hsiung

12. Body and hind wing long (130 mm, 36 mm); femora serrated ventrally, with distinct spines along the keels. Color: pale green. Fiji, Solomon Is, New Britain . . . . . *phelaus* (Westwood)
— Body and hind wing short (98 mm, 21mm); femora not serrated, with only a few minute spines ventrally. Color: yellowish black. New Guinea . . . . . *nigrosulfurea* Redtenbacher

Megacrania speiseri Carl, 1915

The systematic status of Carl's *M. batesi speiseri* has been confused with *Megacrania alpheus* Westwood for a long period. Gunter (1931) followed Carl's publication and listed *M. batesi speiseri* occuring in New Herbiden. Four years later, he believed that *Megacrania batesii* Kirby was a synonym of *Megacrania alpheus* (Gunther 1935). Willemse (1926) described a new species, *Megacrania bakeri*, from New Hebrides. Thirty years later, he listed both *Megacrania batesii* and *Megacrania bakeri* as synonyms of *Megacrania alpheus* (Willemse 1955). Bragg (2001) listed Carl's *M. batesi speiseri* as a synonym of *M. alpheus*, when he studied the stick insects of Borneo. Otte and Brock (2005) doubted the validity of Bragg (2001), listing *M. batesii batesii* as a synonym of *M. alpheus*. Actually, *M. alpheus* is a very unique species whose holotype does not match any of the types of *Megacrania*. At the present, only one species is known to occur in Borneo, which is *Megacrania rentzi* Hsiung. Hsiung (1991, 2007) also noted that the locality of the type of *M. alpheus* might not be Ceylon, but rather a mislabelled Philippine specimen.

Megacrania batesi speiseri Carl, 1915, Phasmiden von Neu-Caledonien unden Loyalty-Inseln, pp. 173-178. In: Sarasin F., Roux J. (Eds) Nova Caledonia, Recherches Scientifiques en Nouvelle-Caledonie et aux lies Loyalty Zoologie Az. — Bragg 2001. Phasmids of Borneo. Nat. Hist. Pub (Borneo): 402 (*partim*). — Zompro and Brock. 2003. Revue Suisse de Zoologie 110(1): 23 (type data). — Gunter 1935. Overdruk Uit Het Natuurhistorisch Maandblad Nos 10 en 11: 125-126. — Willemse 1955. Treubia vd. 23, part 1: 44-45 (*partim*). — Bragg 2001. Phasmids of Borneo. Nat. Hist. Pub (Borneo): 402 (*partim*). — Zompro and Brock 2003. Revue Suisse de Zoologie

