

Two New Species of the Subfamily Cantharinae (Coleoptera, Cantharidae) from Taiwan

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Abstract Two new cantharid species are described from Taiwan: *Lycocerus russulus* sp. nov. and *Rhagonycha (Rhagonycha) micheli* sp. nov. Their habitus are photographed, and the genital organs of both sexes and the abdominal sternites VIII of females are illustrated. Both of them are endemic to Taiwan and the related species are known from mainland China, respectively. *R. (R.) nigroimpressa* (PIC, 1922) from mainland China is shown by a photo of male habitus and illustrations of aedeagus for the first time.

Introduction

Up to the present, thirty-three species of the genus *Lycocerus* GORHAM, 1889 and two species of *Rhagonycha* ESCHSCHOLTZ, 1830 have been known in the Taiwanese cantharid fauna (OKUSHIMA, 2007; WITTMER, 1982).

We had an opportunity to stay at the Naturhistorisches Museum Basel, Switzerland (NHMB) from 2008 to 2009, and examined the Walter WITTMER's collection which includes the materials of Taiwanese Cantharidae in his revision (WITTMER, 1982, 1983, 1984). As the result, we discovered two interesting Taiwanese species classified in the tribe Cantharini of the subfamily Cantharinae, one of which is a member of the genus *Lycocerus* and the other is *Rhagonycha*. Both species had been identified to be the previously known species from mainland China, the former was treated as *L. pluricostatus* (FAIRMAIRE, 1887) by WITTMER (1984) and the latter was *R. (R.) nigroimpressa* (PIC, 1922) by WITTMER (1982). However, the Taiwanese specimens of NHMB were clearly different from the above previously known species of the mainland of China. Besides, we found out one more specimen of the same Taiwanese *Rhagonycha* species in the Masataka SATÔ's collection preserved in the Ehime University Museum, Matsuyama, Japan (EUMJ). After a careful examination of these materials, it became clear that the two interesting species are new to science. They are described in this paper under the names of *Lycocerus russulus* sp. nov. and *Rhagonycha (Rhagonycha) micheli* sp. nov. Additionally, *R. (R.) nigroimpressa* (PIC, 1922) from China is illustrated for the first time in order for comparison with *R. (R.) micheli*.

This paper is dedicated to the memory of the late Dr. Michel BRANCUCCI who unfortunately passed away in October 2012, for his great achievement on studies of Coleoptera.

Materials and Methods

The holotypes and paratypes are deposited in the Naturhistorisches Museum Basel, Switzerland (NHMB), with the exception of one paratype preserved in the Ehime University Museum, Matsuyama, Japan (EUMJ).

The anatomical and sketching techniques used herein mainly follow OKUSHIMA (2005), but methylene blue solution was used for staining the female genitalia in this study. Body length is measured from the anterior margin of clypeus to the apices of elytra and width is measured at the widest part of conjoint elytra. The abbreviations used in the text are as follows: HW—width of head; PW—width of pronotum; PL—length of pronotum; EW—maximum width of conjoint elytra; EL—length of elytra.

Lycocerus russulus OKUSHIMA et Y. YANG, sp. nov.

(Figs. 1–2, 5)

Lycocerus pluricostatus: WITTMER, 1984, Ent. Rev. Japan, Osaka, **39**: 142. [misidentification, nec *L. pluricostatus* (FAIRMAIRE, 1887)].

Type series. Holotype: ♂, "(Near Ta chi)" / "Taoyuan Hsien," / "TAIWAN" / "7th March, 1980" / "Coll. T. Shimomura"; "WW"; "Lycocerus" / "pluricostatus" / "(Fairm.)" / "det. W. Wittmer"; "Naturhistorisches" / "Museum Basel" / "Coll. W. Wittmer" (NHMB). Paratype: 1 ♀, "Pachieh, Nr. Ta-chi" / "Taoyuan Pref." / "TAIWAN" / "27. III 1981" / "T. Shimomura leg."; "Naturhistorisches" / "Museum Basel" / "Coll. W. Wittmer" / "CANTHARIDAE" / "CANTH00015969" (NHMB).

