

NOTES ON A SMALL COLLECTION OF SIAMESE DRAGONFLIES, WITH
DESCRIPTIONS OF THREE NEW SPECIES.

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(With two text figures)

I am indebted to Dr. A. F. G. Kerr for the opportunity of studying a small collection of dragonflies made by himself at Pak Tawan, a village on the Pran River in the Province of Prachuap, Peninsular Siam, during July and August, 1931. A few specimens were also sent by the same donor, obtained by his Siamese collector Put at Pang Tawn, Chiangmai, in N. Siam during May, notes on which are included here.

LIST OF SPECIES.

- Macrogomphus kerri* sp. nov. Male only.
Trithemis aurora (Burm.). Males only.
Crocothemis servilia (Drury). One female, teneral.
Nratilla lineata (Brauer). Males only.
Neurothemis fulvia (Drury). Female only.
Onychothemis tonkinensis siamensis subsp. nov. One male.
Mnais andersoni Selys. Males only.
Mnais earnshawi Williamson. Males only.
Pseudophaea masoni (Selys). One male.
Pseudophaea ochracea (Selys). One male.
Micromerus lineatus lineatus (Burm.). Males and females.
Caconeura coerulescens sp. nov. Male and two females.
Caconeura autumnalis Fraser. One male only.
Copera marginipes (Ramb.). Males only.
Ceriagrion azureum (Selys). One male only.

Family LIBELLULIDAE.

Trithemis aurora (Burm.).

Several males of this widely distributed species are in the collection, and all are adults with the crimson venation of the wings fully developed and the abdomen of the adult fusiform in shape.

Extends from India and Ceylon throughout southern Asia to Formosa and the Philippines.

Crocothemis servilia (Drury).

A single teneral female only of this common species.

Distribution similar to the last.

Cratilla lineata (Brauer).

Three males which do not differ from type. Not a common insect but occurs in colonies.

Distributed from Assam to Borneo and New Guinea, and the Sondaic Islands. *C. calverti* Först., a near relation occurs in evergreen forests in S. W. India.

Neurothemis fulvia (Drury).

A single isochromatic female which, apart from its genitalia, cannot be distinguished from the male. Dr. Ris in his monograph of the subfamily *Libellulinae* states that only isochromatic females occur but this is not so, at least in so far as S. India is concerned. In that district the isochromatic female is rare enough to be regarded as a curiosity. The whole wing is of an uniform bright amber tint clouded with darker tints in a few restricted areas only as follows:—the subcostal space as far out as the node where the darkened area broadens out posteriorly into the three next spaces; at a few cells distal to the node is another small area occupying the spaces between the costa and radius and space posterior to the radius for a distance of about 6 or 7 cells; the triangle in the hindwing; and lastly the hinder border of hindwing proximal to the outer angle of anal loop, this latter area not extending quite to anal angle of wing but spreading forwards over the toe of the loop. There is no hyaline or colourless area at the apices of wings as in the male. The median space, the postcostal zone juxta-distad to the node and the same spaces juxta-proximad to the pterostigma are clearer than the rest of the wing.

This heterochromatic female is the typical form for South India.

Onychothemis tonkinensis siamensis subsp. nov.

Male. Abdomen 30 mm. Hindwing 35 mm.

Head: labium dark yellow, bases of lobes narrowly black; labrum olivaceous, its anterior border finely, and a moderately broad median streak black; anteclypeus yellow; postclypeus olivaceous, its lower border narrowly edged with black; frons metallic green with a small spot of yellow on each outer side; vesicle bifid, metallic blue with a small yellow spot between the apical points; occiput black in

front, yellow posteriorly and beneath; eyes bottle-green during life.

Prothorax black, anterior and posterior lobes bright citron yellow.

Thorax metallic bluish green, steely blue in parts, marked with yellow as follows:— the middorsal carina and midrib of antealar sinus finely; a narrow humeral interrupted stripe consisting of a small upper spot and two lower elongate ones; laterally a very narrow stripe on the antero-lateral suture, a small upper spot on posterior part of mesepimeron and the hinder border of metepimeron narrowly. Legs black, middle coxae with a yellow spot.

Wings hyaline, palely enfumed at apices; pterostigma black, squared at ends, covering $2\frac{1}{2}$ cells; 10 to 13 antenodal nervures and 9 postnodals in forewings, 9 antenodals and 10 postnodal in the hind; trigone in forewing entire or traversed; discoidal field with 2 or 3 rows of cells at its beginning; other details as for genus.

