

**A NEW SPECIES OF ETHIOPIAN *ELATTONEURA* COWLEY, 1935  
FROM THE CENTRAL AFRICAN REPUBLIC, AND SOME  
NOTES ON THE GENUS (ZYGOPTERA: *PROTONEURIDAE*)**

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*E. centrafricana* sp. n. (♂ holotype, ♀ allotype, ♂, ♀ paratypes: Centre d'Elevage, Bouar, Central African Republic) is described and illustrated, and descriptions and illustrations are given of the females of *E. acuta* Kimmins and *E. balli* Kimmins. Some general remarks on the Ethiopian *Elattoneura* are added and a key is provided for the adults of both sexes of the regional species.

INTRODUCTION

PINHEY's Descriptive Catalogue of 1962 lists eleven Ethiopian species of *Elattoneura*. Three of these, *glauca* (Selys, 1860), *frenulata* (Hagen, 1860), and *pruinosa* (Selys, 1886), were described in the last century. The status of *cellularis* (Gruenberg, 1902) is doubtful. PINHEY (1963) described the type, a teneral male missing the tip of the abdomen, and concluded: "It is evident that this species does not represent *Prodasineura vittata* (Selys), and it appears to be nearer *Isomecognemis cyanura* (Forster 1909)".

In 1938 KIMMINS made four new species, *nigra*, *acuta*, *dorsalis* and *balli*, the last named being close to *pruinosa*. He also described the true female of *pruinosa*, figuring its prothorax, and mentioned that it did not fit Selys' original description. He tentatively referred to *balli* a female from Sierra Leone, conforming reasonably to Selys' description of *pruinosa*.

*E. aethiopia* FRASER, 1941 was made a synonym of *pruinosa* by PINHEY (1971), and two paratype males in the British Museum certainly appear to be this species. FRASER (1954) also described *henrardi* and *vrijdaghi*, both of a light brick-red colouration, unlike all the other Ethiopian species, which are

black or brown, with pale markings, and, in the adult male, blue pruinosity.

Since 1962, two more names have been added to the list. COMPTE SART (1964) described a West African species, *josemorai*, which PINHEY (1971) suggested may be only a large *pruinosa*. Compte Sart's figure of the male appendages is from an unusual angle, and does not allow any certain conclusions from the description alone. Finally, Pinhey (1974) made a new species, *tropicalis*, for East African specimens previously placed under *frenulata*, but differing from the true *frenulata* of the Cape.

In December 1973 I collected some examples of a species with exceptionally long inferiors in the male, near Bouar, Central African Republic (6°ON, 15°40E). I showed these to Mr R.M. Gambles, of Reading, U.K., for his advice, and he recommended caution in placing the males and females together, owing to the closeness of the female prothorax to that of Nigerian specimens, taken by himself in tandem with males confirmed by Kimmins to be *balli*. The true *balli* female is not the same as the Sierra Leone female tentatively referred to this species by KIMMINS (1938).

In March 1975, however, I was lucky enough to take a better series of the new species from Bouar, including a pair in tandem. The only other *Elattoneura* species I have found at Bouar are *nigra* and *acuta*. The evidence now seems strong enough to accept that the males and females do indeed belong together, and they are described here as *E. centrafricana* sp. nov. It is also appropriate to describe a Nigerian specimen of the female of *balli*, kindly given to me by Mr Gambles. In addition, I took at Bouar a pair of *acuta* in tandem, and it is convenient to add a description of the female.

## DESCRIPTIONS

### *ELATTONEURA CENTRAFRICANA* SPEC. NOV.

Figures 1 a, 2 a, g-h, 3 b

**Male** (holotype). Head: All dull black, save for a faint yellow stripe on each side running from lateral ocellus nearly to base of antenna. A few sparse hairs on labrum, postclypeus, and frons. Thorax: Prothorax pruinose blue. Synthorax black, with blue pruinosity as follows: a short triangular antehumeral stripe, extending only a third of the way up the thorax, tapering above, below making a right angle laterally to become confluent with ventral pruinosity over coxae. Patchy bands of pruinosity across metepisternum and metepimeron also confluent with pruinosity of coxae and ventral surface of thorax. Legs black. Wings:  $R_3$  arises at Px 7 in both forewings. Px  $\frac{15/15}{14/13}$ . Prophallus with terminal segment bifid, divided into two lobes by deep rounded excavation, each lobe approximately square, but with distal free corner tapering, proximal one rounded. Abdomen: Black, segments I, VIII, IX pruinose dorsally. Appendages