Distribution. Taiwan: northern area.

Description. Male (Fig. 1). Body almost black; eyes blackish brown; lateral areas before eyes faintly brownish; mandibles and claws faintly reddish; elytra dull red. Body densely covered with fine pubescences which are pale on head, pronotum, and meso- and metaventrals, brown on antennae and legs, and reddish on elytra; anterior margin of clypeus fringed with pale bristles.

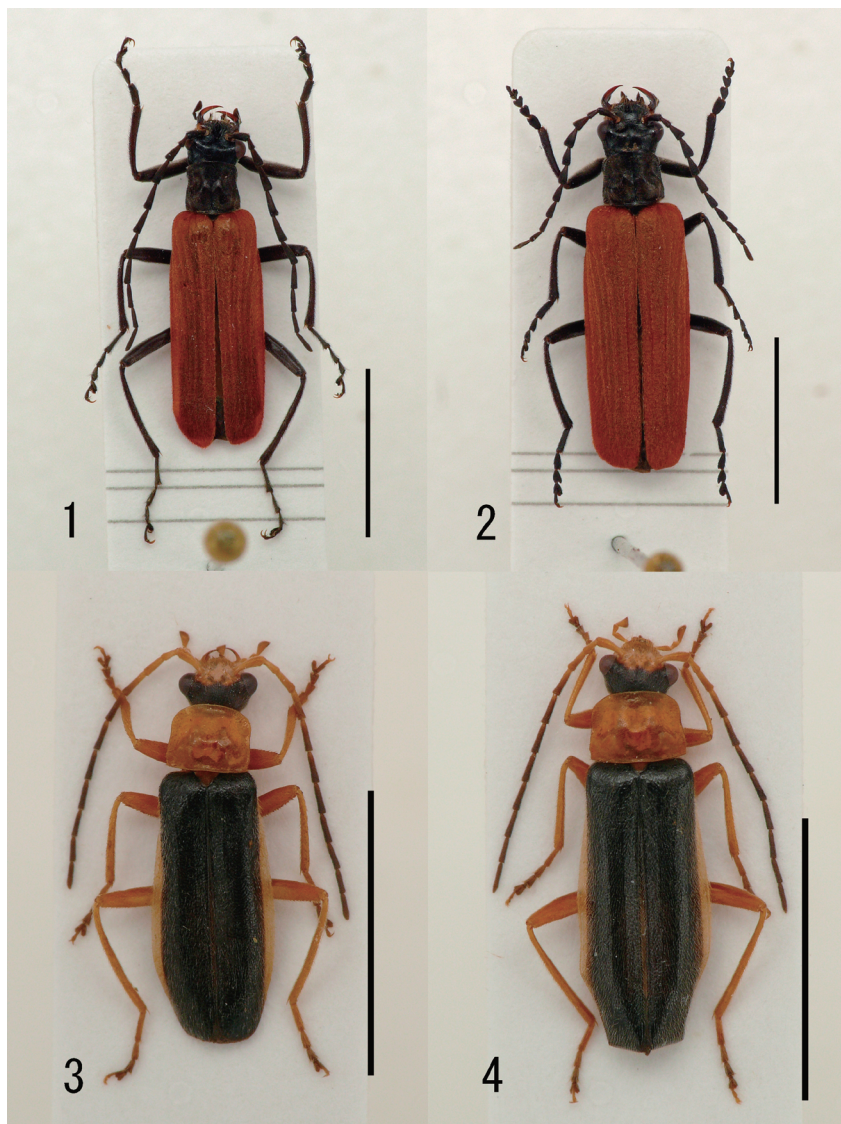
Body moderately elongate in the members of the same genus. Head slightly wider than long; dorsum nearly flattened, depressed along the anterior margin of clypeus and lateral areas before eyes, transversely elevated in cephalic area with a faint depression along the median line, and more or less hollowed behind it. Surface smooth with faint lustre, but densely and finely punctate on posterior half. Anterior margin of clypeus slightly arcuate and faintly indented in middle. Eyes large, globular and prominent, ratio of an eye diameter to interocular space 1 : 1.95. Terminal labial palpomeres subtriangular. Terminal maxillary palpomeres semicircular. Antennae somewhat serrate and depressed particularly in middle parts, gradually thinning apicad in apical halves, extending to the apical third of elytra, antennomeres I clavate, II short and strongly dilated apicad, III–VIII somewhat depressed and dilated apicad, III widest, IX–XI subcylindrical, each antennomere without groove. Ratio of the lengths of antennomeres from base to apex as follows: 18 : 10 : 15 : 20 : 20 : 20 : 18 : 18 : 16 : 18.5.

