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ON SOME OLD TYPES OF COENAGRIONINE ODONATA DESCRIBED FROM THE PHILIPPINE ISLANDS, WITH NOTES ON ALLIED SPECIES

by

M. A. LIEFTINCK
Rijksmuseum van Natuurlijke Historie, Leiden

The present paper is the result of an examination of some type specimens in the Brussels Museum, collected by G. Semper in the Philippines and described by Friedrich Brauer in 1868; it includes also a discussion of one species recorded from these islands by Edm. de Sélys Longchamps in the last part of his "Synopsis des Agrionines", in 1877. These were rendered accessible to study during my visit to Brussels in June, 1938, by Mons. Antoine Ball, at that time entomologist of the Musée Royal d'Histoire Naturelle. Through his kindness I was permitted afterwards to borrow the types for further study and to keep them for almost twenty years. This enabled me to make comparisons with certain species included in a splendid collection of Philippine dragonflies in the Senckenberg Museum, sent to me on loan in 1938; these had been assembled by G. Boettcher, many years in advance, in behalf of the late Dr. F. Ris, whose collection was bequeathed to the Natur-Museum Senckenberg, Frankfurt a. M.

Of the six species of *Amphicnemis* and *Teinobasis* described by Brauer and de Sélys, only three were represented in the Boettcher collection, the rest belonging either to undescribed forms, or might prove identical with some species or other recorded by J. G. Needham & M. K. Gyger, in their account (1939) of the Zygoptera of the Philippines.

Judging by the great number of apparently undescribed species at present available for study, each of the Philippine islands has developed an astonishingly rich and diversified zygopterid fauna. Among the species pertaining to such genera like *Drepanosticta, Risiocnemis, Amphicnemis* and *Teinobasis,* several were found to approach each other so closely that detailed descrip-

tions and accurate camera lucida drawings of morphological features are indispensable to tell them apart. Unfortunately, the existing descriptions often did not allow to identify them properly, in some instances two closely allied species answering the same description, thus leaving in suspense the status of both. I have accordingly postponed dealing with the majority of the regional species now before me until these can be compared with the types of those described already by Needham & Gyger.

The completion of this paper has only been rendered possible by the helpfulness of the authorities of the Institut Royal des Sciences Naturelles de Belgique, and of the Natur-Museum Senckenberg at Frankfurt a. M., my special thanks being due to Mons. A. Collart of the Brussels Museum, and to Miss Dr. Elli Franz, who is in charge of the F. Ris collection. I am also much indebted to Dr. L. B. Uichanco, at one time Dean of the College of Agriculture, University of the Philippines, Laguna, P.I.; to Miss Clare Baltazar, now temporarily at the University of Wisconsin; and to Dr. and Mrs. H. K. Townes, of Ann Arbor, Michigan. These scientists not only supplied valuable material for study, but gave me also much kind assistance and hospitality during our stay and joint excursions in the Mt. Maquiling area at Los Baños, on the occasion of the Eighth Pacific Science Congress, in 1953.

Amphicnemis lestoides Brauer (figs. 1-2)

1868. Brauer, Abh. Zool.-bot. Ges. Wien, vol. 18, pp. 541-542. — ♂ ♀ Mindanao.

1877. Sélys, Bull. Acad. Belg. (2), vol. 43, pp. 130-131. — Same specimens, redescribed.

1939. Needham & Gyger, Philipp. J. Sci., vol. 70, p. 291 (notes), 297-298, pl. 18 figs. 258-259 (♂ app.), pl. 22 fig. 311 (nodal area of wing). — ♂ Mindanao (*Pericnemis*).

1940. Lieftinck, Treubia, vol. 17, p. 362. — Note on generic status.

Material studied. — 1 ♀ ad. (head wanting), Philippine Is., Mindanao, labelled: "Mind. /554/35 (white, Brauer's hand?), "*Amph. lestoides* Br. ♂" (yellow, Sélys's hand), holotype; 1 ♀ ad. (in fragments), same loc., labelled: "♀ de Mind. 554.35" (white, Brauer's hand?), "*A. lestoides* Br.? ♀" (yellow, Sélys's hand), allotype; both in the Brussels Museum. — 5 ♂ (ad.), Mindanao, Surigao, 18.v and 9.xi.1915, 9-10.viii and 6.ix.1916, G. Boettcher leg., ex coll. F. Ris, in the Natur-Museum Senckenberg, Frankfurt a/M.