black, superiors 'trigger-shaped' to use Fraser's term, upper and lower branches of equal length, the upper ones slightly diverging, the lower ones slender at their origin, with tiny apical fork. Inferiors produced to end at same level as upper branch of superiors. Inferiors first converge then diverge. Abdomen without appendages 29 mm, Hw 20.5 mm.

Taken at stream on the Bokaranga road, 10 km from Centre d'Elevage, Bouar, Central African Republic, on 28.3.75, as were all the following specimens.

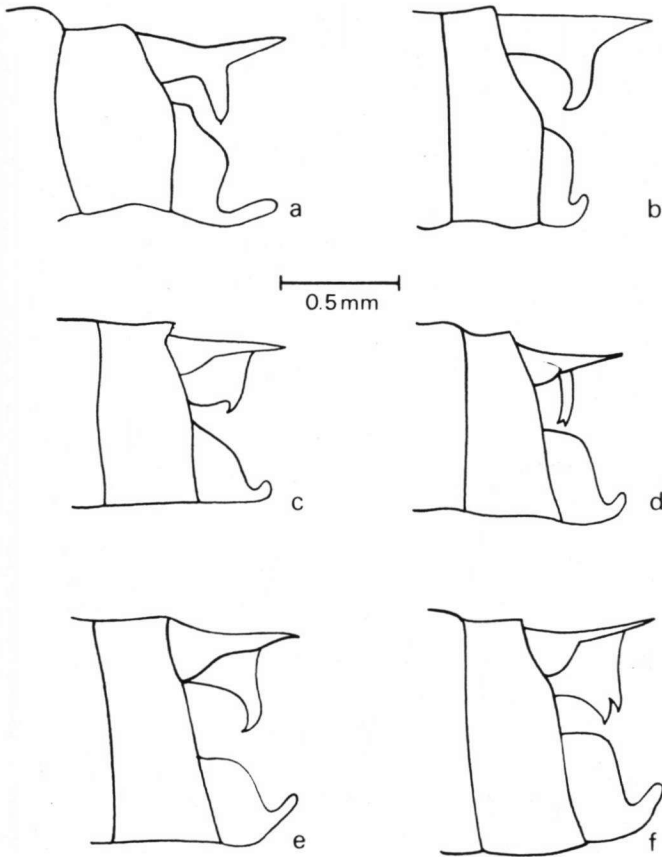


Fig. 1. Male appendages of Ethiopian *Elattonneura* species: (a) *centrafricana*, holotype; – (b) *balli*, Otu, West Cameroon, 17.10.63; – (c) *acuta*, Bouar, Central African Republic, 28.3.75; – (d) *nigra*, Korhogo, Ivory Coast, 19.4.69; – (e) *tropicalis*, Msamfu, Zambia, 18.3.69; – (f) *glauca*, Chongwe, Zambia, 20.3.60.

Male (paratype). As for holotype male, except: antehumeral stripe less tapered above. Px  $\frac{16}{16}$ . R<sub>3</sub> in forewing arises at Px 8.  
15/14

Abdomen 29.5 mm, Hw 20 mm.

Taken in tandem with first paratype female.

Male (paratype). Immature, almost unpruinosed, much paler insect than holotype. Head: Black with yellow markings. Postclypeus pale yellow, yellow line reaching laterally to eye. Three small black spots on postclypeus, one in the centre and one on either side, triangular, their bases confluent with black of anteclypeus. A yellow stripe from lateral ocellus to eye, medially narrow and pointing forwards towards antenna, finely interrupted, then broader and angled sideways to eye. Thorax: Black, with pale yellow markings. Fine antehumeral stripe, reaching to top of thorax, wider below but not extending laterally, running forwards along side of prothorax, leaving its centre dark. Wide stripes on metepisternum, and on ventral half of metepimeron. Ventral surface pale. Wings: R<sub>3</sub> arises at Px 7 in forewings. Px  $\frac{16}{15}$ . Abdomen: I with distal pale annulus, widened below. II black, with fine pale line on dorsal keel. III black, basal pair of flat yellow spots, pale dorsal keel. IV-VII black. VIII and IX pruinose. X and appendages black.