Abdomen black marked with yellow as follows:—segment 2 with a fine transverse line about its middle ending in a rounded spot on middorsum; segment 3 with its base and the jugal suture narrowly yellow and a middorsal triangular spot with its base against the jugal suture, finally a very large lateral spot at the level of the jugal suture; segments 4 to 9 with median subbasal spots which enlarge steadily as far as 7 becoming confluent with latero-ventral spots on segments 6 and 7; the latter spots absent on segments 8 and 9, whilst on 9 the spot is very small and applied to the base of segment; segment 10 unmarked. Paired yellow spots on the ventral aspect of all segments from 3 to 8.

Anal appendages black; superiors nearly twice the length of segment 10, cylindrical in the basal half, broadening thereafter and with a robust subapical ventral point, apex acuminate, ventral surface of basal part, including the ventral spine, with many small teeth. Inferior triangular, its apex curled rather strongly upwards. Hamules *Ia* ending in a slightly curled apex which broadens into a crochet-like hook.

Habitat.—A single male from Pak Tawan, Prachuap Province, collected by Dr. A. F. G. Kerr, 31. 7. 31.

It is quite the smallest species of the genus so far discovered. It is distinguished from *O. tonkinensis tonkinensis*, *O. tonkinensis*

testacea and *O. tonkinensis ceylanica* by its smaller size and by segments 8 and 9 with yellow markings. The nodal index is lower than any other known species of the genus. The discoidal field with only 2 rows of cells and the entire triangle in one forewing appear to be abnormalities. The apex of the anterior hamule has also specific characters.

Family GOMPHIDAE.

Macrogomphus kerri sp. nov.

Male. Abdomen with appendages 52 mm. Hindwing 43 mm.

Head: labium with middle lobe black, lateral lobes greenish yellow; labrum and whole of face black; upper surface of frons except its extreme base, a large spot on bases of mandibles and a small obscure spot on outer border of postclypeus greenish yellow; vertex and occiput black, the latter fringed with coarse black hair behind and with a small low eminence at its middle; eyes probably bottle-green during life.

Prothorax black, quite unmarked.

Thorax black marked with greenish yellow as follows:—an interrupted mesothoracic collar broadly confluent with a broad triangular spot on each side of middorsum, representing the anterior rudiments of an antehumeral stripe extending for rather less than halfway up the dorsum of thorax; laterally two broad stripes, an anterior on mesepimeron and a posterior on anterior half of metepimeron. Beneath and the whole of legs, which are very short, black.

Wings hyaline; pterostigma unbraced, 5 mm in length in hindwing, slightly shorter in the fore, covering 5 to 6 cells; all triangles entire; 2 median nervures in all wings (in the type, only 1 such nervure in one of the hindwings, 2 in all the others); anal triangle 3-celled; 4 rows of cells in anal field; nodal index—

12-17	18-13
10-12	13-11

Abdomen black marked with citron yellow as follows:—segment 1 unmarked; segment 2 with a broad basal annule which extends along the middorsum towards the apical border of segment; segment 3 with a large latero-subbasal spot situated over the jugal suture; segments 4 to 6 with similar but smaller spots; segment 7

with its basal half yellow; remaining segments unmarked.

Anal appendages; superiors dark reddish brown, about one fourth longer than segment 10, the inner branch tumid at its base, about one third shorter than main stem and with a very robust spine springing from the ventral aspect not far from its base, which is almost as large and as long as the branch itself, this spine strongly bent backwards towards the anus, the whole appendage thus shaped like a stag's antlers; inferior appendage broad at base and dividing almost at once into two long thin divaricate branches, the apices of which are turned slightly in and upwards but do not extend as far as apices of superiors.

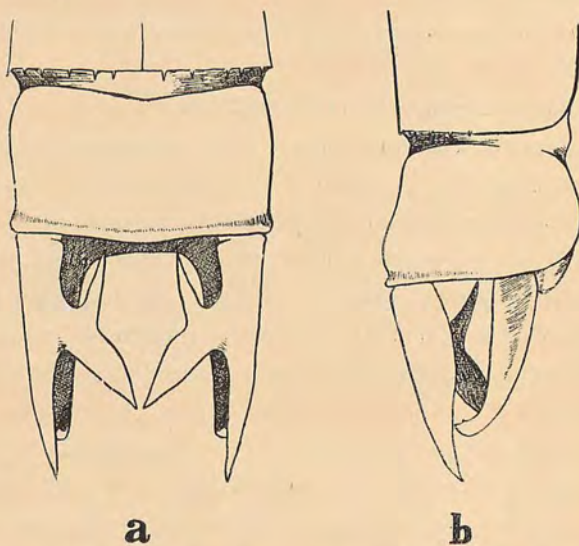


Fig. 1. a. Dorsal view of anal appendages of *Macrogomphus kerri* sp. nov.
b. The same seen from the right side.