Male. — The description of Brauer's type as given by de Sélys is excellent and should be consulted instead of Brauer's. It is important to note that Brauer was mistaken in his description of the colour of the head and parts of the thorax. The rear of the head is black, not yellow, while the posterior lobe of the prothorax is not simply rounded, as stated in the

original description, but triangularly produced in the middle, distinctly upcurved and longitudinally carinate. These errors have all been corrected by de Sélys, and also by Needham & Gyger, whose good drawings of the anal appendages will serve to its easy recognition.

In the males from Surigao, the cross-vein *Ac* is situated near the level of Ax_2, while the position of the arculus is at that vein, or slightly distal to it. The origin of the veins M_3 and *Rs* varies somewhat in both fore and hind wing; usually their position is as shown in fig. 311 by Needham & Gyger, but occasionally these veins are a little more apart, M_3 arising slightly before and *Rs* after the subnodus. M_2 arises at Px_7 in fore wing, at Px_6 or Px_7 in hind wing. Postnodals 14-15 in fore wing, 12-13 in hind wing. Area between *C* and R_1 posterior to *pt* with a single row of cells.

All femora are distinctly striped with black exteriorly, the knees being likewise black.

Female. — As to Brauer's allotype, I have taken the opportunity of giving outline sketches in dorsal and lateral view of the hind lobe of its prothorax. From these figures it will be seen that the female of *lestoides* differs considerably from the Luzon specimen which Needham & Gyger referred to that species in their 1941 paper. Needham's example should, I think, be properly classified as the female of the earlier described *A. bonita* (Needham & Gyger), a species also reported from Luzon, but probably overlooked by the authors in their later paper.

The allotype has 13 postnodals in the fore wing, 12 in the hind wing. Its wings are shaped exactly as in the type, and I have no doubt that de Sélys was right in considering Brauer's male and female to be correctly associated.

Measurements (♂ Surigao): abd. + app. 46.0-47.3, hw. 26.6-28.7 mm.

Amphicnemis bonita (Needham & Gyger)

1939. Needham & Gyger, Philipp. J. Sci., vol. 70, p. 291 (key ♂), 292-293, pl. 18 figs. 260-261 (♂ app.), pl. 22 fig. 306 (hind wing). — ♂ ♀ Luzon (*Pericnemis*).

1941. Needham & Gyger, Ibid., vol. 74, p. 148, pl. 1 fig. 24 (♀ apex abdomen). — ♀ Luzon (*Pericnemis lestoides* Brauer).

Material studied. — 1 ♂, 1 ♀ (*in cop.*), Philippine Is., Luzon, Laguna Prov., Los Baños, Molawin Creek, 50 m, 22.xi.1953, M. A. Lieftinck. 1 ♂, 1 ♀, same loc., Los Baños, 13.xii.1953, H. Townes. 1 ♂, same loc., Mt. Maquiling, 100 m, 5.v.1949, J. de la Paz (coll. Coll. Agric., U. P., Laguna). 1 ♂, same loc., Los Baños, 6.iv.1949, L. B. Uichanco. 1 ♂, same loc., Los Baños, 20.ii.1914, G. Boettcher (Natur-Mus. Senckenberg). 1 ♂ (juv.), Leyte I., Balinsesayao, 50 m, 24.iv.1952, Miss C. R. Baltazar (coll. Coll. Agric., U. P., Laguna).

The males of this species correspond well with the original description and figures, except that in the adult insect the colour of the pro- and synthorax is not bright yellow, but carnelian red above and on the upper parts of the sides, the bronze-green patches at the base of the mesepisterna and dark lines bordering the mid-dorsal carina standing out conspicuously.

The female differs from that of *lestoides*, which it resembles in size, chiefly by having the posterior lobe of the prothorax short and rather trapezoidal in shape, with short rounded side-angles. It also differs from that species by its more closely veined and somewhat broader wings, there being 15-17 postnodals in the fore wing, 13-15 in the hind wing. The pterostigma is similar in the two species, but in *bonita* the anal side is almost 1½ times longer than the costal, whereas in *lestoides* it is more nearly quadrangular in shape, having the inner angle less acute and the anal side barely one-third longer than the costal. Lastly, the thorax of *bonita* is almost without dark markings, the bronze-green stripe on each side bordering the pale mid-dorsal crest being only very narrow, whereas in *lestoides* the inner two-thirds of the mesepisterna are greenish bronzy black, the mesepimera carrying, in addition, a conspicuous spot of that colour, which is placed on the shoulders.

Measurements: ♂ abd. + app. 47.0-52.5, hw. 28.5-32.5; ♀ 45.0-46.8, 30.5-32.0 mm.

The pair taken by me *in cop.* at Los Baños, were captured at a hill-slope in the forest, some distance away from the stream. It is possible that this species, like others in the genus, breeds in water-containing plants growing in damp situations.