Abdomen 29.5 mm, Hw 20 mm.

**F e m a l e** (allotype). Head: Black, with yellow markings. Postclypeus pale as in immature male, yellow on postclypeus itself faded, but colour bright from it to eye. A transverse yellow stripe at level of ocelli, v shaped as it passes between anterior and posterior two ocelli, the apex of the v pointing caudally, then, as in immature male, running towards antenna, finely interrupted, then angled sideways to eye; but lateral to interruption pale blue. Thorax: Prothorax boat shaped in sideview, both anterior and posterior lobes raised. Anterior lobe essentially a transverse ridge, from side running at first directly into the centre, then making a right angled turn caudally followed by a second transversely to arrive at the midline, where there is a deep v shaped excavation. A small shelf on posterolateral aspect of ridge on each side. Anterior to ridge a little diagonal tongue on each side, flattened in transverse plane as is the ridge itself, attached below laterally at the commencement of the ridge, and free in the centre. Posterior lobe with a single flat fingerlike process on each side, reaching across to almost touch its fellow in the centre. Fine antehumeral stripe as in immature male, running forward onto side of prothorax, but central lobe of prothorax with small pruinosed pearly white triangle, apex forwards. Lower half of antehumeral stripe with pearly white pruinosity, upper half yellow. Pale stripes, with a trace of pruinosity above, on metepisternum and metepimeron, as in immature male. Wings: R<sub>3</sub> arises at Px 7 in forewings. Px  $\frac{14}{14}$ . Abdomen: Dark brown to  
13/13

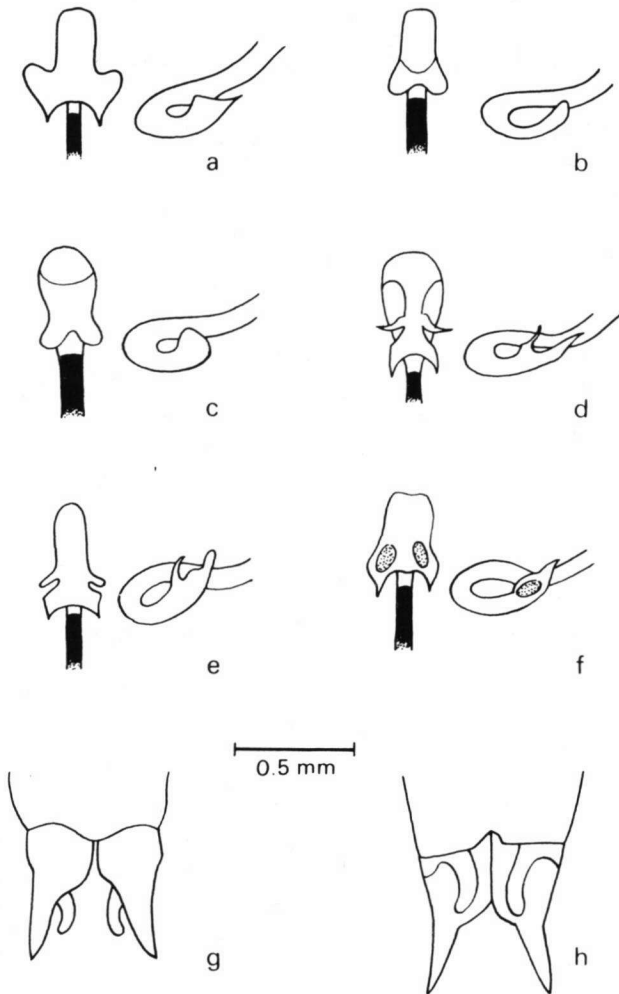


Fig. 2. Penes (ventral and side view) of Ethiopian *Elattonneura* species: (a) *centrafricana*, holotype; - (b) *nigra*, Korhogo, Ivory Coast, 19.4.69; - (c) *balli*, Otu, West Cameroon, 17.10.63; - (d) *acuta*, Bouar, Central African Republic, 1.4.73; - (e) *glauca*, Muanga, Mozambique, 25.8.71; - (f) *tropicalis*, Msamfu, Zambia, 18.3.69; - (g) *centrafricana*, paratype, appendages from above; - (h) the same, from below.