Pronotum subquadrate, slightly dilated posteriad; PW/HW 0.87, PW/PL 1.06. Anterior and posterior margins arcuate; lateral margins weakly sinuate; anterior angles rounded; posterior angles obtuse. Dorsum convex, particularly elevated in the postero-lateral areas, forming a pair of rounded elevations which become narrower anteriorly and strongly depressed along the posterior margin; antero-lateral areas hollowed along the lateral sides. Medio-longitudinal groove clearly recognizable only in the middle part. Surface smooth with dull lustre. Scutellum triangular with rounded apex.

Elytra elongate, subparallel-sided though slightly dilated in basal fourth; EW/PW 1.68, EL/EW 2.51; dorsum densely and rugosely punctate; each elytron provided with two distinct and several indistinct costae.

Legs considerably slender. Femora mostly straight. Tibiae weakly arcuate. Each outer claw of fore and mid legs provided with a small digitiform tooth at base; each claw of hind legs simple.

Aedeagus. Ventral process of paramere slender and leaning inside, with rounded tip; each dorsal plate somewhat slender and slightly narrowed in the middle part, with rounded apical margin, completely separated from the other one, slightly shorter than ventral process in lateral view; laterophyse



Figs. 1–4. Habitus, dorsal view. — 1–2, *Lycocerus russulus* sp. nov.; 3–4, *Rhagonycha (Rhagonycha) micheli* sp. nov. (1, 3, holotype, ♂; 2, 4, paratype, ♀). Scales: 5.0 mm.

extended towards the apex of dorsal plate, leaning dorsad, gradually tapered apicad, with pointed tip. Median lobe provided with a stout dorsal process at apex; the pointed tip situated between the two dorsal plates. Inner sac lengthened and swollen ventro-posteriorly, as long as tegmen (Fig. 5a–c).

Body length: 9.95 mm; width: 2.85 mm.

F e m a l e (Fig. 2). Body somewhat longer and wider than in male. Eyes not so large as in male, ratio of an eye diameter to interocular space 1 : 2.13. Antennae considerably shorter than in male, reaching basal third of elytra; antennomeres III–XI clearly shorter and III–X somewhat wider than in male. Ratio of the lengths of antennomeres from base to apex as follows: 19 : 10 : 13 : 15 : 15 :