Habitat.—Pak Tawan, Pran River, Prachuap Province, P. Siam.
A single male collected by Dr. A. F. G. Kerr, 1. 8. 31.

Distinguished from all other species of the genus by its remarkably branched superior anal appendages, the inner branch of which being itself again branched.

Mnais earnshawi Williamson.

A single male from Pang Tawn, Chiangmai, N. Siam, 2. 5. 31.
Abdomen 45 mm. Hindwing 35 mm.

The dorsum of thorax is densely pruinose white, as also the

ventral surface of prothorax and thorax and the dorsum of the 3 terminal abdominal segments. The pterostigma is deep mahoghany red, slightly more than $1\frac{1}{2}$ mm. in length in the forewings, about 1 mm. long in the hind, its outer side slightly oblique, inner very much so; only a single row of cells lies distal to it. The wings are a rich amber tint, being deeper coloured in the middle three-fifths and on the anterior half of the wings; venation red.

The size of this specimen is decidedly greater than those mentioned by E. B. Williamson from Burma. (Proc. U. S. Nat. Mus. Vol. XXVIII, pp. 184, 185 (1904).

***Mnais andersoni* Selys.**

Two adult males and one teneral, Pang Tawn, Chiangmai, N. Siam, 2. 5. 31.

Abdomen 42 mm, Hindwing 32 mm.

The dorsum of thorax shows no pruinescence in any of the specimens, although the ventrum of the two adults is densely white with this, as also the dorsum of the 3 terminal abdominal segments. It is especially to be noted that even the teneral specimen shares in the latter character so that pruinescence evidently appears very early, and the fact that none is seen on the dorsum of thorax is strong presumptive evidence that this never develops even in adults in *M. andersoni*.

The pterostigma is variable; in one specimen it is exactly similar to that of *M. earnshawii* described above, whilst in another it is distinctly shorter and broader, the outer side is either perpendicular or angulated at its middle from which point springs a nervure to form a double cell after the pterostigma; the proximal side is very oblique, the posterior rounded. In the teneral male, the pterostigma conforms to the latter but is variable in size, that of one hindwing being half as long again as in the other hindwing. All three specimens have occasional double cells after the pterostigma but never any definite row.

The wings are of a clear greenish olive tint throughout except in the teneral male where they are of a pale amber tint throughout; the pterostigma in this specimen is of a pale pinky mauve; venation is black in the adults, orange or yellow in the teneral. This latter

might well belong to either *M. earnshawi* or *M. andersoni* but it is to be noted that in *Vestalis smaragdina* Selys, tenerals have the same tinting of the wings and coloured venation, which later changes in the adult stage to greenish olivaceous and to black venation. Moreover it is to be noted that there is no pruinescence on the dorsum of thorax.

In *Mnais icteroptera* Fraser, which is very closely related to *M. earnshawi*, the size is still greater than the male from Pang Tawan, and the pterostigma is longer and narrower. In addition, the vertex of the head is pruinose white and the wings are more uniformly tinted throughout from base to apex.

In specimens from Dran, Annam (Journ. Nat. Hist. Soc. Siam, Vol. III, No. 4, 1919), the size equals those from Burma described by Williamson, and the pterostigma is of a remarkable shape, resembling that of *Protosticta*, the costal side being only about half the length of the posterior, the proximal side remarkably oblique, the distal perpendicular.

Whether we are dealing with more varieties or races of a single species or with two or more species, is uncertain and must remain so until more material has been collected. At present, with the evidence at our disposal, it would appear that there are at least two species from S. Asia, with varieties or races of one of them.

M. andersoni has the venation black in the adult, the wing membrane a pale greenish olivaceous, the dorsum of the thorax free from white pruinescence. *M. earnshawi* on the other hand, has the venation reddish or orange, the wing membrane a rich amber tint and the dorsum of thorax densely white from pruinescence.

In both species the terminal segments of the abdomen are pruinose white on the dorsum. The colour of the 2nd segment of the antennae is so similar as to offer no reliable points for differentiation.

***Caconeura coerulescens* sp. nov.**

One male and two females, Pak Tawan, Prachuap Province, P. Siam, 2. 8. 31.

Male. Abdomen 29 mm. Hindwing 18 mm.

Head: labium blackish brown; labrum, bases of mandibles, genae and anteclypeus azure blue; postclypeus and rest of head velvety black

the vertex traversed by a moderately broad azure blue stripe between the ocellar space and antennae, but indented by the former in a semicircular manner. Beneath and behind head, as well as eyes black.