black, with pale yellowish white markings: paler ventrally; distal annulus on I, widening ventrally; long rectangle on side of II, distally narrowed, kinked, then dilated again, giving a fanciful resemblance to a horse's fetlock and hoof. Fine basal annulus on III, reduced to a pair of spots on IV, V. Narrow streak on

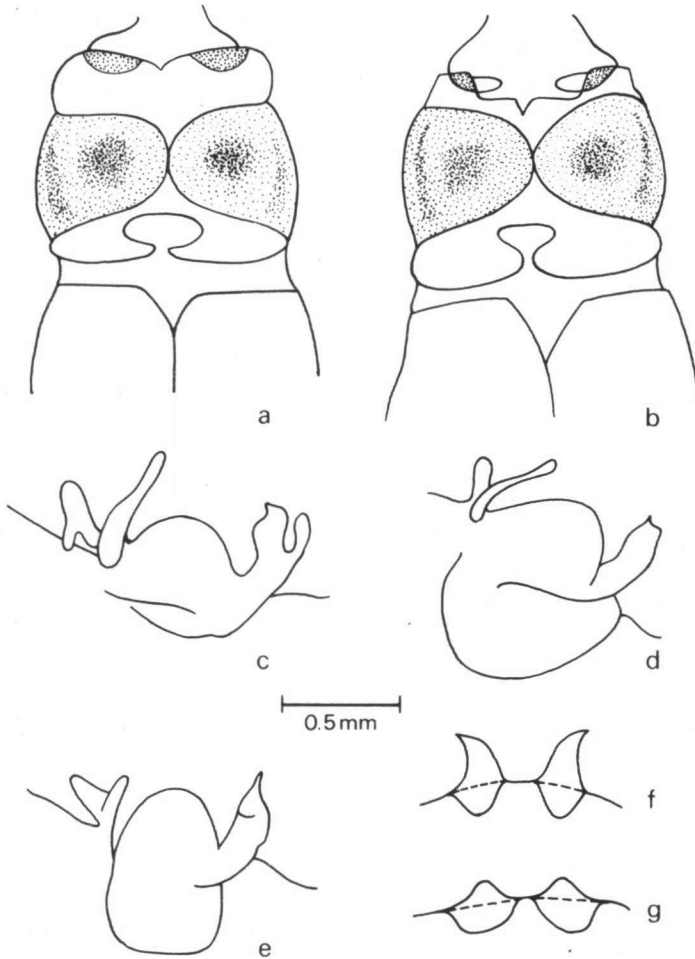


Fig. 3. Female prothoraces of Ethiopian *Elatoneura* species: (a) *halli*, specimen described, prothorax from above; - (b) *centrafricana*, allotype, prothorax from above; - (c) *glauca*, Nqutu, Natal. 12.1.61, hindlobe from right; - (d) *acuta*, specimen described, hindlobe from right; - (e) *nigra*, Korhogo, Ivory Coast, 21.4.70, hindlobe from right; - (f) *acuta*, specimen described, hindlobe processes from above; - (g) *nigra*, Korhogo, Ivory Coast, 21.4.70, hindlobe processes from above.

dorsal keel of III, IV. Rest of abdomen, cerci, and ovipositor black. Tip of abdomen with debris, perhaps from egg-laying.

Abdomen 31.5 mm, Hw 21 mm.