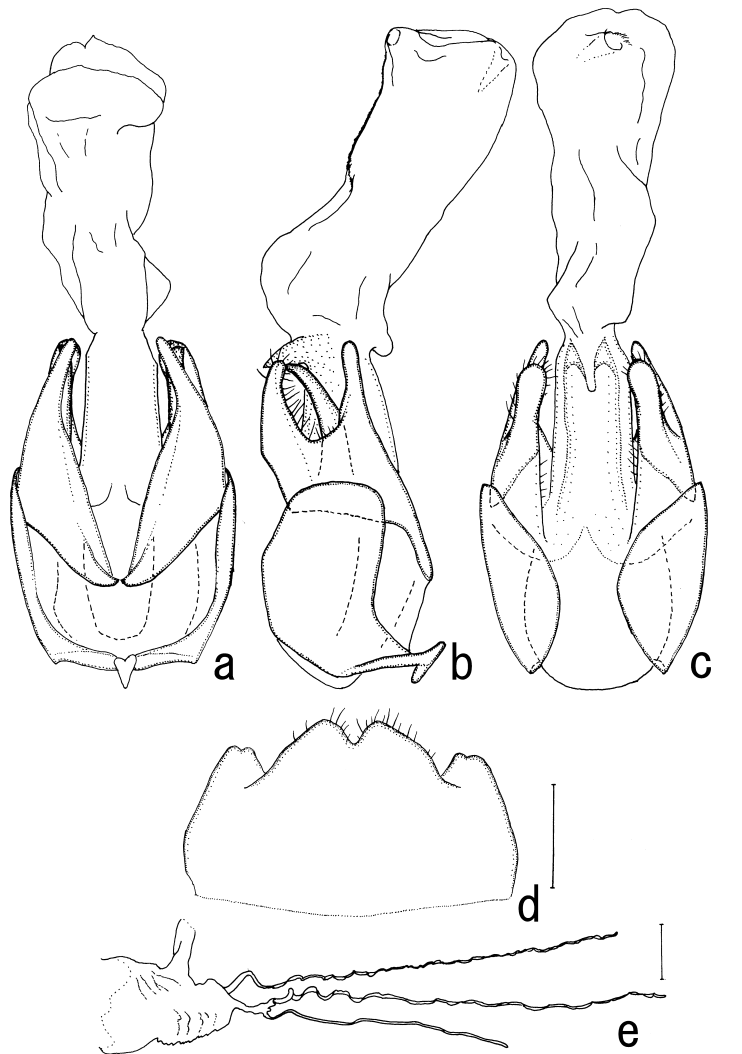


Fig. 5. *Lycocerus russulus* sp. nov. — a–c, Aedeagus (a, ventral view; b, lateral view; c, dorsal view); d, female abdominal sternite VIII; e, female genitalia, lateral view. Scales: 0.5 mm.

15 : 15 : 14 : 13 : 12 : 14.5. PW/HW 0.90, PW/PL 1.13, EW/PW 1.71, EL/EW 2.49. Each outer claw of fore and mid legs provided with a small digitiform tooth at base, each claw of hind legs simple. Abdominal sternite VIII triangularly emarginate on both sides of posterior margin, forming lateral lobes; apical margin of each lateral lobe slightly emarginate; median part gradually narrowed posteriad, forming median lobe; each lateral margin somewhat rounded; provided with a triangular emargination in middle; the apices clearly projected beyond the tip of lateral lobe (Fig. 5d).

Female genitalia. Vagina tapered and extended apicad. Diverticulum and spermathecal duct arising from apical portion of vagina. Diverticulum long, thin and spiral; spermathecal duct short and somewhat stout; spiral tube of spermatheca long and thin, as long as diverticulum; accessory gland thin and clearly shorter than diverticulum in extended position (Fig. 5e).

Body length: 11.18 mm; body width: 3.25 mm.

Etymology. The specific name is derived from a Latin word “*russulus*” (red), referring to its red elytra.

Remarks. According to OKUSHIMA’s classification (2005), this new species should be attributed to the *Lycocerus hiroshii* subgroup of the *L. vitellinus* group in view of the serrate antennae, the conspicuous process on the median lobe of aedeagus, the short spermathecal duct and the spermatheca provided with one spiral tube. The present new species is closely related to *L. pluricostatus* (FAIRMAIRE, 1887) from Fujian, China and *L. hiroshii* M. SATÔ et OKUSHIMA, 2001 from the Ryukyu Islands, Japan, but can be distinguished from the former by the entirely black pronotum and the rounded apical margin of dorsal plate of aedeagus (pronotum blackish brown and fringed with reddish brown, and apical margin of dorsal plate of aedeagus diagonally truncated in *L. pluricostatus*. See OKUSHIMA, 2005, p. 137, fig. 35), and from the latter by the rounded anterior angles of pronotum (the pronotum of *L. hiroshii* provided with angular anterior angles at least in female).

The dull red elytra might be more vivid when alive, because they are so coloured in some specimens of *L. nigricollis* WITTMER, 1984 and *L. hiroshii* which belong to the same subgroup.

The two type materials were misidentified by WITTMER (1984) as *L. pluricostatus*. Hereby, the true *L. pluricostatus* seems to be restricted to mainland China.

