

## A FURTHER REVIEW OF *RHYSOGASTER* ALDRICH WITH DESCRIPTIONS OF NEW SPECIES FROM JAVA AND BORNEO (Diptera: Acroceridae)

By Evert I. Schlinger<sup>1</sup>

*Abstract*: The Oriental genus *Rhysogaster* Aldrich is reviewed. The 4 new species *olthofi*, *vandervechti* and *lieftincki* from Java and *quatei* from northern Borneo are described. A key to all 8 species of *Rhysogaster* is provided and the relationship and distribution of *Rhysogaster* is compared to *Astomella* Lamarck.

The genus *Rhysogaster* Aldrich belongs to the *Astomella*-branch of the Panopinae along with *Astomella* Lamarck, *Astomelloides* Schlinger, *Physegastrella* Brunetti and *Corononcodes* Speiser. The genus *Rhysogaster* was revised earlier by Schlinger (1959) and its relationship to other genera was discussed at that time. It is most similar to *Astomella* with which it shares the peculiar feature of having the ♀ genitalia placed anteroventrally close to the thorax as shown by Aldrich (1927, fig. 1 for *Rhysogaster implicata* Aldrich) and by Schlinger (1959, fig. 2 for *Astomella acuta* Schlinger).

*Rhysogaster* can be differentiated from its closest relative, *Astomella*, by the presence of a small proboscis and maxillary palpi as well as by distinct features of head-shape and by the genitalial structure in both the ♂ and the ♀. It is apparent, however, by reading over the scanty literature on these taxa that there has been some misunderstanding or lack of knowledge on the part of the several authors involved and it seems worthwhile to note these discrepancies with a hope that further confusion will not ensue.

In 1926, Frey described *Astomella orientalis* from the Philippine Islands, and although he mentioned that its wing venation was similar to *Astomella gravis* Erichson, and that the antennae of *orientalis* were larger and broader than in European species of *Astomella*, he did not seem at all concerned that he was including in *Astomella* the first Oriental species of the genus, and one from the Philippine Islands at that.

Aldrich (1927) was apparently unaware of Frey's paper, but it probably wouldn't have mattered had he seen it since in his paper describing *Rhysogaster implicata*, as a new genus and new species from the Philippine Islands, he indicated it had wing venational relationships with *Eulonchus* Gerstaecker (from North America) and *Apsona* Westwood (from New Zealand), and made no mention of *Astomella*. I might add here that *Rhysogaster* is relatively unrelated to both *Eulonchus* and *Apsona*, which together with *Lasia* Wiedemann and several other genera form a distinct group of the Panopinae.

In 1959, I placed *Astomella orientalis* Frey in *Rhysogaster* and described 2 further new species, *R. indica* from northern India and *R. panayensis* from the Philippine Islands. I also had before me at that time a specimen of *Rhysogaster* from Borneo which was too poorly preserved to be described as a new species. At that time, I was unaware of a paper published in 1940 (by an anonymous author) discussing the presence

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of 3 "new species" of *Astomella* (?) from Java. The importance of this 1940 article was made evident to me recently when I received some acrocerid specimens from Java, and found that they were identical to those specimens referred to in the anonymous paper. They do in fact represent 3 new species of *Rhysogaster* (not *Astomella*) and are described below. The figure on page 35 of the 1940 paper is an excellent habitat drawing of *R. vandervechti* n. sp. (given as *Astomella?* spec.), and this would indicate that the genus *Rhysogaster* was unknown to those involved with that 1940 paper.

It now turns out that *Astomella* species do occur in the Oriental region after all, i.e., *A. jardinei* (Brunetti) from India and *A. oldroydi* Schlinger from Viet Nam, but they are not known from any islands of the Malay Archipelago. Species of *Astomella* are also known from Tanganyika (*A. acuta* Schlinger) and South Africa (*A. capensis* Schlinger), but the bulk of the known specimens as well as the species are known from the European and Mediterranean Sea region.

The inclusion of the 4 new species from Java and Borneo does not change the zoogeographical range of *Rhysogaster*, which is an Oriental genus distributed from northern India to Indonesia west of Wallace's line. As of this writing, I am unaware of any member of the *Astomella* branch that occurs east of Wallace's line. There is, however, a related group, the *Ocnaea* branch, which includes several genera in the Nearctic and Neotropical regions (Schlinger 1968).