It is worthy of note that all males of *bonita* examined by me, even the specimen mentioned above, are in the "red" colour phase, no olive or blue-green males being known yet. In the Malaysian species two forms, males as well as females, nearly always occur, the teneral forms and those in the sub-adult stage being red, but the males at least take on green or bluish colours in the final.

Amphicnemis glauca Brauer (figs. 3-4)

1868. Brauer, Abh. Zool.-bot. Ges. Wien, vol. 18 pp. 542-543. — ♀ Luzon.

1877. Sélys, Bull. Acad. Belg. (2), vol. 43, pp. 121-122. — Same specimen, redescribed (*Telebasis*).

1940. Lieftinck, Treubia, vol. 17, p. 362. — Note on generic status.

Material studied. — 1 ♀ ad. (abd.-segments 8-10 missing), Philippine Is., Luzon, labelled: "Luzon/557/*Amphicnemis glauca* Brau/Luzon" (white,

Brauer's hand?), "*Amphicnemis glauca* Br. ♀ "(yellow, Sélys's hand), holotype in the Brussels Museum.

I have been unable to associate the unique type of this very distinct species with any of the described Philippine members of the genus. It also differs from several closely allied, yet distinct, species now before me from various islands of the archipelago, all of these awaiting careful study and description.

Superficially, it resembles *bonita* (Needham & Gyger) fairly closely, but it can be distinguished from that species by a number of characters: — the labrum is deep black broadly bordered with light orange, the front margin of the black band being indented by black mesially. The posterior lobe of the prothorax is depressed, shorter and a little broader than in *bonita,* and with the lateral lobes of larger size, weakly carinate (fig. 3). Femora distinctly striped with black exteriorly, the knees being also obscured. Thorax marked similarly in the two species and wings also nearly identical in shape, but the apices are more bluntly rounded in *glauca* than they are in *bonita.* M_2 arises more proximad, at Px_7 in fore wing, at Px_6 in hind wing. M_3 and *Rs* are well separated at their origin, arising just before and just beyond the subnodus, respectively, in both pairs of wings. Pterostigma with the costal side only slightly shorter than the anal; colour in fore wing dark grey brown surrounded by light grey and framed in dark brown (fig. 4), in the hind wing dissimilar in colour: pale yellow with a much smaller excentric brown spot, the whole enclosed between bicoloured nervures: dark brown costal and distal sides, orange-yellow proximal and anal sides.

The colour of the apical segments of the abdomen (segm. 8-10, now lost) was described by Brauer as blue, an additional peculiarity which should be helpful to the recognition of this species.

Needham & Gyger (1941, p. 149), when describing their new species *Teinobasis ranee,* from Mindanao, compared the female of that insect with *glauca* Brauer, which is an *Amphicnemis.* From Needham's remarks it is not clear to me why the latter was at all mentioned in this connection.

Amphicnemis furcata Brauer (figs. 5-6)

1868. Brauer, Abh. Zool.-bot. Ges. Wien, vol. 18, pp. 543-544. — ♂ sine patria! rect. Luzon.

1877. Sélys, Bull. Acad. Belg. (2), vol. 43, pp. 127-128. — Same specimen, redescribed; hab. Luzon.

1940. Lieftinck, Treubia, vol. 17, p. 362. — Note on generic status.

Material studied. — 1 ♂ ad., Philippine Is., Luzon, labelled: "Luzon/555/ *furcata* Brauer" (white, Brauer's hand?), "*Amphicnemis furcata* Br. ♂"

(yellow, Sélys's hand), holotype in the Brussels Museum. — 1 ♂ (ad.), Luzon, Kasiguran, 30.viii.1915, G. Boettcher leg., ex coll. F. Ris, in the Natur-Museum Senckenberg.

The type is a specimen in poor condition with the apical segments of its abdomen, including the appendages, distorted and unfit for figuring. Our second example is not fully adult, and though its terminal abdominal segments are also rather compressed, the prothorax and anal appendages are in a good enough condition to exhibit clearly their characteristic form.

The two males agree with each other in every respect, but to facilitate the recognition of this species, the following notes may prove useful in addition to the existing descriptions.