***Rhagonycha (Rhagonycha) micheli* OKUSHIMA et Y. YANG, sp. nov.**

(Figs. 3–4, 6)

Rhagonycha limbatipennis: WITTMER, 1982, Ent. Rev. Japan, Osaka, 37: 135. [misidentification, nec *R. limbatipennis* WITTMER, 1956].

Type series. Holotype: ♂, “Mt. Shihtoushan” / “400 m, Miaoli Pref.” / “TAIWAN”, “20–IV–1981” / “T. Shimomura leg.”, “Naturhistorisches” / “Museum Basel” / “Coll. W. Wittmer” (NHMB). Paratypes: 3 ♂♂, 2 ♀♀, same data as for the holotype (NHMB); 1 ♀, “[TAIWAN]” / “Kueishan” / “Taipei Hsien” / “22. IV. 1972” / “M. Sakai leg.”, “Rhagonycha” / “limbatipennis” / “Wittm.” / “det. W. Wittmer” (EUMJ).

Distribution. Taiwan: northern area.

Description. Male (Fig. 3). Body orange yellow except for the following parts; posterior half of head and elytra except for lateral sides black; eyes, antennae except for several basal segments, metaventrite except for the circumference, each of abdominal sternites II–VII except for the circumference dark brown; apical parts of labial and maxillary palpi, apical half of each tarsus dusky brown; apices of mandibles and claws reddish brown; lateral marginal area of elytra pale yellow. Body densely covered with fine pale pubescence; anterior margin of clypeus fringed with pale bristles.

Body somewhat stout. Head wider than long; dorsum depressed along the anterior margin of clypeus and lateral areas before eyes, slightly elevated in cephalic area. Surface finely rugose and obscurely bumpy on posterior half. Anterior margin of clypeus semicircularly arcuate and faintly indented in middle. Eyes large, globular and prominent, ratio of an eye diameter to interocular space 1 : 1.8. Terminal labial palpomeres subtriangular. Terminal maxillary palpomeres broadened cultellate. Antennae simple filiform, nearly extending to apical third of elytra, antennomere I clavate, II short and slightly dilated apicad, III–XI subcylindrical, each antennomere without groove. Ratio of the lengths of antennomeres from base to apex as follows: 16 : 10 : 13 : 14.5 : 15 : 15 : 15 : 14 : 13 : 12 : 13.

Pronotum transverse subrectangular, PW/HW 1.07 (in the holotype; range 1.04–1.13), PW/PL 1.25 (1.24–1.33). Anterior margin moderately arcuate; posterior margin weakly arcuate and faintly sinuate; lateral margins weakly sinuate; anterior angles rounded; posterior angles angulate and obtuse.