This paper is the seventeenth in a varied series offered towards the publication of a monograph of the family Acroceridae. Articles citing references to most of the other articles in this series are by Schlinger (1959, 1961, 1968, and 1970a and 1970b).

The species described below are presented now so that their names can be made available for a forthcoming catalogue on Oriental Diptera being prepared under the supervision of Drs Elmo Hardy and Mercedes Delfinado of the University of Hawaii.

I sincerely thank both Drs L. W. Quate formerly of the Bishop Museum, Hawaii, and Fred Keiser of the Naturhistorisches Museum, Basel, Switzerland, for the loan of these important specimens. I particularly wish to acknowledge the collectors of these rare and interesting specimens, in whose honor the new species are named.

#### KEY TO THE SPECIES OF RHYSOGASTER ALDRICH

1. Proboscis about 2 × as long as tarsal claw (fig. 13).....2  
    Proboscis shorter, about length of tarsal claw (fig. 11) ..... 3
2. Anterior 1/2 of tergite II yellow; antenna 3 × as long as wide (♂) ..... **vandervechti**\*  
    Anterior 1/2 of tergite II brownish yellow not clearly fasciated; antenna about 2 × as long as wide (♂) ..... **olthofi**\*
3. All tibiae black ..... 4  
    All tibiae with distinct yellow or yellowish brown areas ..... 6
4. Wing with 4th posterior cell closed but not appendiculate, or if appendiculate then cell closes well before wing margin ..... 5  
    Wing with 4th posterior cell appendiculate, cell ending close to wing margin..... **quatei**\*
5. Tergite I black ..... **orientalis** (Frey)  
    Tergite I yellow..... **lieftincki**\*
6. All tibiae with yellow and black markings.....7

\* Described as new.

- All tibiae yellowish brown ..... **panayensis** Schlinger  
 7. Anal cell much longer and wider than 2nd basal cell.....**indica** Schlinger  
 Anal cell about as long and as wide as 2nd basal cell ..... **implicata** Aldrich

***Rhysogaster olthofi*** Schlinger, new species      Fig. 3, 4, 5, 12, 13, 17.

♂. Length of entire specimen 14.0 mm, wing length 10.0 mm.

**Color:** Brown, black and yellow; specimen light yellowish brown except as follows: eyes, antennal and ocellar tubercles, tarsi, apical 1/2 of tarsal claws, black; ocelli, antennal segment I, dorsolateral area of antennal segment II, thin ventral (posterior) line on antennal segment III, proboscis, maxillary palpus, mesonotum, posterior 1/2 of humerus, scutellum, most of postalar callus, wing veins, most of mesopleural area and sternopleura, tibiae, broad fasciae occupying anterior 4/5 of tergites II-V, small lateral spot on sternite II-VI, dark brown; dorsal aspect of hind femora, basal 1/2 of tarsal claws and pulvilli, light brown.

**Pile:** Dense brown on eyes, about as long as width of antennal segment II, distinctly longer laterally and dorsally, short dense hairs present on dorsolateral areas of antennal segments I-II, segment III bare; that on thorax dense golden brown about as long as distitarsus I; that on legs concolorous with segments, longest on femora, shortest on tarsi; that on foretibia long and brush-like on outer lateral margin; that on dorsum of abdomen mostly dark brown and appressed, shorter than on eyes except that on tergite I and dorsolateral margins of tergites II-IV longer, erect and golden brown; that on venter mostly short, brown and appressed except some pile on lateral margins of sternites I-III longer, more erect and golden brown; squama covered with dense golden brown pile about as long as on eyes.

**Head:** Round when viewed frontally, about 2.5 as high as long when viewed laterally (fig. 3); ocellar tubercle barely raised above eye margin, the 2 lateral ocelli nearly approximate anteroventrally; antennal tubercle tiny but distinct, extending anteriorly about as far out as dorsal margin of antennal segment I; antenna (fig. 3) with segment III paper-thin when viewed ventrally (fig. 13), about 2.5 longer than wide when viewed laterally; eyes separated below antennae by distance slightly greater than width of proboscis; proboscis about 2/3 as long as antennal segment III, covered with long hairs; maxillary palpus 2-segmented, about 1/3 as long as prementum.

