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SOME LITTLE-KNOWN SPECIES OF *RISIOCNEMIS* COWLEY FROM THE PHILIPPINE ISLANDS, WITH NOTES ON THEIR SYNONYMY, MORPHOLOGICAL CHARACTERS AND LARVAL STRUCTURE (ZYGOPTERA: PLATYCNEMIDIDAE)

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The status of 5 of the 14 species of *Risiocnemis* known to occur in the Philippines is discussed, and detailed redescriptions are presented of all. Needham's group characters of the genus are analysed and considered well founded. The specific characterizations are based on a study of ♂ and ♀ type specimens of the misinterpreted *R. ignea* (Brauer) as well as the unique ♀ types of *R. incisa* Kimmins and *reflexa* Kimmins, two species erroneously recorded from Borneo. Additional notes and figures are given of the type-species *R. serrata* (Hagen *in* Selys) with its larva, and of *R. haematopus* (Selys), all from the island of Luzon. Illustrated redescriptions are supplied of *R. ignea* and *incisa*, whose characters are compared with those of *reflexa*, which turns out to be synonymous with the earlier described *haematopus*. In spite of their uniform colour-pattern, females belonging to the species-group here treated appear to be well recognizable on details of structure found on pro- and mesothorax.

INTRODUCTION

In the following pages information will be given on the taxonomy, nomenclature and revised synonymy of some little known members of the Philippine genus *Risiocnemis* Cowley. The present article was initiated by Prof. B. and Mrs. M.A.J.E. Kiauta (1980), who in May 1979, while journeying in Luzon, also spent one day exploring the Laguna district area in search of Odonata. On that occasion one male and female were taken of an unnamed species of *Risiocnemis* which is discussed hereafter. Having investigated the aberrant chromosomal karyotype of that particular damselfly, it was felt necessary to find out the proper name for it, a task

apportioned to the present writer.

Determination soon proved to be a bold undertaking, because the group to which it belongs comprises several closely similar and poorly known species. It could be accomplished only after consultation of the type specimens of some of the earliest described forms whose identity had never been tested since their original description. Consequently a number of little problems had to be solved in advance, such as to associate the sexes correctly on the basis of their genitalia, venation and leg structure; and also, as a natural inference, the necessity of checking all characters of two more recently described unique female types of questionable provenance, against those of long-standing species. In point of fact, most taxa became involved in a rather complicated synonymy, all verifications in the end leading to quite unexpected conclusions which naturally brought about drastic changes in the nomenclature.

GENERIC AND GROUP CHARACTERS

Risiocnemis Cowley, 1934 (olim *Hypocnemis* Hagen *in* Selys, 1863, and *Prionocnemis* Selys, 1886, both preoccupied), is a rather aberrant genus of the Platycnemididae, restricted to the Philippine subregion. More than a dozen specific names have been proposed for its members. Two of these, *incisa* Kimmins, 1936, and *reflexa* Kimmins, 1936, were described in the same publication, the diagnosis of the former being based on a single female, the latter on two specimens of that sex, both reportedly collected somewhere in Borneo. However, these species are now known with certainty to have come from the Philippines, most probably from the island of Luzon (see below).

The genus is chiefly characterized by the peculiar position of the wing veins M_3 (R_{4-5}) and Rs (IR_3), the origin of these veins being situated further distad than usual, the former arising at or well distal to the subnodus, the latter removed far away from it, at least at a level of Px_3 or after that cross-vein; at the same time, the veins M_2 (R_3) and M_{1a} (IR_2) have maintained approximately their normal position still further distad. Otherwise *Risiocnemis* is typically a platycnemidid in that the venation is regular, the discoidal cell (quadrilateral) being long and more or less rectangular, the main longitudinal vein M_4 (MA) and occasionally also Cu_2 (A_1 or IA), fractured only toward the end.

A second feature worth attention, shared by the Papuan *Idiocnemis* Selys and some other genera of eastern distribution, is found at the border of the wing apex, probably a constant feature on the basis of which two species-groups can be recognised. The part of the wing referred to is either distinctly crenulated (Fig. 3), as in *R. appendiculata, cornuta, erythrura, serrata* and probably others (Brauer: ".... Spitzenrand am Ende jeder einmündenden Ader vorgezogen, daher stark zackig, mit kurzen Buchten zwischen den

Zacken...."); or only more or less sinuate in consequence of shallow emarginations between the tips of the main veins (Brauer: "..... Spitze wenig zackig, nur an der Mündung der Hauptlängsadern in weiten seichten Buchten der Rand vorgezogen", as a.o. in *atripes, atropurpurea, excelsa, flammea, haematopus, ignea* and *incisa.* As has been pointed out by NEEDHAM & GYGER (1939: 269), this character is correlated with the position of the arculus in relation to the second antenodal. In the first category (typified by *serrata* (Hag.-Selys), Arc is placed well byond Ax_2 (Figs. 1-2), whereas in the last-mentioned group (typified by *ignea* Brauer), Arc is in line with that cross-vein. These group characters may ultimately prove useful for the definition of subgenera.