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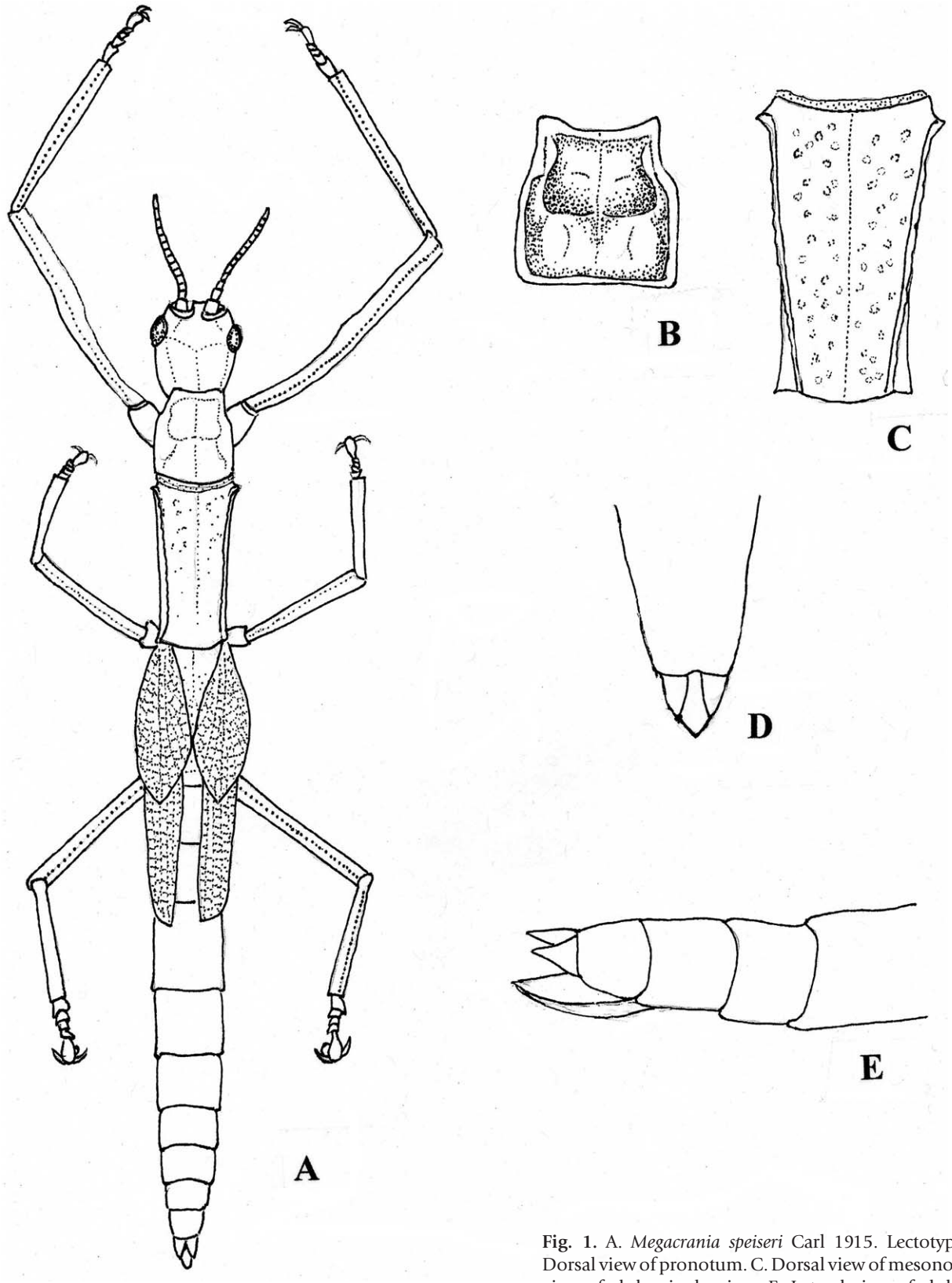


Fig. 1. A. *Megacrania speiseri* Carl 1915. Lectotype (female). B. Dorsal view of pronotum. C. Dorsal view of mesonotum. D. Dorsal view of abdominal apices. E. Lateral view of abdominal apices.

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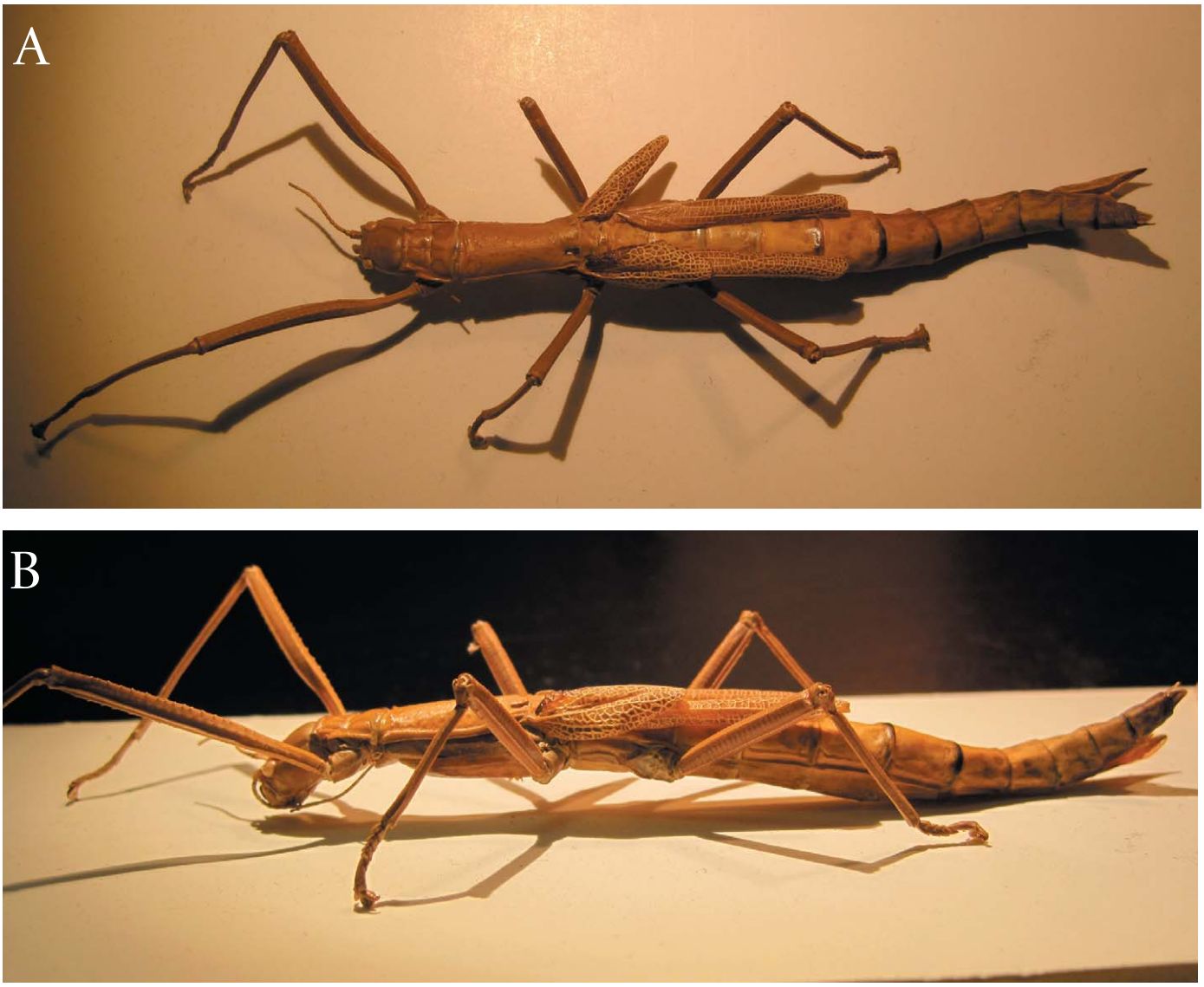