**Thorax:** Proespisternum and humerus greatly swollen; forecoxal cavity developed, about 1/4 as wide as eye width; mesopleuron and hypopleuron greatly swollen; scutellum about 2.5 as wide as long; anterior foretibial distal spur present as rounded-off process; posterior tibial distal spur a small rounded point; all femora slightly longer than corresponding tibiae; squama lightly infuscated, semi-transparent; wing lightly browned; venation as in fig. 5.

**Abdomen:** Widest at apex of segment II tapering evenly to rather pointed apex; tergite I overlaps sternite II at lateral margin; spiracle I in tergite I, other spiracles not clearly evident; genitalia subapical, aedeagus as in fig. 17.

♀. As described for ♂ except as follows: length of entire specimen (slightly crushed 11.0 mm), wing length 11.0 mm; head smaller and longer (fig. 4); antenna with segment III long and thin, dark brown, pointed apically, with bristles along entire dorsal margin and apex (fig. 12), with about 10 small sensorial pits forming a line on inner side of segment III (shown as dotted line in fig. 12); antennal tubercle reduced, pile on eyes light brown; ocellar tubercle slightly higher; mesonotum lighter brown anteriorly and laterally, but with faint indication of 3 dark brown vittae similar to that shown for *R. quatei* (fig. 14); hind femora darker brown (middle legs missing); abdomen crushed but apparently tergite II mostly yellowish brown; genitalia placed far forward ventrally similar to that shown for *Astomella acuta* (Schlinger, 1959, fig. 2).