Lastly, attention may be drawn to a peculiarity of the leg structure, mentioned in the literature only in the original description of *R. haematopus* (Selys), in which the author says: "Les fémurs comprimés dilatés". The expansion is, indeed, most conspicuous in that species and *R. atripes* (Needham & Gyger). In the males of these, the inner (flexor) surfaces of all femora are not only perfectly flat, but the latter themselves are distinctly expanded, the usual row of long, strong bristles being implanted at the sharp ridges. Throughout our series of species the broadening of the femora is less developed in the females, and in *R. serrata*, the type-species of *Risiocnemis*, it is hardly perceivable, and there are no acute lateral carinae.

Apart from some unique venational features, the general morphology of *Risiocnemis* points to affinity with *Coeliccia* and immediate allies in the western part of the Oriental region (India to the Philippines), and undeniably also with a large group of eastern genera centred in the Papua region, viz. with the inclusion of the Solomon Islands. For details, see LIEFTINCK (1958, 1963, 1974).

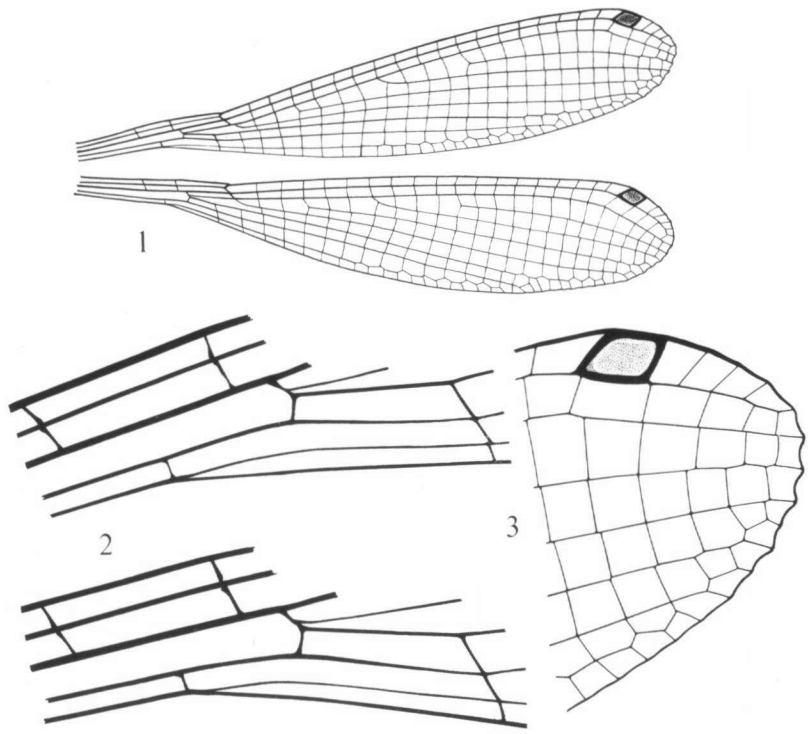
THE FIRST SPECIES-GROUP

From this first group only the type-species is briefly discussed.

RISIOCNEMIS SERRATA (HAGEN *in* SELYS, 1863)

Figures 1-6

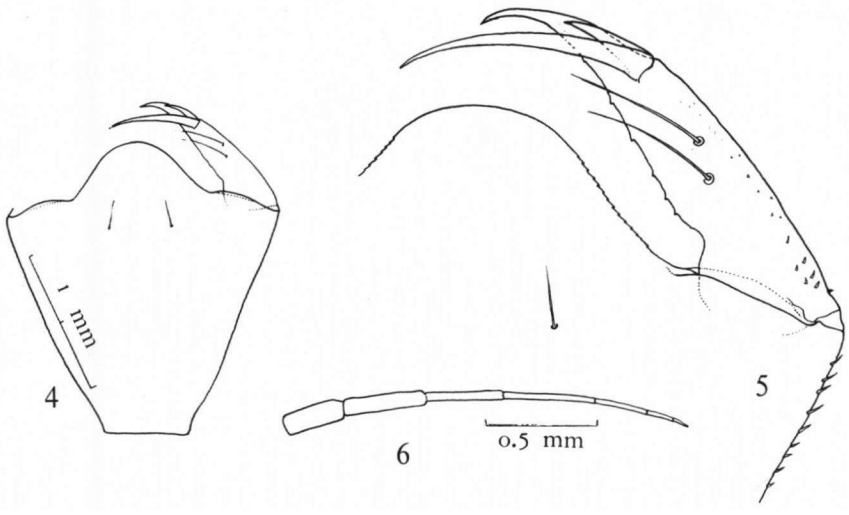
This is the first described and best known (type-)species of the genus. It was well characterized and entered in a specific key, with good pictures of both sexes and other illustrations, by NEEDHAM & GYGER (1939: 270, pl. 14 figs. 171-173, 184-186, 191-195). The same authors also gave an impression of the various teneral phases of the imago. As prototype of the first species-group of *Risiocnemis*, illustrations are here given of the wings and details of the venation of a male *serrata* from Luzon (Figs. 1-3).



Figs. 1-3. *Risiocnemis serrata* (Hag.-Selys), ♂ from Los Baños, Luzon: (1) right wings; — (2) wing bases; — (3) apex of right fore wing.