Labium and mandibles dirty yellowish, the latter marked at their base with a sub-rectangular dark brown spot. Labrum glossy black broadly bordered with yellow and fringed with pale bristle-like hairs along anterior margin. Anteclypeus dirty yellow, postclypeus glossy black. Genae pale yellow, this colour continued upwards as a narrow (apically somewhat dilated) stripe along the margin of compound eye, which ends at a level about half-way between the frontal crest and the median ocellus. Frons with very distinct transverse ridge; colour glossy black, the surface of the vertical (anterior) portion smooth and flat, marked with a pair of transverse pale yellow spots, one on each side of the middle. Antennae black, the apex of the first segment and the second segment excepting the tip, pale yellow. Vertex and epicranium black with brilliant metallic green lustre; vestiges of two yellow spots at the occipital ridge, but occiput and rear of the head black.

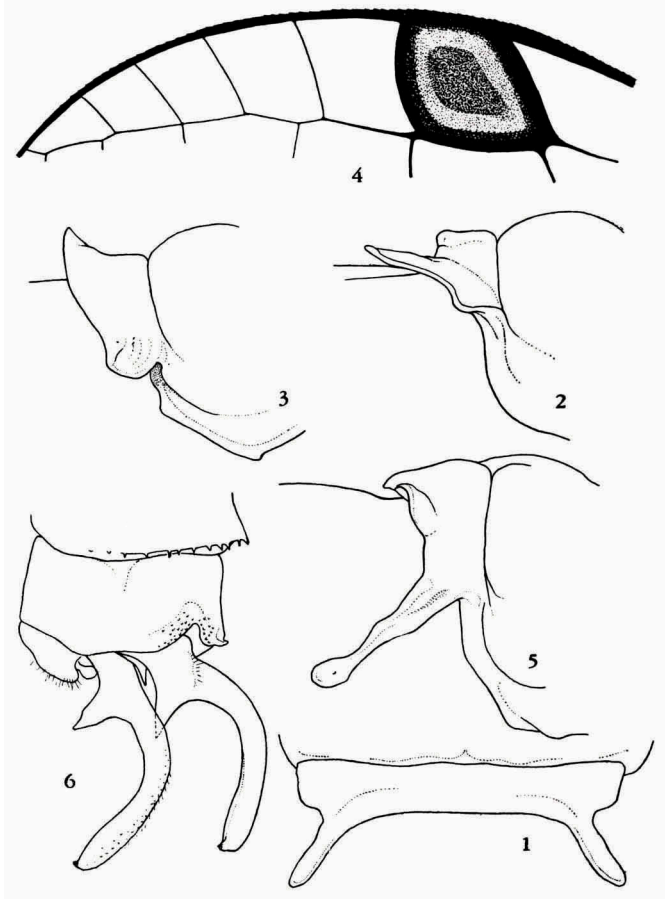
Prothorax metallic green, the sides and a transverse stripe on the crest of the anterior lobe as well as the lower part of the propleuron, light yellow. Posterior lobe depressed, its hind margin undulated and slightly upcurved between the widely distant lateral processes, showing moreover a pinched convexity on either side of the middle at the base of the slender halteres, which are likewise metallic green in colour (fig. 5).

Synthorax, dorsum brilliant metallic green almost as far down as the first lateral suture, this colour also occupying the mesinfraepisternum with the exception of a yellow line, bordering its ventral suture. The green band covering most of the mesepimerum tapers a little upwards so as to save a narrow yellow line over the upper half of the humeral suture, behind which it curves round the dorsal crest merging into the pale-coloured area posterior to the first suture. Metepisternum yellow, carrying at its upper end a wedge-shaped metallic-green mark, pointed ventrad, which runs parallel to and nearly touches the first suture. There is also a diffuse brownish streak just above the spiracle and a similar obscuration at the upper end of the second

suture; sides as well as the ventral surface of the thorax pale yellow, only the swollen dorsal ridge of the metepimerum being lined with blackish.

Legs yellowish, outer surfaces of all femora with a dark brown line, the knees and the apices of the tibiae also obscured. Posterior femur with an outer row of four and with an inner row of six spines.

Wings narrow. *Ac* situated at a level slightly in advance of Ax_2. Veins M_3 and *Rs* well separated at their origin, M_3 arising at the subnodus, *Rs* a little further distad, these veins not closely approximated after their fusion.



Figs. 1-2. *Amphicnemis lestoides* Brauer, ♀ allotype, dorsal (1) and right lateral view of posterior portion of prothorax (2). Figs. 3-4. *A. glauca* Brauer, ♀ holotype, right lateral view of posterior portion of prothorax (3) and pterostigmal region of fore wing (4). Figs. 5-6. *A. furcata* Brauer, ♂ homotype, right lateral view of posterior portion of prothorax (5) and left dorso-lateral view of apical abdominal segments, the left sup. app. viewed obliquely from aside, the right one obliquely from within (6).