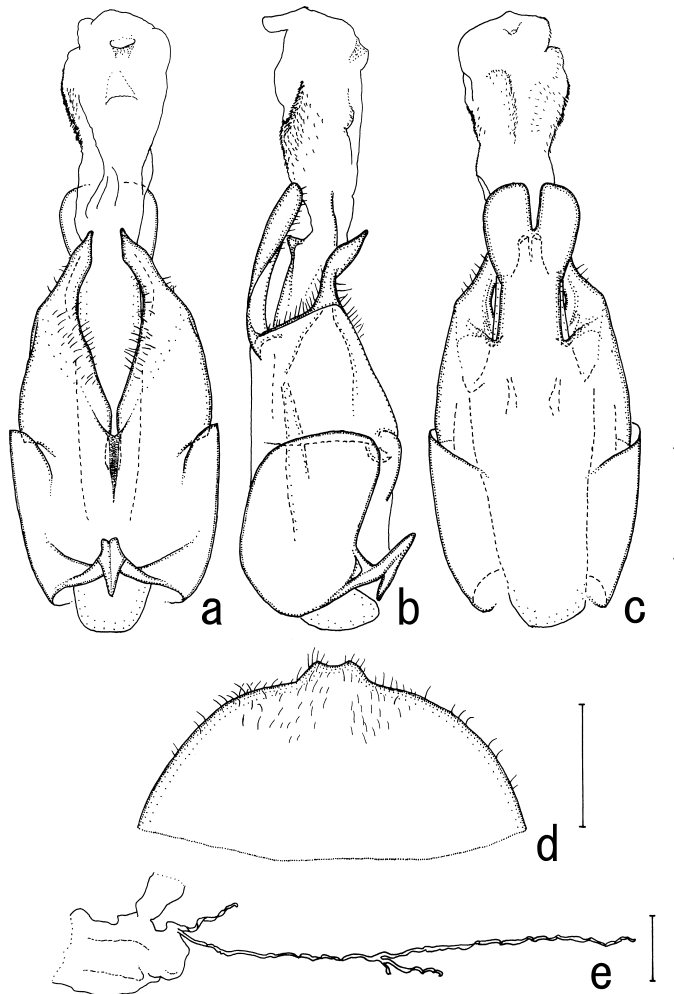


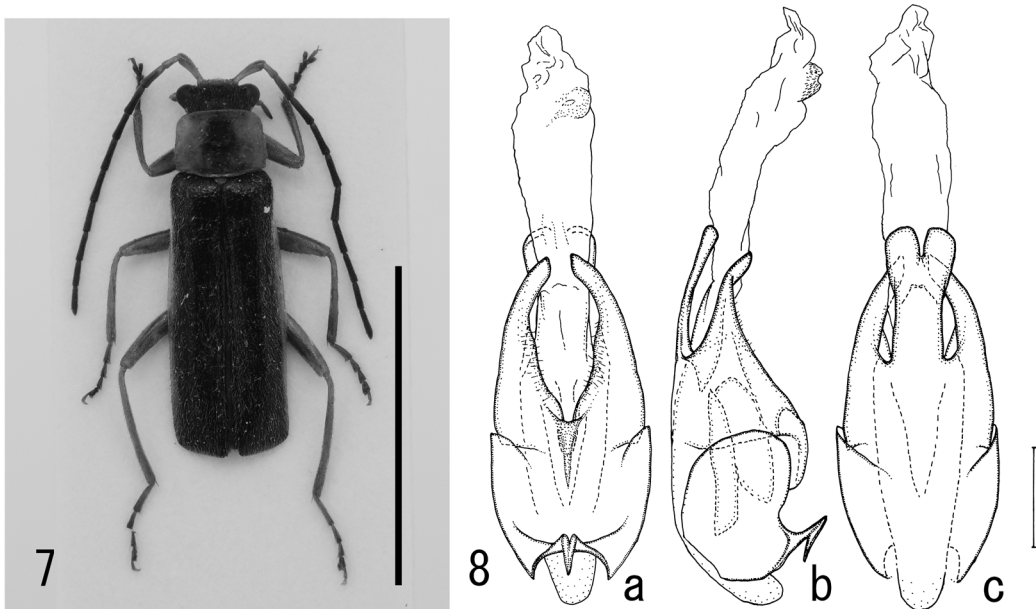
Fig. 6. *Rhagonycha (Rhagonycha) micheli* sp. nov.— a-c, Aedeagus (a, ventral view; b, lateral view; c, dorsal view); d, female abdominal sternite VIII; e, female genitalia, lateral view. Scales: 0.5 mm.

Dorsum convex, particularly elevated in the postero-lateral areas, strongly depressed along the posterior margin; antero-lateral areas hollowed along the lateral sides. Medio-longitudinal groove obscure. Surface smooth and with dull luster on the elevated parts. Scutellum triangular with rounded apex.

Elytra moderately elongate, slightly dilated posteriad, broadest at apical two-fifths; EW/PW 1.47 (1.38–1.47), EL/EW 2.2 (2.13–2.34); dorsum densely and rugosely punctate; each elytron provided with two obscure costae in basal half.

Legs considerably slender. Femora mostly straight. Tibiae faintly arcuate in basal parts. Each claw finely cleft at apex.