Stature very slender, body relatively of small size: ♂ abd. + app. 34-37, hind wing 20-21 mm, ♀ 34 and 22.5 mm, respectively. By its variegated colour design and slender forms, *serrata* is strongly suggestive of some regional protoneurid, like *Prodasineura*, resembling the latter superficially. Body jet black, richly adorned with blue on head and thorax, with pale obscurely ringed and striped legs, and with contrastingly arranged blue subapical spots and rings on the abdominal segments. Both sexes are easily distinguished from the next-discussed species by sharply defined light markings, crenulated wing tips, and distal position of arculus.

An elaborate description of a penultimate instar larva of *serrata*, with sketches of its mouth-parts, can be found also in NEEDHAM & GYGER's publication (loc. cit.: 271-273, pl. 14 figs. 191-193). Years later, the full-grown larva was briefly characterized in a key, in comparison with that of other platycnemidid genera (LIEFTINCK, 1958: 285-286). The sketches here given (Figs. 4-6) on a somewhat larger scale than those published earlier, are copied from the writer's subsequent notes on *serrata* (1963: 533-534, figs. 22-24) and



Figs. 4-6. *Risiocnemis serrata* (Hag.-Selys), ♀ larval exuviae from Los Baños, Luzon: (4) dorsal view of labium; — (5) partial view of middlobe and right palpus; — (6) right antenna, same specimen.

taken from the exuvia of a female in transformation, collected on 24 November 1953, in the same locality as Needham's specimen, viz. near Los Baños.

Originally described from Manila, *serrata* occurs also in Mindanao and is possibly widely destributed in the Philippines.

THE SECOND SPECIES-GROUP

Apart from the salient features of the second species-group mentioned above, its members here treated have the following characters in common: — Stature slender, size moderate to rather large, both sexes measuring at least 35 mm for the abdomen (incl. apps.) and 25 mm for the hind wing, females being always a little smaller than males. Body colour, except fully adult male of *haematopus*, uniform light red, orange-red to light reddish brown, this colour changing imperceptibly laterally and underneath to greenish or pale chrome and marked in places with diffuse lighter or darker areas. No deep black spots or stripes on any part of body, except postclypeus sometimes obscured and occasionally black. Finely outlined with dark brown are: middorsal carina of mesothorax, a streak along dorsal crest of mesepimeron, tiny specks at upper end of second lateral suture, and posteroventral edge of metepimeron; also ridges bordering pale ante-alar triangles and fore wing axillae anteriorly. Median lobe of labium with small, narrowly U-shaped

emargination, its depth about one-seventh (14:100) of whole length, lobes bluntly pointed. Antenna long, sockets (1st joint?) immovable, conspicuously swollen, placed in shallow epicranial depression, next two segments thick, more or less sausage- or club-shaped, all pale, the flagellum obscured, long and thread-like, the first joint longest but often indefinite. Legs including bristle-like setae invariably unicoloured, often more vividly so than rest of body. Femora slightly to distinctly expanded, with flattened flexor surfaces; femoral and tibial bristles much longer than interspaces; an outer row of 8-10, 9-10 and 11-13 marginal bristles on fore, mid and hind femora, and 9-10, 9-10 and 9-11, respectively, on tibiae. Tarsal claws with distinct though short inferior subapical tooth. Wing neuration as for genus, membrane subhyaline. Medio-anal link entire, or almost so; only one subquadrangular antenodal cell; other details of venation, including shape of discoidal cell and number of postnodal cross veins, rather unstable infraspecifically. Penile organ (prophallus) not studied. Male sup. anal apps straight or a little outbent, tapering to a point, each armed on the inside with a robust, laterally compressed and often spine-like basal or subbasal process, these spurs closely approximated, almost equal in length to main branch of appendix and directed straight ventrad; inferior pair shorter than superiors, broadest at base, distal portion slender and tapering, with upturned tip. Cerci of female short, conical and pointed; genital valves not very robust, projecting beyond tips of cerci, lower border weakly convex, outer pair armed with a row of 14-25 fine black denticles, acuminate in profile, broader and placed transversely in ventral view.

THE STATUS OF TWO "BORNEAN" SPECIES OF *RISIOCNEMIS*

The unique types of *R. incisa* and *reflexa*, described by KIMMINS (1936), are said to have come from "N.W. Borneo", etc. Since these species are the only *Risiocnemis* recorded from beyond the limits of the Philippine subregion, it became necessary (1) to verify the reliability of the printed locality labels of both and (2) to compare the insects with their Philippine congeners and establish their identity. Both questions can now be answered satisfactorily and regarded as settled. In May, 1947, I was permitted to consult the reference books in the entomology department of the British Museum (Nat. Hist.), in which the following additional information is given on the identical locality labels: — "N.W. Borneo &&, purchased from E. Gerrard Jr. [a dealer!] collected by E. Everett".* The suffix "&&" being

* "A.H. Everett (1848-1898) collected for Rajah Brooke of Sarawak, in Borneo, the Philippines, Palawan and Balabac; and from 1894 onward for Lord Rothschild on the Philippines, Celebes, and the Lesser Sunda Is., from Lombok to Timor" (transl. from W. HORN & I. KAHLE, 1935, *Ent. Beitr. Berlin-Dahlem* 2: 70).