M_2 arises at Px_7 in fore wing, at Px_5 in hind wing. Postnodals 13 in fore wing, 12 in hind wing. Pterostigma moderately oblique, rather narrow, a little longer than high, costal side about one-third shorter than anal side, the distal side forming approximately a right angle with the costa.

Tenth abdominal segment distorted and compressed; posterior border slightly but distinctly emarginate in the middle, as shown in fig. 6, a small, more or less triangular slanting area in front of the excision beset with a number of minute denticles.

Anal appendages yellow, shaped as in fig. 6. The inferior branch of the superior pair is very short, that of the right appendage being just visible in the figure as a small finger-shaped basal process situated between the main stems; inferior appendages short and apparently bluntly rounded.

Measurements: abd. + app. 36.5, hw. 21.0 mm.

The female of this species is still unknown.

Teinobasis filiformis (Brauer) (fig. 7)

1868. Brauer, Abh. Zool.-bot. Ges. Wien, vol. 18, pp. 544-545. — ♂ Luzon (*Amphicnemis*).

1877. Sélys, Bull. Acad. Belg. (2), vol. 43, pp. 123-124. — Same specimen, redescribed (*Telebasis*).

Material studied. — 1 ♂ ad. (head and prothorax wanting), Philippine Is., Luzon, labelled: "Luzon/556/*A. filiformis* Brau/Manilla" (white, Brauer's hand?), "*Amphicnemis filiformis* Br. ♂" (yellow, Sélys's hand), holotype in the Brussels Museum.

This is a very small and extremely slender species, which has been well described by both Brauer and de Sélys. The type, whose anal appendages are here figured for the first time, unfortunately lacks its head and prothorax.

T. filiformis is easily distinguished from allied species in the genus by its small size and narrow wings, its uniform rufous-coloured thorax and legs, and by the shape of its appendages.

The posterior femur carries four spires in the outer row, six in the inner. *Ac* is situated at about two-thirds the distance between Ax_1 and Ax_2. Arculus slightly distal to Ax_2. Only two post-quadrangular antenodal cells. M_3 and *Rs* originate well apart, for a distance about equal to a cross-vein; after their unison they are at first closely approximated, then diverge gradually outwards. M_2 arises at Px_6 in fore wing, between $Px_{4\text{-}5}$ or at Px_5 in hind wing. The vein Cu_1 reaches the wing margin at a level between

Px_{7-8} in fore wing, at Px_7 or a little beyond in hind wing. Cu_2 is short, ending at level of Px_4 in fore wing, at Px_2 or Px_3 in hind wing. Pterostigma of small size, costal side distinctly shorter than anal side, the proximal side more oblique than the distal one.

Terminal segments 8-10 of abdomen as well as the anal appendages unicoloured reddish, the shape of the 10th segment and appendages as in fig. 7.

Measurements: abd. + app. 34.0, hw. 30.5 mm (Brauer: 34 and 20 mm).

Female unknown.

The type is unique, *filiformis* having not been found among the numerous species of *Teinobasis* from the Philippine Islands that have come under my notice.

Teinobasis filum (Brauer) (fig. 8).

1868. Brauer, Abh. Zool.-bot. Ges. Wien, vol. 18, pp. 545-546. — ♂ Mindanao (*Amphicnemis*).

1877. Sélys, Bull. Acad. Belg. (2) 43, pp. 124-126. — Same specimen, redescribed (*Telebasis*).

Material studied. — 1 ♂ ad., Philippine Is., Mindanao, labelled: "Mind./558/*Amphicnemis filum* Brau/Mindanao" (white, Brauer's hand?), "*Amphicnemis filum* Br. ♂" (yellow, Sélys's hand), holotype in the Brussels Museum.

Labium and mandibles yellow, as are also the genae to a level as far as the antennal sockets, the light colour extending upwards along the margin of the compound eyes as a rapidly tapered stripe, pointed at its extremity. Mandibles with a diffuse obscure spot on the middle at base. Labrum also black, finely mottled with yellowish, and with a yellow stripe along its anterior margin. Anteclypeus and postclypeus black, the former with a minute reddish lateral spot, the latter carrying three reddish dots, one on its middle at base and one on each side behind anterior border. Frons black, its vertical (anterior) surface marked with a diffuse transverse yellow spot on each side of the middle and a median point at its base. Antennal sockets and first segment blackish-brown, the second segment yellow, the flagellar segments brown. Dorsal surface of the head dark greenish brown (probably discoloured), only the shiny surface of a stripe along the eye-margin apparently deep black in colour. Postocular lobes greenish, the occipital region and rear of the head pale orange-yellow.