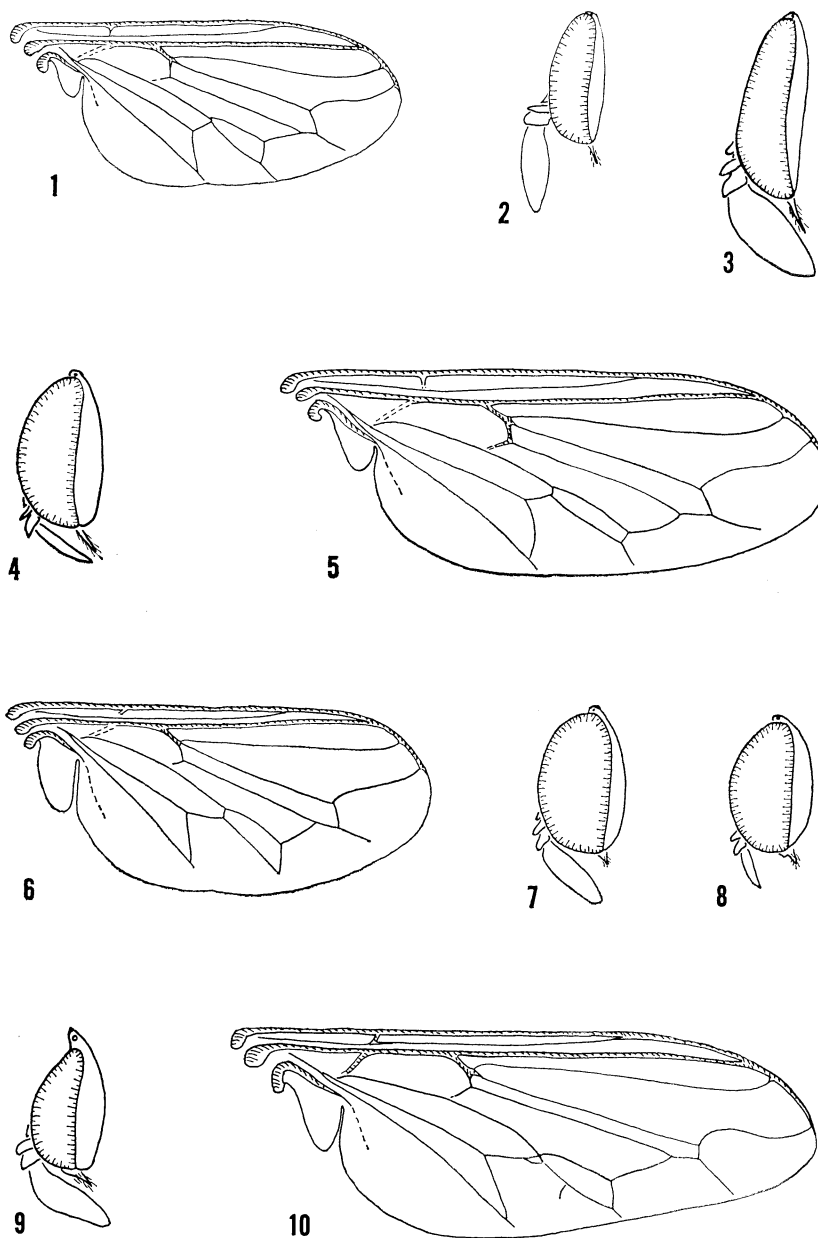


Fig. 1, 2, *Rhyogaster vandervechti* n. sp.; fig. 3, 4, 5, *R. olthofi* n. sp.; fig. 6, 7, 8, *R. lieftincki* n. sp.; fig. 9, 10, *R. quatei* n. sp. All holotype ♂ except: 4, 8, 12 paratype ♀. Fig. 1, 5, 6, 10, wings; fig. 2-4, 7-9, heads in lateral view.