already of suspected character, all other available evidence proves that *R. incisa* and *reflexa* were not collected in Borneo but came from one of the Philippine islands, most likely Luzon. This is supported by an analogue case of erroneous labelling found among a species of *Rhinocypha* preserved in the same collection. Three males of the common Philippine species *R. colorata* lacking blue spots on the frons bear locality labels exactly identical with those of the above *Risiocnemis*. They are mixed with a small series of *R. frontalis*, from Celebes, a somewhat similar species characterized by conspicuous blue frontal spots, but all are standing over the drawer label *frontalis*. Since no members of the dark-winged taxa belonging to the *tincta-semitincta--colorata-frontalis* complex are known from continental Borneo, all being restricted to the zoogeographical subregions east of Wallace's Line, viz. Celebes, Moluccas, the Philippine islands and the Papuan archipelago, the conclusion must be that the *R. colorata* males are, in fact, mislabelled specimens evidently not collected in "N.W. Borneo".

RISIOCNEMIS IGNEA (BRAUER)

Figures 7-8

Hypocnemis ignea BRAUER, 1868: 547 (♂♀ Luzon). — SELYS, 1882: 23 & 26 (key & notes, after Brauer); 1886: 103-104 (redescr., after Brauer)

Risiocnemis ignea: ST. QUENTIN, 1970: 254 (type-cat.: "Holotypus und Allotypoid; inv.-Nr. 307")

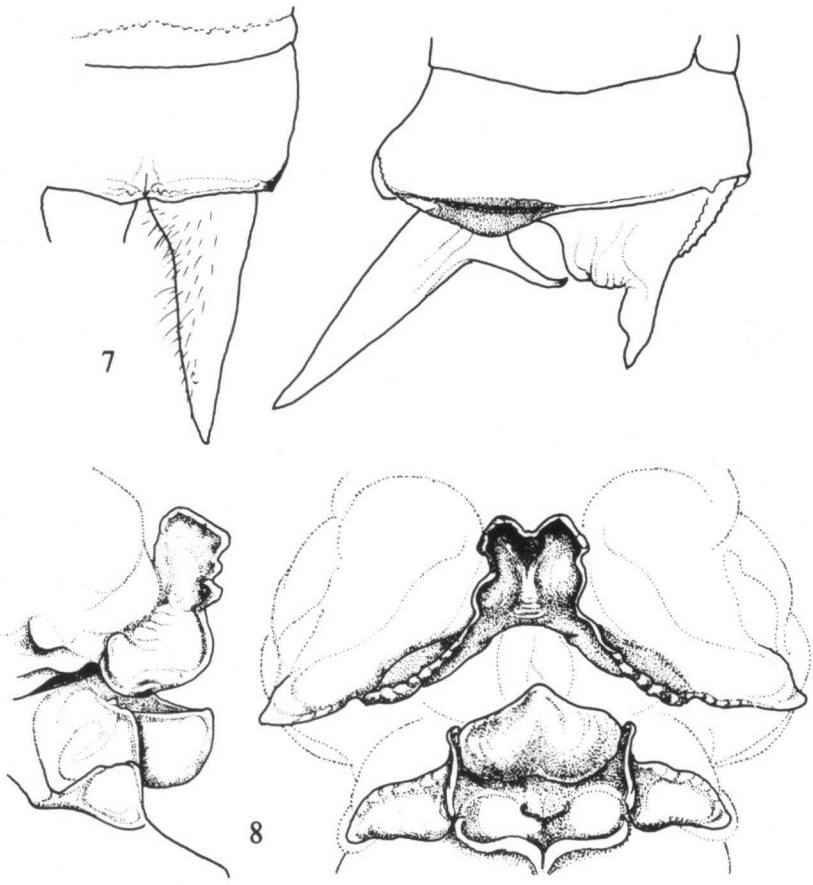
Type material. — Luzon (P.I.): 1 ♂ (ad., set with outspread wings), labelled "Brauer 1868. Luzon", "ignea det. Brauer" (written and partly printed), "Holotypus" (print on red); 1 ♀ (ad., mounted and labelled as for ♂ in unknown handwriting): "Luzon", "ignea det. Brauer" and "Allotypus"; both in Vienna Museum.

Further material. — None.

This is evidently not the species referred to *R. ignea* by de Selys Longchamps (loc. cit.), who not having examined the types, only translated parts of Brauer's diagnosis. From that description and the measurements given, it would appear that Brauer had several examples at his disposal, but as Dr. Kaltenbach informs me, there are no more syntypical specimens of this in the Vienna museum, nor are there any in the Hamburg museum. The present qualifications of holotype male and "allotype" (rect. first described) paratypic female of *ignea* should therefore be accepted. Similarly, the female of "*ignea*" discussed by NEEDHAM & GYGER (1939), is obviously not that species but *incisa* Kimmins, while the supposed male of "*ignea*" from Mindanao, described and figured by the same authors (1941: 147-148, pl. 1, figs. 17-18), is neither conspecific with *ignea* nor *incisa* and may prove to be a species still unnamed.