Pro- and synthorax unicoloured orange-rufous, sides of the thorax with three black points situated just outside the dorsal carinae, one each immediately behind the humeral and second lateral suture, and a third at the

posterior edge of the metepimerum. The mid-dorsal thoracic carina at its ventral extremity ends in a minute, raised, blunt tubercle, which is best visible in side-view.

Posterior lobe of prothorax short and rather broad, sub-erect, its margin straight in dorsal aspect, evenly rounded, the side-edges small, rounded, not protuberant.

Legs orange-buff; posterior femur with four or five short spines in outer row, six in inner row.

Wings narrow, neuration much as described for *filiformis*, but M_3 and Rs still more widely separated at their origin, M_3 arising just distal to the subnodus, Rs one-third of the distance to Px_1 further distad. Postnodals 13 in fore wing, 12 in hind wing. Three postquadrangular antenodal cells. M_2 arises at Px_7 in fore wing, at Px_6 in hind wing. Veins Cu_1 and Cu_2 relatively longer than in *filiformis*, e.g. Cu_2 in hind wing reaching the margin at the level of Px_5 or Px_6. Pterostigma relatively longer than in *filiformis*, but otherwise shaped similarly to that species.

Abdomen with the first two segments unicoloured orange-rufous, dorsum of all succeeding segments bronze-black except narrow and interrupted basal annules on 3-7, which are confluent with the pale colour of the sides; 8 black with the sides orangish, most broadly so at base, 9-10 entirely deep black.

Anal appendages shaped as in fig. 8, colour obscurely reddish, the apices of the upper branch and the whole of the lower branch of the superior pair blackish, as is also the distal portion of the inferiors.

Measurements: abd. + app. 39.6, hw. 22.8 mm (Brauer: 38 and 23 mm).

Female unknown.

This species differs from *filiformis* in being of larger size, and in having the dorsum of the first two segments of the abdomen orange-rufous, not bronze-black, whilst segm. 9 and 10 are deep black instead of reddish.

T. filamentum Needham & Gyger, also from Mindanao, seems to be more closely related to *filum* than any other described species; but, as stated already by these authors, this is a larger species, differing also in the colouring of the head and in the form of its appendages.

N.B. — The terminology of the male anal appendages as given by Needham & Gyger (1939, p. 303, sub *T. filamentum*) is incorrect. What these authors call the inferior appendage is, in actual fact, the lower branch of the cercus, in taxonomic papers better known as the appendix superior, whilst the "process of the subanal plate" is a branch of the bipartite eleventh sternite, the latter being more commonly called appendix inferior. Brauer misinterpreted these processes in the same way, only his terminology was different. (See also Lieftinck 1953, p. 250).

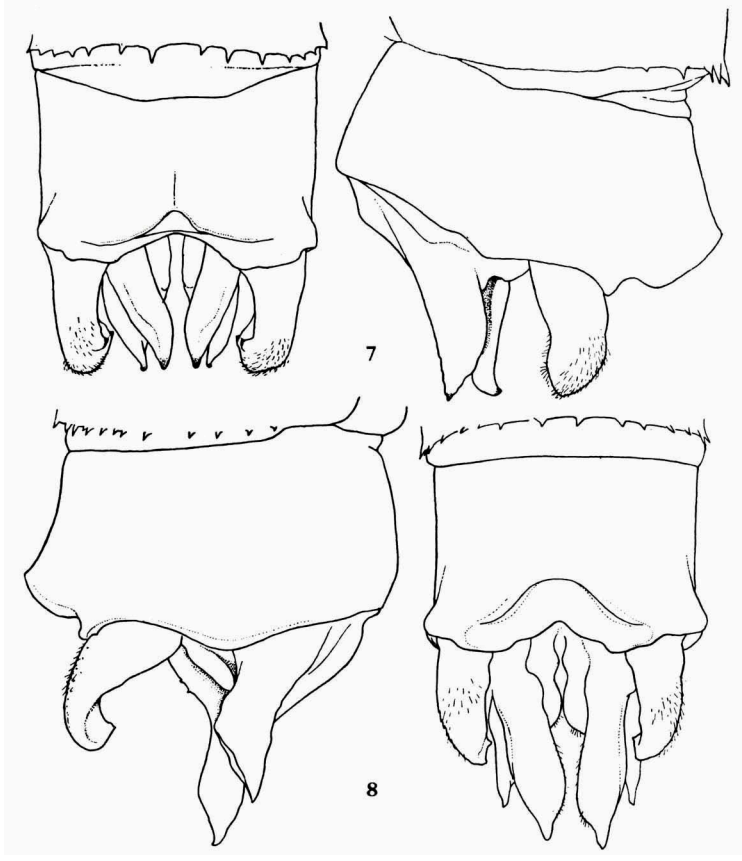


Fig. 7. *Teinobasis filiformis* (Brauer), ♂ holotype, anal appendages, dorsal and left lateral view. Fig. 8. *T. filum* (Brauer), ♂ holotype, anal appendages, right lateral and dorsal view.