Prothorax velvety black marked with turquoise blue, a large spot on each side of the middle lobe and a smaller on the outer end of posterior lobe.

Thorax velvety black marked with turquoise blue as follows:— a narrow antehumeral stripe continuous with the blue on prothorax, a second equally narrow stripe on the hinder part of mesepimeron and a third on the hinder border of metepimeron. Legs black.

Wings hyaline; pterostigma black finely framed in pale brown and thick black nervures; 16 postnodal nervures in forewings, 14 in the hind; anal bridge (*Ab*) completely absent in all wings.

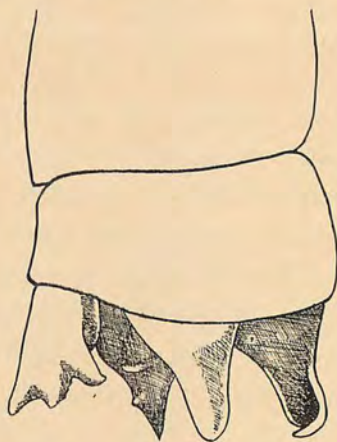


Fig. 2. Anal appendages of *Caconeura coerulescens* sp. nov., lateral ventral aspect.

Abdomen black marked with turquoise blue as follows:— segment 2 with a narrow stripe on each side bordering the ventrum, and a middorsal mark shaped like the head of a spear, the haft of same not quite extending to apical border of segment; segments 3 to 5 with a basal annule continuous with a fine middorsal stripe which extends to the end of segments; segment 6 similar, but the middorsal stripe ending at about the middle of segment; segment 7 unmarked; segments 8 and 9 with a triangular dorsal apical marking to be trilobed on the latter; segment 10 with a dorsal spot.

Anal appendages; superiors black, about as long as segment 10, bifid at apex as seen in profile and with a robust inner ventral spine; inferior appendages of the same length, yellowish tipped with black, broad at base, then narrowed, cylindrical and directed straight back, apex curled inward and ending in a fine point.

Female. Abdomen 31 mm. Hindwing 19 mm.

A more robust insect with stouter abdomen; markings very similar to those of male but yellow instead of blue; differs as follows:— prothorax with the anterior lobe finely bordered with yellow, and the usual hooks of posterior lobe of the same colour.

Legs black, femora yellow on the flexor surface, tibiae and tarsi on the extensor surface.

Wings with the diamond-shaped pterostigma slightly paler and more broadly framed in yellow; 15 postnodal nervures in forewings, 13 in the hind; *Ab* entirely absent.

Abdomen black marked with yellow or greenish yellow as follows:— segment 1 with a large hook-shaped greenish yellow spot on each side; segment 2 with a broad lateral stripe and the middorsal carina finely yellow; segments 3 to 6 with the middorsal carina finely yellow, a narrow basal blue annule and a broad stripe on each side, interrupted at the apical end of each segment; segment 7 with no markings; segment 8 with a fine linear spot on middorsum and a stripe on the lower part of sides bluish; segment 9 with a dorsal blue stripe broadening at the apical end of segment, whilst segment 10 has the dorsum blue.

Anal appendages short, conical, blue. Vulvar scales black bordered below with pale brown, extending to end of abdomen.

Habitat.—Pak Tawan, Prachuap Province, P. Siam, 2. 8. 31. This new species bears a remarkably close resemblance to *D. campioni*, but the complete anal bridge in the latter at once separates them; it is also closely related to *C. theebawi* but the latter has bright yellow anal appendages without an apical notch and the dorsal markings of abdomen differ. It belongs to the section *C. dorsalis*, that is, those *Caconeuras* without any vestige of *Ab*.

Caconeura autumnalis Fraser.

A single male from the same locality as the last. Does not differ in any way from type.

The species appears to be widely distributed throughout S. Asia. The type comes from Assam and the species is common throughout parts of Upper and Lower Burma. The author also possesses specimens from Annam, Tonkin and Java.

Copera marginipes (Ramb.).

Two males from the same locality as the last. Not differing in any way from type.

A widely distributed species throughout S. Asia.

Ceriagrion azureum (Selys).

This species has been redescribed by Dr F. Laidlaw under the name of *Ceriagrion coeruleum*. It is not quite typical of the genus in some respects and it may be that this led Selys to place it in genus *Pseudagrion*. Although I have not seen the type of the latter, I have no doubt as to the synonymy, the differences in colour and markings being due to artifacts from dryage and decomposition. Such artifacts are visible in some specimens which I have received from Burma.

The species is distributed from Assam to Annam and Tonkin.

The type of *C. coeruleum* comes from Darjeeling district, Bengal, whilst that of *C. azureum* is from Burma.