Brauer's good description can be supplemented as follows.

Male (ad., holotype). — Size larger and all body parts distinctly more



Figs. 7-8. *Risiocnemis ignea* (Brauer), ♂ holotype and ♀ "allotype", Luzon: (7) ♂ anal apps., partial dorsal and right lateral view; — (8) posterior part of ♀ prothorax with laminae mesostigmales, left lateral and dorsal view.

slender than both *incisa* and *haematopus*, especially the former. Head (including first antennal segments) entirely unicoloured warm orange with a brownish hue; prothorax, legs and abdomen only little lighter, the synthorax less vividly coloured, more orange-brown, growing lighter at sides and underneath. Legs long and slender, femora scarcely dilated but flexor surfaces smooth. Wings clear, rather narrow, petiolation ending beyond level of Ac where A_1 enters the border at a distance about equal to Ac itself, the latter placed much nearer Ax_1 than Ax_2. Fore wing with 22-23 Px of first series, 20-21 in hinder pair. M_3 well distal to subnodus in fore wing, only

slightly so in hind wings; Rs at $Px_{4\,5}$ in all wings; M_2 only three cells further distad, at Px_8 in fore wing, at Px_7 in hinder pair; Rsa at Px_{12} and Px_{11}, respectively. The only postquadrangular cell shorter than quadrilateral itself. Pterostigma small, very oblique, purely rhomboidal, with equilateral sides on fore wing, colour brownish yellow. Abdomen, including intersegmental rings and anal appendages, unmarked, unicoloured, only the somewhat swollen posterior rims at sides of segm. 10 opposite the superior appendages, black. Anal apps as in Figure 7, superior pair with interior subbasal process thinner than in *haematopus* and more removed basad than in that species, on the left sup. app. just visible in profile, on the right well exposed to view.

Female ("allotype"). — Very similar to male but body less vividly coloured, more uniform reddish brown; labrum more definitely orange and postclypeus darker brown-red than rest of head. Pronotal tubercles rather low and evenly convex, with strongly protuberant sub-acute posterolateral angles; posterior lobe and laminae mesostigmales of peculiar shape, as shown in Figure 8, the former raised almost vertically upward and pinched, its median portion deeply hollowed out posteriorly between finely and irregularly rimmed margins; side portions plate-shaped and also finely rimmed, the whole structure more strongly curved cephalad than in *haematopus*. Median mesostigmal process more nearly triangular in outline, hardly bilobed, declivous and quite flattened anteriorly, thus differing from both *haematopus* and *incisa*. Wing neuration as in male, except that M_3 arises well distal to subnodus in fore wings, and coinciding with that vein in hind wing. Fore wings with 19-20 Px of first series, 19 on hinder pair.

Measurements: ♂ total body length 53 mm, abd. + app. 44 mm, hind wing 26.3 mm; ♀ 50.5, 41.8 and 28.5 mm, respectively.

RISIOCNEMIS INCISA KIMMINS

Figures 9-12

Risiocnemis (Prionocnemis) incisa KIMMINS, 1936: 91-92, fig. 11 (♀ prothorax, "N.W. Borneo., err. pro Philippine Is.: Luzon?); 1970: 180 (type cat.)

Prionocnemis ignea: NEEDHAM & GYGER, 1939: 275, pl. 14 fig. 174 (♀ prothorax), "Agric. Coll. Laguna", Luzon, ♀ notes)

? *Risiocnemis ignea*: LIEFTINCK, 1961: 143 (♂♀ Luzon, no descr.)

Risiocnemis spec., KIAUTA & KIAUTA, 1980: 237 (note)

Type material. — 1 ♀ (ad., set with outspread wings), "Holotype" (print on red-rimmed disk), "N.W. Borneo 95-226" (print), "Prionocnemis incisa sp. n. ♀ det. D.E. Kimmins" and 2nd label "Risiocnemis incisa Kim, D.E. Kimmins det. 1969" (both in K's handwriting). Holotype in Brit. Mus. (Nat. Hist.).

Further material. — Luzon (P.I.): 1 ♂ (subad.), 1 ♀ (ad.), Quezon prov., Laguña, Pagsanjan Falls, 13.V.1979, ♂ marked PHP1a-d, B. & Mrs. M.A.J.E. Kiauta; both in coll. Kiauta. 11 ♂ 3 ♀ (juv.-ad.), Mountain prov., Ifugao, Mayoyao, 1000-1500 m, 6.VII.1966 (2 ♂); same area,

Jacmal Bunhian, 24 km E Mayoyao, 800-1000 m, 7-8.IV.1967 (1 ♀), 4-6.V & 11-13.V.1967 (5 ♂ 1 ♀); same area, Liwo, 8 km E Mayoyao, 1000-1300 m, 21 & 30-31.V.1967 (4 ♂ 1 ♀), all H.M. Torrevillas et al. (in Bishop & Leiden Mus.); 1 ♂ 1 ♀ (♀ incompl.), Quezon Prov. (?), Balbaran, Kalinga, 2.V.1948, M. Celestino ex coll. Uichanco (Bishop Mus.); 1 ♂, Luzon, Mountain Prov., 20 mi. SW Baguio, 2.X.1915, H.E. Milliron (Bishop Mus.); 1 ♀, same prov., Dr. Kias (?), XI.1930, H. Townes coll. (Leiden Mus.).