Fig. 2. *Megacrania speiseri* Carl 1915. Lectotype (female) A. Dorsal view of insect body. B. Lateral view of insect body. C. Granules of mesonotum. For color version, see Plate XVI.

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110(1): 23 (type data). — Otte & Brock 2005. Phasmida species file. Catalog of stick and leaf insects of the world. 197. — Hsiung 2007. Journal of Orthoptera Research 16(2): 207.

Megacrania bakeri Willemse, 1926. Transactions Entomological Society London 1925: 513-529 (*partim*). — Günther 1931. Mitteilungen aus dem Zoologischen Museum in Berlin 14: 753-831 [pp. 779-828] (*partim*). — Shiraki 1932. Zoological Society Japan 45: 108-111 (*partim*). — Willemse 1955. Treubia Vol. 23, Part 1: 44-45 (*partim*) — Otte & Brock 2005. Phasmida species file. Catalog of stick and leaf insects of the world. 197. — Hsiung 2007. Journal of Orthoptera Research 16 (2): 207.

Type.— Lectotype (designated from Carl's syntype ♀, Malo. Deposited in Naturhistorisches Museum, Basel [Figs 1, 2])

Description.— **Head**: oval, slightly porrect, a little longer than broad. **Thorax**: pronotal disc as long as broad, slightly narrowed at antero-lateral angles, dorsal surface uneven with strongly defined margins; mesonotum 2× length of pronotum, its surface with numerous (left 36-38, right about 41) oval granules; the granules of the posterior part are less strong than those of the anterior part; the lateral margins with weak needle-like spines. **Wing**: tegmina elongate-ovate, as long as mesonotum; hind wing 1.93× as long as tegmina and extending a little beyond posterior margin of second abdominal tergum. **Leg**: anterior femora about 1.98× as long as mesonotum, with ridge bearing five spines visible in ventral view, the mid femora with 2 on the left, 4 on the right, hind femora with 2 on the left and 2 on the right. **Abdomen**: elongate, segments I-V wider than remaining ones; posterior margin of anal segment nearly round, slightly concave medially; cerci broad, triangular in shape; subgenital plate gradually narrowing apically and slightly extending beyond cerci, its ventral surface with a longitudinal ridge.

Coloration.—Brownish-testaceous.

Measurements.—(length in mm) ♀: body 105.0; pronotum 8.0; mesonotum 16.0; tegmen 16.0; hind wing 31.0; front femur 28.00; median femur 15.5; hind femur 18.0; front tibia 23.0; median tibia 13.5; hind tibia 15.0.

Type material.—Lectotype female (designated). Bears five labels: 1. a (hand written, on a small red square paper); 2. Malo ♀ Dr. Speiser, XI. 1911 (black hand writing); 3. *Megacrania batesi* kby ♀ var., Dr. Speiser XI. 1911 (hand written on a brown paper); 4. Ei eutu. F. Hennemann.

Distribution.—Known only from Malo, New Hebrides.

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