Teinobasis recurva (Sélys) (figs. 9 & 9a)

1877. Sélys, Bull. Acad. Belg. (2), vol. 43, p. 114. — ♂ Mindanao (*Telebasis*).

Material studied. — 2 ♂ ad., Philippine Is., Mindanao, each labelled: "*recurva* S. ♂/ Mindanao" (yellow, Sélys's hand), holotype and paratype in the Brussels Museum. 1 ♂ ad., Philippine Is., "Kolam" (Mindanao?), 7.vi.1914, ex coll. F. F. Laidlaw, via author's collection in the Leiden Museum. 1 ♂ ad., Basilan I. (off SW Mindanao), 12.xii.1914, G. Boettcher, ex coll. F. Ris in the Senckenberg Museum. 3 ♂ ad., Basilan I., Maloong, 25.ix.1932, K. Kuwasima, ex author's coll. in the Leiden Museum.

This very distinctive species has not been recorded from the Philippine

islands since its original description was published. The "*recurva*" of Needham & Gyger (1939, pp. 305-306) evidently belongs to a different species.

The species has been compared by de Sélys with its ally *superba* (Sélys), from Celebes and the Moluccas (see Lieftinck 1935, p. 254), the two of them being segregated from other Oriental members of the genus *Teinobasis* on account of the fused stems of the veins M_3 and Rs, a character which later has been found to exist in several other species of the same group, whose members are apparently centred in the Philippine subregion, with some outliers in Celebes, the Moluccan islands, western New Guinea, and western Micronesia.

T. recurva is no doubt allied to *superba*, but when comparing these two species with each other, de Sélys (1877, pp. 114-115) seems to have overlooked the different position of the nervure Ac, which in the Philippine species *recurva* and its nearest relative *olivacea* Ris is situated only little distal to the first antenodal cross-vein, whereas in *superba* and allies this vein is placed much nearer Ax_2 than Ax_1. Also, in the *recurva* group, the fused stem of M_3 and Rs originates distinctly distal to the subnodus, these veins in *superba* arising from the subnodus, or from a point only slightly distal to it, and are occasionally not even completely fused at their origin. I hope to return to this subject when dealing with other members of the genus *Teinobasis*, which can probably, and more conveniently, be split up into a number of species groups, or subgenera. The genotype of *Teinobasis* Kirby 1890, is *superba*, as fixed by Cowley (1934, p. 253).

T. recurva has several near allies in the Philippines, most of these still awaiting their description.

The following emendations can be made to the original description of *recurva*.

Male. — Labium light orange-yellow. Mandibles black, the teeth ferruginous. Labrum glossy black, finely bordered with pale yellow anteriorly. Anteclypeus narrowly, and genae as far upwards as the level of the frontoclypeal suture, light greenish yellow; postclypeus glossy black. Frons indistinctly brownish at the latero-basal angles of the vertical surface, but otherwise entirely dull bronze-black, as is also the rest of the dorsal surface of the head, including the occipital crest, but with the exception of a pair of minute reddish streaks, placed in a V just in front of the median ocellus. Antennae black, except the second segment, which is pale yellow. Rear of the head light greenish yellow.

Prothorax bronze-black, except the latero-ventral margin and a few irregular spots on the lower half of the propleuron, which are yellowish. Posterior lobe very short and rather broad, regularly crescent-shaped, lacking

definite lateral lobes, slightly convex in dorsal view, its hind margin somewhat upturned and evenly rounded.

Synthorax dull bronze-black as far down as a little beyond the first lateral suture, the posterior limit of this colour somewhat undulated, running from a point between the wing-bases to the posterior edge of the intermediate coxae, the mesinfraepisternum bordered with yellow ventrally. Dorsum with a pair of complete, fairly broad, but not very sharply delimited and occasionally rather obscured juxtahumeral bands, which are about two-fifths as wide as each of the mesepisternal halves. Ante-alar triangles bronze-black. Metapleurae for the greater part light green, but this colour almost completely divided into two by a sharply defined bronze-green metepimeral stripe along the second suture; ventrally, this stripe commences as a crescent-shaped mark at the base of the metinfraepisternum, then continues upward as an increasingly broader stripe in the form of a narrow triangle, which is cut off obliquely before reaching the dorsal ridge of the metepimerum. Ventral surface, as well as the coxae and trochanters of the legs, pale orange-yellow.