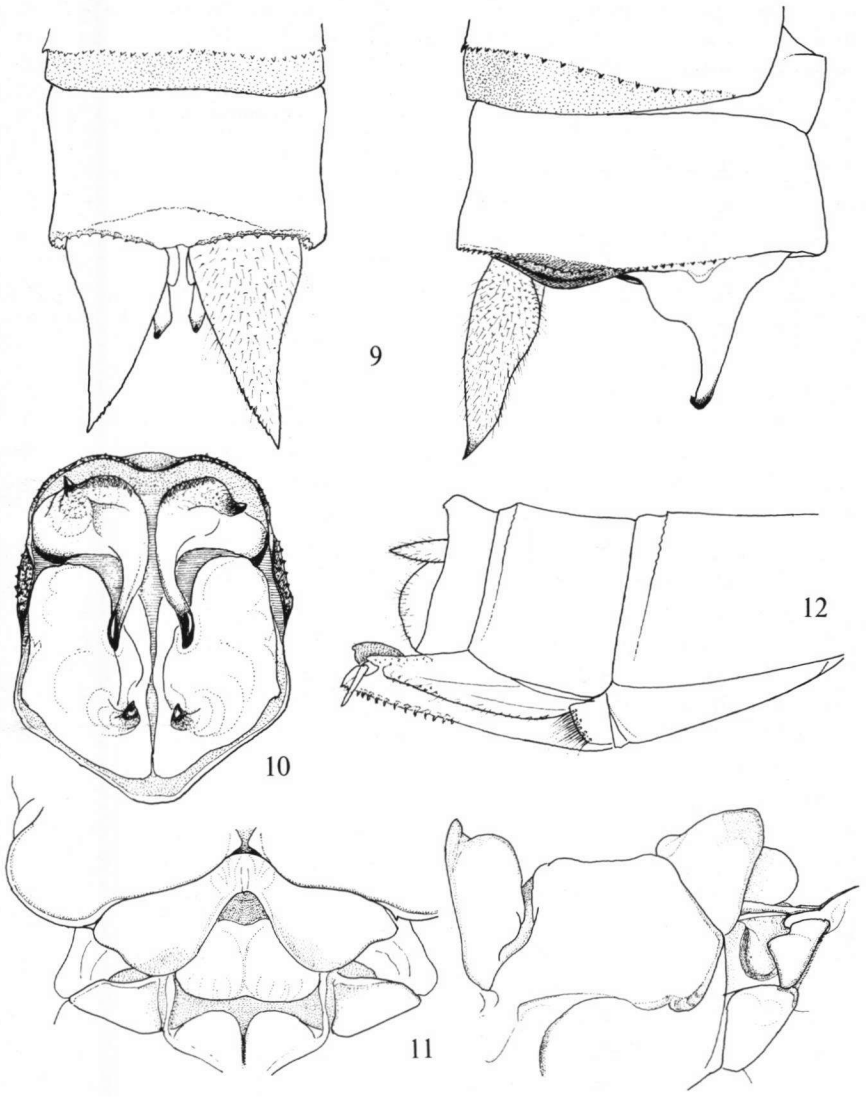
As already explained the true *R. ignea* (Brauer) is a distinct species, apparently known only from the types.

Note. — It is significant that the fully adult type of *R. incisa* conforms closely in every respect with specimens of that sex from various other localities in Luzon, evidently also with the one wrongly attributed to *ignea* by Needham & Gyger, who figured the unmistakable prothorax of a female collected at Los Baños. Since "*Prionocnemis ignea* auct. nec Brauer" was left without a name but now turns out to be the same species as *R. incisa* Kimmins, the last-mentioned name should be applied, after all, to one of the better known members of the genus, a species probably widespread and fairly common in Luzon.

Female (holotype, additional remarks). — Somewhat smaller and more stoutly built than *ignea* and *haematopus*. Postclypeus glossy dark brown, not black, as stated in description. Prothorax and laminae mesostigmales as described and shown in Kimmins' sketch but here figured in greater detail after the specimen from Pagsanjan, the two being practically alike (Fig. 11). No traces of brown antehumeral bands on the thorax, which are due to discoloration. Legs pale, femora only little expanded (hinder pair missing), the outer faces slightly obscured; an outer row of 10 femoral bristles becoming increasingly longer distad, the last 6 longer than interspaces; 7-8 tibial bristles, all except the last much longer than the distance separating them. Wing membrane faintly yellowish, venation dark brown. A_1 entering the wing border slightly distal to Ac on fore wing, both veins practically coinciding at margin on hinder pair; Ac much nearer Ax_1 than Ax_2 on fore wing, only very slightly so on hind wings. Fore wing with 19 Px of first series, 16-17 in hinder pair. M_3 little distal to subnodus, or at that level (hind wings); Rs at Px_5 on fore wings, at Px_{4-5} on hinder pair; M_2 4 cells further distad (3-4 on hind wings) at Px_9 and Px_7, respectively; similarly Rs_a at Px_{12} and Px_{11}. Pterostigma very oblique, slightly but distinctly longer than high but sides almost parallel, colour brown. Abdomen unicoloured, the posterior darkening unapparent except on 8-10 restricted to diffuse median streaks, the fine piceous obscuration at apices of 3-9 restricted to intersegmental rings. Cerci more slender than in *ignea*, subequal in length to segm. 10, cone-shaped with sharply pointed tips; ovipositor valves projecting beyond tuberculum supra-anale for the length of segm. 10, lower margin with 14-15 fine denticles (Fig. 12).