Aedeagus. Ventral process of paramere leaning inside in ventral view, apical half ventro-posteriorly bent, apical portion abruptly narrowed apicad with pointed tip. Dorsal plate narrowed in basal half; apical margin narrowly and deeply emarginate in middle and smoothly rounded on both sides, distinctly longer than ventral process in lateral view. Median lobe provided with a sclerotized protu-



Figs. 7–8. *Rhagonycha (Rhagonycha) nigroimpressa* (PIC, 1922) — 7, Male habitus (paratype of *R. (R.) limbatipennis* WITTMER, 1956), dorsal view; 8, aedeagus (a, ventral view; b, lateral view; c, dorsal view). Scales: 0.5 mm.

berance at the apex of dorsal side. Inner sac lengthened and swollen posteriad, shorter than tegmen (Fig. 6a–c).

Body length: 6.90 mm (in the holotype; range 6.43–7.23); body width: 2.20 mm (1.93–2.40).

Female (Fig. 4). Body somewhat longer and wider than in male. Eyes slightly smaller than in male, ratio of an eye diameter to interocular space 1 : 2.1. Antennae slightly shorter than in male, extending to basal three-fifths of elytra. Ratio of lengths of antennomeres from base to apex as follows: 16 : 10 : 12 : 14 : 14 : 14.5 : 15 : 14 : 13 : 12 : 14. PW/HW 1.19–1.23, PW/PL 1.31–1.4, EW/PW 1.32–1.37, EL/EW 2.25–2.4. Each claw slightly widely cleft at apex. Abdominal sternite VIII nearly semicircular, the middle of posterior margin protuberant and faintly emarginate in middle (Fig. 6d).

Female genitalia. Vagina tapered and extended apicad. Diverticulum and spermathecal duct arising from ventro-apical portion of vagina. Diverticulum short, thin and spiral; spermathecal duct very long, thin and spiral; spermatheca composed of two thin spiral tube, one of which is a little longer than spermathecal duct, the other one is short, as long as diverticulum. Accessory gland very short and small, arising at the base of the short spiral tube of spermatheca (Fig. 6e).

Body length: 7.40–7.60 mm; width: 2.25–2.40 mm.

Etymology. The specific name is dedicated to the late Dr. Michel BRANCUCCI who rendered many services to the taxonomic study on the Cantharidae.

Remarks. This new species is classified in the subgenus *Rhagonycha* because of its cleft claws on all legs in both sexes. It is closely related to *R. (R.) nigroimpressa* (PIC, 1922) from mainland China, which is illustrated with the aedeagus for the first time (Figs. 7–8), but can be distinguished from the latter by the entirely orange yellow pronotum and sharply pointed apices of ventral processes of paramere.

All the type materials were misidentified by WITTMER (1982) as *R. (R.) limbatipennis* WITTMER,

1956, which is described from “Hangchow”, China and a junior synonym of *R. (R.) nigroimpressa* (PIC, 1922) (WITTMER, 1997). Hereby, the true *R. (R.) nigroimpressa* seems to be restricted to mainland China.

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要 約

奥島雄一・楊 玉霞：台湾産ジョウカイボン亜科の2新種（コウチュウ目ジョウカイボン科）。——筆者らは2008年から2009年にかけてスイスのバーゼル自然史博物館 Naturhistorisches Museum Basel に滞在し、ジョウカイボン科の世界的な分類学的研究を行った Walter WITTMER 博士のコレクションを調査する機会を得た。その結果、台湾産のジョウカイボン属およびクロヒメジョウカイ属に属する2新種を見出し、それぞれ *Lycocerus russulus* OKUSHIMA et Y. YANG, sp. nov. および *Rhagonycha (Rhagonycha) micheli* OKUSHIMA et Y. YANG, sp. nov. として命名記載した。後者の種小名は、ゲンゴロウ科やジョウカイボン科に関する分類学的研究に多大な貢献をされ、筆者らの研究に協力を惜しまれなかったバーゼル自然史博物館の故 Michel BRANCUCCI 博士に献名したものである。これらの種はいずれも、かつて WITTMER 博士が台湾産種をまとめた際に、中国本土から記録した種に同定し記録していたものである。 *R. (R.) micheli* のパラタイプには、愛媛大学ミュージアム所蔵の1個体も含めた。また、本種との比較のために、中国本土から知られる *R. (R.) nigroimpressa* (PIC, 1922) を初めて図示した。

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