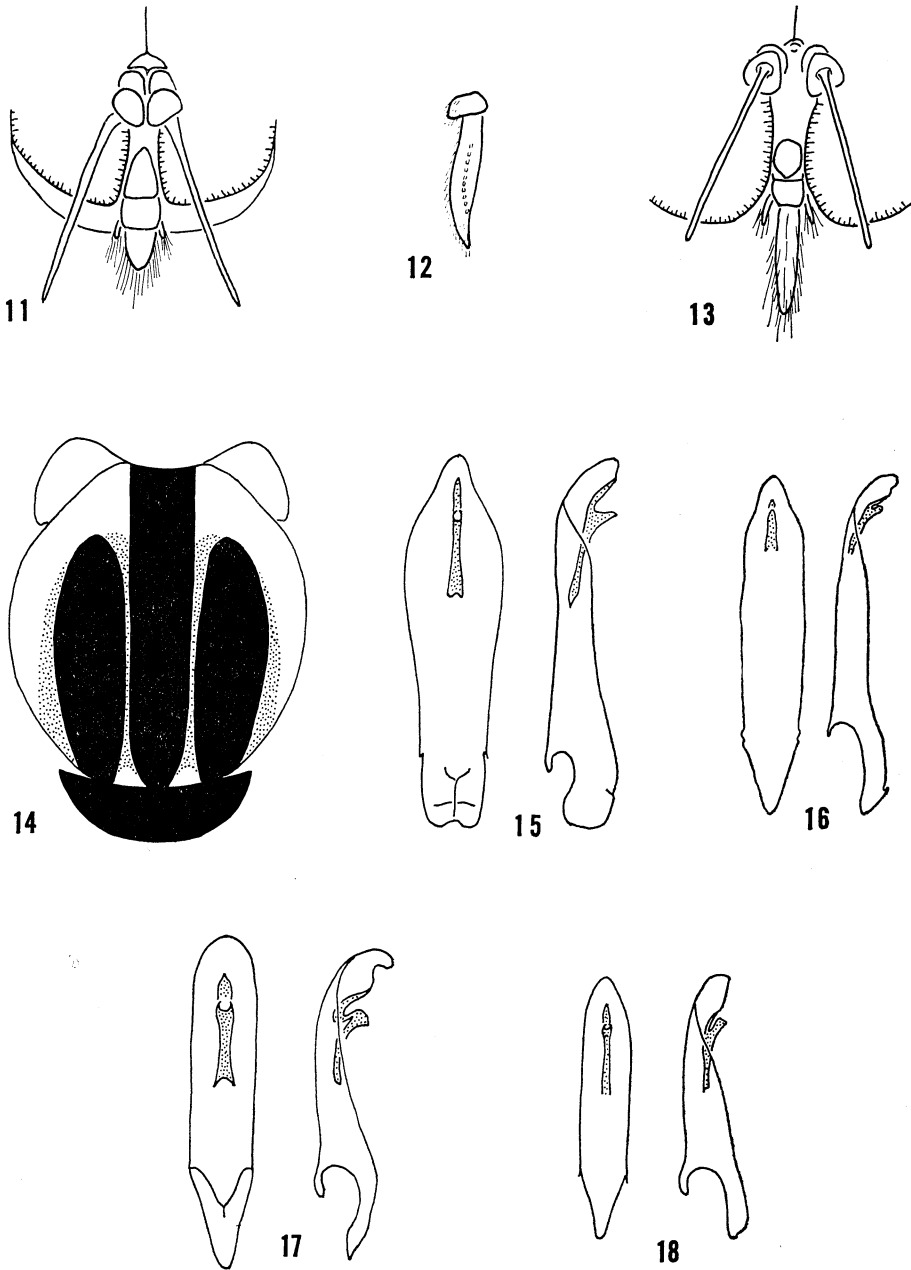


Fig. 11, 14, 15, *Rhysogaster quatei* n. sp.; 12, 13, 17, *R. olthofi* n. sp.; 16, *R. lieftincki* n. sp.; 18, *R. vandervechti* n. sp. Fig. 11, 13, mouthparts and antennae in ventral view; fig. 12, inner side of antennal segments 2-3; fig. 14, dorsal view of mesonotum; fig. 15-18, aedeagi in ventral (left) and lateral (right) view.

Holotype ♂ and paratopotype ♀; West Java, Bandoeng, 29.I.1940, J. Olthof. These specimens will be returned to the Basel Museum, Switzerland, but they will ultimately be deposited in the Leiden Museum, the Netherlands.

*Discussion*: This species is most closely related to *R. vandervechti* from which it is most easily separated by the shape of the ♂ antennae, the configuration of the ♂ genitalia (compare fig. 2 and 3, and 17 and 18) and by its larger size.

**Rhysogaster vandervechti** Schlinger, new species      Fig. 1, 2, 18.

♂. Length of entire specimen 9.0 mm, wing length 7.0 mm.

As described for *R. olthofi* n. sp. ♂ except as follows: ocellar tubercle not as flat, with distinct median ridge separating lateral ocelli; antennal segment III about 3 × longer than wide and differently shaped as in fig. 2; mesonotum with 3 dark brown almost black vittae about as in fig. 14 for *R. quatei*, n. sp.; proboscis more yellow than brown; yellow fasciae on tergites II-V broader and occupying anterior 1/2 of tergite I, 1/3 of tergites II-III as well as narrow posterior margin of tergites II-V; abdominal venter yellow and with somewhat longer, more erect and more dense pile; aedeagus as in fig. 18; venation similar (fig. 1), but wing shorter and more broad.

Holotype ♂, West Java, Buitenzorg, 8.IV.1940, on window in house, J. van der Vecht. Paratopotype ♂, same data but 300 m, 20.II.1941, J. van der Vecht. The holotype will be deposited in the Leiden Museum, and the paratopotype in the author's collection at the University of California Museum at Berkeley.

*Discussion*: The paratopotype agrees with the holotype in all aspects except for it being somewhat larger (specimen 10.0 mm, wing 7.0 mm), it has a slightly darker habitus, as some of the yellow areas become more yellowish brown and the mesonotal vittae are less distinct.

This species is closely related only to *R. olthofi*, but its distinct antennal and genitalic differences serve to separate it from all *Rhysogaster* species.

**Rhysogaster lieftincki** Schlinger, new species      Fig. 6, 7, 8, 16.

♂. Length of entire specimen 11.5 mm, wing length 7.5 mm.