Measurements: total body length 44 mm approx., abd. incl. valves 35.5 mm, hind wing 26 mm.

The postclypeus of other females in our collection is always darker brown than the rest of the anterior part of the head. They have 16-19 Px on the fore



Figs. 9-12. *Risiocnemis incisa* Kimmins, ♂♀ from Pagsanjan Falls, Luzon: (9) ♂ anal apps.: dorsal and right lateral view; — (10) caudal view; — (11) posterior part of ♀ prothorax with laminae mesostigmales, dorsal and left lateral view, and, — (12) apex of abdomen, right lateral view.

and 14-17 on the hinder pair of wings. As in *ignea* and *haematopus*, the posterior lobe of prothorax, when viewed from behind, carries a pair of smooth black ridges, one on either side, placed at the very base of its two lamellae.

Male (ad., first description). — Average size slightly smaller than *ignea* and *haematopus*, head and thorax of the same strong build, but with an equally slim and very slender abdomen. Body colour very uniform, lacking any deep black markings except those mentioned and characteristic for the second group. Labium pale ochreous, remaining mouth-parts, face and front of head vivid orange-ferruginous mottled with brown, especially toward inner orbits and (usually) around ocelli; labrum and first antennal segments definitely orange, the latter thick, club-shaped and of subequal length; distalia black, filamentous, the first one fairly distinct though shorter than each of the basal ones, remaining joints inarticulate. Postclypeus very shiny, invariably brownish black or black; postocular area behind level of ocelli again rather paler, from light chrome to ferruginous, becoming still lighter rearward and underneath. Pro- and synthorax unicoloured orange-brown gradually becoming lighter, with admixture of pale green, at sides and on ventral surfaces; coxae again somewhat more orangish but much less vividly so than all the rest of legs, which are orange throughout including the bristles, femora lacking any obscuration at extensor faces. Femora, and to a less degree also tibiae, distinctly expanded with flattened inner surfaces, though much less markedly so than in *haematopus* and *atripes*. Wings hyaline, veins black; neuration as described above, points of origin of main veins little variable; fore wing with 17-20 Px of first series, 14-18 in hind wings. Pterostigma brownish black or black, shaped as described for the female, usually finely surrounded by a yellow line. Colour of abdomen entirely orange but dorsum of tergites becoming progressively a little darker in very old specimens, all segments moreover carrying a tiny black dorsolateral spot just in front of and including the intersegmental membranes. Posterior border of 10, on each side opposite superior appendage, swollen and with convex margin, otherwise unmarked. Anal appendages shaped as in Figures 9-10, colour dark orange; superiors gradually obscured, almost black, toward the finely pointed tips; inferior pair red tipped with black. In natural position, the superiors are directed straight backwards, the long, slender and gently curved spine pointing straight down at a right angle; this shiny black process is situated more basad than in the other species, only the extreme lower (side-) portion of it remaining visible in full profile view. Inferior appendages somewhat shorter than the superiors, very broad at base but lacking the swollen and raised subbasal tubercle so well shown in side view by *ignea* and *haematopus*; distal portion tapering rapidly, directed almost straight back, the finely upcurved apices tipped with black (Fig. 9).

Measurements of whole series: ♂ abd. + app. 39-40.8 mm, hind wing 25.2-27.5 mm; ♀ 35-38 and 25-27.5 mm, respetively.

Note — The specimens recorded by me (LIEFTINCK, 1961: 143) from the Mountain and Abra provinces of Luzon and referred to *R. ignea*, probably also belong here. As they were returned to the Chicago Natural History Museum, a re-examination would be desirable to prove this.

RISIOCNEMIS HAEMATOPUS (SELYS)

Hypocnemis haematopus SELYS, 1882: 23 (key ♂♀), 25-26, col. pl. 1 figs. 1-10 (♂♀ insects, struct., Mindanao); 1886: 102-103 (redescr., ♂♀ Mindanao)

Prionocnemis haematopus: MUNZ, 1919, pl. 12 fig. 79 (wing); — NEEDHAM & GYGER, 1939: 270 (key ♂), 274 (notes, no descr.), pl. 14 figs. 177, 189 & 190 (♂♀ struct., Luzon)

Risiocnemis (Prionocnemis) reflexa KIMMINS, 1936: 92-93, fig. 12 (♀ prothorax, "N.W. Borneo" err. pro Philippine Is.: Luzon ?); 1970: 180 (type cat.). Syn. nov.