Legs yellow; femora with a brown exterior stripe, incomplete basally, but widening out towards the apex so as to join a blackish annule at the knees. Spines brown; posterior femur with four spines in the outer row, six in the inner. Tibiae with a fine brown line exteriorly, the apical tarsal segment also obscured.

Shape and neuration of wings, including the pterostigma, practically identical to those of the nearly allied species *olivacea* Ris (1915, p. 103, fig. 24), and differing from that species only in that the nervure *Ac* is situated still more proximad, only little further distal to the level of Ax_1 than its own length; pterostigma usually somewhat darker than in *olivacea,* in aged individuals almost black and surrounded by a fine yellowish line.

Abdomen, dorsum of segm. 1-6 bronze-black, the sides greenish yellow; dorsal marks on 3-6 narrowed basally so as to leave a pair of minute transverse dorso-lateral annules; before reaching the apex of the segment these dorsal bands after a gradual constriction are expanded to form black apical rings. On segm. 7 the bronze-black band is obliterated and reduced to a long black basal ring which tapers gradually to a fine point that is directed towards a shorter black apical ring, the ground-colour of this segment thus occupying the greatest part of the surface. Segm. 8-10 throughout deep black, the intersegmental rings also obscured. Apical portion of tenth segment strongly raised dorsally in front of the declivous apex, forming a bilobed, bluntly ⌒-shaped ridge, behind which the surface of the tergite slopes down and is more or less hollowed out, carrying a knob-like median prominence and two

strong teeth on either side of it, the acute apices of the latter being directed towards each other.

Anal appendages black, shaped as in figs 9-9a. Upper branches of the superior pair globular, distinctly bilobate; lower branches considerably longer, gently upcurved. Inferior appendages much shorter than lower branches of superior pair, their distal portion curved ventrad.

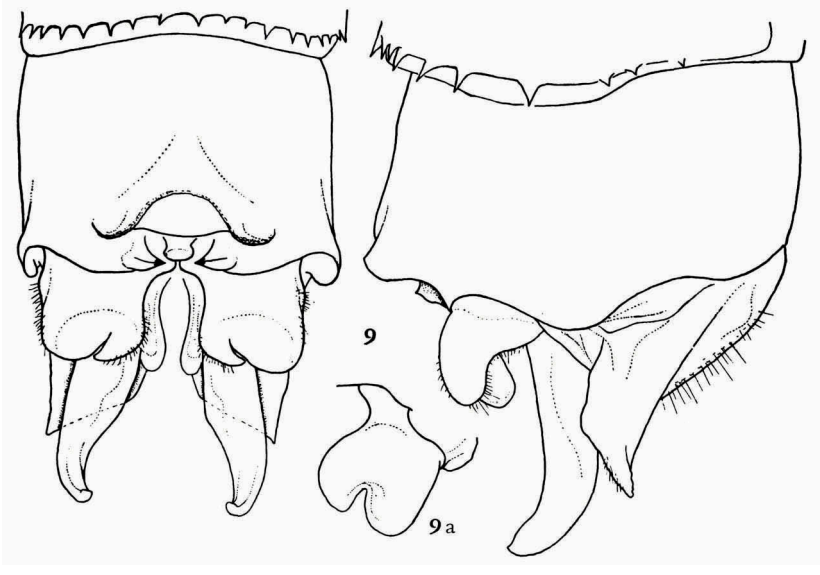


Fig. 9. *Teinobasis recurva* (Sélys), ♂ holotype, anal appendages, dorsal and right lateral view (9), and upper branch of right sup. app., viewed obliquely from within (9a).

The specimens fom Kolam and Basilan are true to the type and paratype of de Sélys, which, though not very old, are fully adult examples. The three males from Maloong (Basilan) are very matured individuals with a smoky wing-membrane; they agree with the types in every respect except in body-colour, the whole thorax being thinly overlaid with a dull grey-blue pruinescence, which gives these parts a dusty appearance, obscuring the light ground-colour, only traces of the juxta-humeral greenish bands being discernible.

Measurements: abd. + app. 40.0, hw. 23.8 mm (holotype); 37.0-40.0, 22.4-24.0 mm (paratypes).

Female unknown.

Chiefly distinguished from allied species by the combined characters of the venation, the colour-scheme of the body, and the terminal appendages of the abdomen. Among the described species, *T. recurva* seems to come nearest

olivacea Ris (1915), from which it differs in the characteristic markings of the head and thorax, and also in the excised, bilobate, upper branch of the superior appendage.

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