*Color*: Black, brown and yellow; specimen black except as follows: antennal segment III, proboscis, maxillary palpus, coxae, trochanters, femora of legs I and II and basal 1/2 of III, humerus, spot below wing base, halter stem and knob, and tergite I light yellowish brown; squamal rim, wing veins, apical 1/2 of femur III, ocelli, area of mesonotum just posterior to humerus, narrow lateral margin of mesonotum, post-alar callus, broad median tergal fasciae on tergites III-IV, narrow anterior fascia and large median spot on tergite II, most of tergites V-VI, lateral spot on tergite I, that on tergites III-V nearly black, remainder of tergites orange-yellow; small anterolateral spot on sternites II-VI, dark brown; genitalia dark brown, aedeagal tip light brown.

*Pile*: Dense, evenly brown on eyes, about as long as width of antennal segment II; short, dense dark brown hair present throughout on antennal segments I and II; segment III bare; that on thorax dense, long, light yellow, about as long as distitarsus I; that on legs much shorter, mostly concolorous with leg segments; that on foretibia somewhat long on outer margin and brush-like; that on dorsum of abdomen dense, mostly short, shorter than that on eyes, concolorous with tergal areas, but that on tergite II and lateral margins of tergites IV-VI longer, erect and mostly yellow; that on venter shorter than that on eyes, mostly erect and yellow; that on squama

dense, yellow, mostly appressed and shorter than that on eyes.

**Head:** Round when viewed frontally, about  $2 \times$  as high as wide laterally (fig. 7); ocellar tubercle slightly raised above eye margins, forming a small point; lateral ocelli well separated by median point; antennal tubercle very small, extending anteriorly about  $1/2$  as far as antennal segment I; antenna short (fig. 7); segment III paper-thin, about  $3 \times$  longer than wide laterally; eyes separated below antennae by distance slightly greater than width of proboscis; proboscis small, about as long as median width of antennal segment III; maxillary palpus short, apparently 1-segmented (somewhat crushed and difficult to observe).

**Thorax:** Proepisternum and humerus swollen; forecoxal cavity evident, about as wide as width of antennal bases; mesopleuron and hypopleuron swollen; scutellum about  $2 \times$  as wide as long; foretibial distal spur short, rounded off apically; mid- and posterior tibial distal spur hardly developed and not spur-like; foretibia distinctly shorter than forefemur, squama semi-transparent, slightly infuscated; wing lightly browned, venation as in fig. 6.

**Abdomen:** Widest at segments II and III, then tapering rather abruptly to apex; tergite I overlays sternite II at lateral margin; spiracle I in tergite I, spiracles II-VI in intersegmental membrane; genitalia subapical, aedeagus as in fig. 16.

♀. As described for ♂ except as follows: Length of entire specimen 11.0 mm, wing length 9.5 mm. Head much smaller, only about 1.5 as high as wide; antennal segment III smaller, not as thin, about  $4 \times$  longer than wide, more pointed apically and with bristles along entire dorsal margin, apex and medially on outer side (fig. 8); about 8 rather-connected sensorial pits present on inner median area about as in fig. 12 for *R. olthofi*; maxillary palpus greatly reduced to small 1-segmented dark brown protuberance; antennal tubercle greatly reduced; ocellar tubercle slightly higher and shiny; mesonotum with larger anterolateral and lateral dark brown areas; the black color of posterior mesonotal area extends forward as broad stripe to cervical region; mesonotum dark brown; tibiae dark brown on apical  $2/3$  becoming lighter orange-brown near bases; wing with 4th posterior cell appendiculate to wing margin; abdomen with less distinct and dark brown instead of black fasciae above; most of tergite II yellowish brown; genitalia placed far forward ventrally similar to that shown for *Astomella acuta* Schlinger (1959, fig. 2); genitalia brown basally, cercus light orange-brown.

Holotype ♂ and paratopotype ♀, West Java, Radjamandala, 23.VI.1940, M. A. Lieftinck. These specimens will be deposited in the Leiden Museum.

**Discussion:** This species is related to *R. quatei*, and more particularly to *R. orientalis*. From *quatei* it differs in having the tibiae all black, the 4th posterior cell closed but not appendiculate, and by the shape of the aedeagus. From *orientalis* it is most easily separated by having tergite I yellow instead of black. The aedeagus of *orientalis* is not described, but judging from the differences expressed in those species I have examined, no doubt the aedeagi of these 2 species will also distinguish them.