Type material. — 1 ♀ (ad., set with outspread wings), "Holotype" (print on red-rimmed disk), "N.W. Borneo 95-226" (print), Prionocnemis reflexa sp. n. ♀ det. D.E. Kimmins and 2nd label "Risiocnemis reflexa Kim, D.E. Kimmins det. 1969" (both in K's handwriting). Holotype in Brit. Mus. (Nat. Hist.).

Further material. — Luzon (P.I.): 2 ♂ 2 ♀ (one pair ad., one pair subad.), Quezon Prov., Laguña, Los Baños, 10.I (1 ♀) & 30.V.1954, H. Townes); 1 ♂ 1 ♀ (ad.), same area, Los Baños, Molawin Creek, 22 & 26.XI.1953, M.A. Lieftinck. All Leiden Mus. 1 ♀, South Luzon, Camarines Sur, Mt. Isarog, 800 m, 28.IV.1965, H.M. Torrevillas (Bishop Mus.).

For a better understanding of the new synonymy and affinity with other species of the group, it was thought best to include brief notes on *R. haematopus* as well. Both sexes were well described, with excellent illustrations, by de Selys and Needham & Gyger, only few supplementary notes on colour and structure being needed to distinguish them from others.

Male (ad.). — Labium much obscured, but remaining parts of head with antennae, thoracic dorsum and abdomen deep black; sides of thorax pale ochreous to light orange with greenish hue, including the coxae, for the rest legs are brilliant scarlet. All femora markedly dilated (quite similar in fact to those of *C. atripes* Needham & Gyger, 1941), more distinctly so than in *ignea* and *incisa*, the latter being rather intermediate in this respect. Wings clear, pterostigma black, shaped much as in *ignea*, shorter and smaller than *incisa*. Fore wing with 17 Px of first series, 16-17 in hinder pair. Superior anal appendages longer than in *ignea* and *incisa* (length ratio of segm. 10 and sup.app. = 56 : 100), and with the acutely pointed subbasal process broader basally than in the other two, removed further distad and accordingly always plainly visible in side view; basal portion of inferior pair with a prominent, broad dorsal tubercle, distal part rather abruptly narrowed and tapering to a point.

Female. — Almost as slenderly built as *ignea*, but whole body tending to become darker with age, especially end segments of abdomen being more

obscurely brown than in the two species compared. Shape of posterior lobe of prothorax and adjoining mesothoracic laminae as shown by de Selys, Needham & Gyger, and again by Kimmins for his *reflexa*. There are 16-18 Px on the fore wings, 15-17 on the hinder pair.

Measurements of all specimens examined (including *reflexa* type): ♂ abd. + app. 40-42 mm, hind wing 25-25.5 mm; ♀ 35.5-38.8 and 25.5-27.5 mm, respectively.

The identity of *R. reflexa* Kimmins. — Only the selected lectotype of *R. reflexa* was examined. Stature distinctly more slender than holotype *incisa*. Resembles the other specimens at hand, all showing very near-identical shapes of pro- and mesothoracic sclerites, characters which are considered decisive. Hence I am convinced that *reflexa* must be dropped as a synonym of *haematopus*.

The following details deserve attention. Most of head and thorax above orange-cinnamon. Posterolateral angles of pronotal tubercles rounded; the more or less quadrate form of the raised posterior lobe is quite characteristic of this species: in full dorsal view it is directed perpendicularly upwards and slightly forward, this structure in Kimmins's sketch being shown when looked at somewhat more from behind; in caudal view, the lobe, on each side of its median portion, is bordered at its very base by a smooth and very shiny deep black ridge, which is also seen in the female of *ignea* and *incisa*. Legs definitely light orange, as in other adult specimens; femora less expanded than in male. Fore wings with 16-17, hind wings with 15 Px of first series. Pterostigma small, still less oblique than in *ignea* and almost equilateral (in left hind wing even a little higher than long), its distal side distinctly convex. Cerci conical, longer and narrower than in the two allied species but scarcely longer than 10th segment. Genital valves exceeding tuberculum supra-anale for a length about equal to last segment, carrying a dense row of 25-26 minute light-coloured denticles. Measurements: total body length 44.5 mm, abd. incl. valves 36.5 mm, hind wing 25.5 mm.

The adult male of *haematopus*, with its black mantle and fiery red legs, is a conspicuous and very handsome insect. Before reaching maturity, juvenile specimens pass through much paler and less striking colour stages, resembling the mature female in most respects. In general appearance and structure, *haematopus* comes nearest *ignea*, with which it is probably most closely related, especially the shape of the female pro- and mesothoracic sclerites pointing to real affinity. However, in *ignea* the femora are hardly noticeably dilated, the male thorax is not black, the legs much less red, and the superior anal appendages are still longer, than in *haematopus*.

Among the specimens of either sex that were collected simultaneously in

certain places of Luzon, is a couple taken by myself, flying in close proximity of each other in secondary forest bordering Molawin Creek, at the foot of Mt. Maquiling, near the College of Agriculture. The two other pairs, one male with its thorax not yet obscured, were also taken near Los Baños, which happens to be one of the localities occupied also by *R. incisa*.

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