***Rhysogaster quatei* Schlinger, new species**      Fig. 9, 10, 11, 14, 15.

♂. Length of entire specimen 12.0 mm; wing length 10.5 mm.

**Color:** Black, brown and yellow; light brownish yellow except as follows: eyes, tibiae, tarsi, tarsal claws and costal vein on anterior margin black; occiput, ocellar tubercle and prementum grayish black; ocelli, antennae, posterior margin of postalar callus and squamal rim light brown; mesopleuron, narrow basal fascia on sternites II-VI, genitalia, fascia on basal  $2/3$  of tergite II (first visible tergite), maxillary palpus and remainder of wing veins dark brown; sternopleural area, spot on outer apical part of femora II and III, mesonotal vittae (fig. 14), scutellum and fasciae on basal  $3/5$  of tergites III-V, brownish black.

*Pile*: Dense brown on eyes, about as long as antennal segments I and II, somewhat longer around posterior margin of eyes, occiput and around ocellar tubercle; dense, fine and somewhat shaggy on thorax, coxae and most of tergite I, about as long as distitarsus I and light brownish yellow except darker brown on mesonotal vittae; that on proboscis, squama, coxae and sternites brownish yellow, not as dense as on thorax, about as long as tarsal claw and somewhat shorter on sternites; that on remainder of legs short, mostly dark brown to black; that on dark fasciae on tergites III-V short, dense and brownish black; that on apical margins of tergites III-V mixed brown and yellow, less dense than but about as long as that on mesonotal disc; clumps of dense bicolored pile (brown basally on brown fasciae and yellow apically on yellow fasciae) obvious on sublateral median portion of tergites III and IV.

*Head*: (fig. 9) Not much higher than wide when viewed frontally, about 1.5 higher than long when viewed in profile; ocellar tubercle conspicuous, narrow basally and narrowing apically to bifid point; lateral ocellus obvious on highly raised tubercle (fig. 9); antennal tubercle small, does not reach as far out as apex of antennal segment I; antennal segments I and II short, covered with short hairs that are somewhat longer ventrally, segment III (fig. 9) laterally compressed (paper-thin) about 3/4 head height in length; eyes separated below antennae by width of prementum; proboscis short, not as long as length of antennal segments I and II (fig. 11); maxillary palpus present but minute, apparently 2-jointed, about 1/2 as long as prementum (fig. 11).

*Thorax*: With proepisternum and humerus greatly swollen, nearly touching occiput, fore coxal cavity developed about 1/3 as wide as head width; mesopleuron and hypopleuron greatly swollen; mesonotal vittate as in fig. 14; anterior foretibial distal spur large but rounded off; posterior distal spur present as broad point; scutellum prominent, about 2 × as wide and long; all femora about as long as corresponding tibiae; squama lightly infuscated, semi-transparent; wing lightly browned, venation as in fig. 10; small adventitious cell between lower basal and 4th posterior cell is present in both wings.

*Abdomen*: Widest at middle of segment II then tapers gradually to rather broad apex; genitalia inserted under tergite VI, but tergite VI is hidden under tergite V; tergite I extends ventrally to overlap sternite II; genitalia subapical in position; aedeagus short with distinct subapical notch as in fig. 15.

♀. Unknown.

Holotype ♂ (BISHOP 9330), British North Borneo, Mt. Kinabalu, Kambaranga, 2140 m, 22-30.X.1958, L. W. Quate.

Another ♂ specimen cited by Schlinger (1959: 152) as "*Rhysogaster* species" from the same locality, 2100 m (7000 ft.), 31.III.1929, H. M. Pendlebury (USNM) has subsequently been designated a topotype.

This species is most closely related to *R. indica* Schlinger from northern India, but shows definite intermediate features between *indica* and the other species from the Philippine Islands, such as *R. panayensis* Schlinger. Features of *quatei* such as wing venation and abdominal configuration are related to *indica*, while the head shape shows similarity to *panayensis*. The distinct ocellar tubercle, vittate mesonotum, pilation features and large antennae will serve to separate *quatei* from all known species.

I take pleasure in naming this species after Dr L. W. Quate formerly of Bishop Museum, who has collected many interesting Diptera in the South Pacific region and other parts of the world.



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