Female (paratype). Younger insect than allotype, yellow markings brighter, without pruinosity. Head: Yellow on postclypeus bright, three black spots clearly delineated as in immature male, centre spot prolonged back as a fine line to touch frons and thus divide pale area on postclypeus. Thorax: Prothoracic and synthoracic markings as in allotype, but without pruinosity. Wings:  $R_3$  arises at Px 7 in forewings. Px  $\frac{16}{16}$ . Abdomen: Basal yellow spots continuing

to VI. Pale longitudinal bar laterally on VIII. Pale blue markings above on VIII-X: triangle on VIII, its base caudal, its apex reaching nearly to border of VII. On IX a similar triangle, but apex cut off by shortness of segment. X all dorsal surface. Cerci and ovipositor black.

Abdomen 31 mm, Hw 21 mm.

Taken in tandem with first paratype male.

Female (paratype). Mature, very like allotype. Head: Yellow markings on postclypeus and vertex faint. Thorax: Centre lobe of prothorax dark. Just a trace of pruinosity on pale markings of pro- and synthorax. Wings:  $R_3$  arises at Px 7 in left forewing, at Px 8 in right. Px  $\frac{15}{15}$ . Abdomen: Pale distal annulus

on I pruinose. Basal spots to VI but faint. Ventrolateral bar on VIII present. VIII-X black above.

Abdomen 31.5 mm, Hw 21 mm.

**R e m a r k s.** Both males and females appear to have marked colour differences at different ages. Older specimens have fewer pale markings, and more pruinosity. The male's pruinosity is dark blue, the female's pearly white. These colour changes make it worthwhile describing several specimens.

The male is chiefly distinguishable by the long inferior appendages, and by the form of the prophallus. The superiors are most like those of *nigra*, the lower branch having a narrow origin from the upper. The female has a distinctive prothorax, most like *balli*, to which it is very close. The hindlobe processes are wider than in *balli*, but only slightly so, and the chief difference between the two species lies in the anterior lobe. That of *balli* is a simple transverse ridge, without the right angled turns described for *centrafricana*, and the central v shaped excavation is much smaller in *balli*.

At the type locality, a small shady stream a few inches deep and a metre or so wide, with dense trees and bushes extending 10 metres or so either side of the water, the new species was found chiefly along the junction of the dense vegetation and the open bush, rather than by the stream itself. When disturbed from the vegetation, individuals usually hovered in the air, making short darts forward parallel to the ground.

The area around Bouar is covered by a network of streams, many of which,

especially near the springs from which they arise, are shallow and shady like the type locality. Perhaps at the right season the species might be ubiquitous around Bouar at such places. Or it may be genuinely fastidious in its choice of habitat. I have taken it at three separate places, but have visited many apparently suitable streams at which I failed to find it.

*ELATTONEURA BALLI* KIMMINS, 1938 (FEMALE)

Figures 1 b, 2 c, 3 a

Head: Mat black, except for yellow stripe between eyes, crossing postclypeus, leaving three small black spots on anterior border of postclypeus. A suggestion of a yellow spot just lateral to lateral ocellus. Thorax: Prothorax black, with two lateral yellow lines, extensions of antehumeral stripes. Hindlobe with single semi-erect processes, narrow and fingerlike, flattened dorsoventrally. Anterior lobe a simple transverse ridge, with tiny central v shaped excavation. On posterior aspect of ridge a small swelling halfway up, forming a shelf. Synthorax black, with yellow markings: an antehumeral stripe, broad below, tapering to a point above, not quite reaching to top of thorax. Broad stripe on metepisternum, with a little pearly white pruinosity above, and another on ventral half of metepimeron. Legs black. Wings:  $R_3$  arises at  $Px$  8 in forewings.  $Px$   $\frac{17/17}{15/15}$ .

Abdomen: Black, with yellow markings. Dorsally, fine streak on dorsal keel of II, interrupted basal annulus on III, reduced to a pair of small spots on IV, V. Streak on dorsal keel of VIII, IX, dilated posteriorly on IX. Dorsal spot on X. Laterally, irregular triangular spot on I, rectangle on II, a little narrowed and kinked caudally, but not dilated beyond kink. Vague pale streaks on III-VII, more pronounced narrow rectangles on VIII, IX. Cerci, ovipositor black.

Abdomen 33.5 mm, Hw 20.5 mm.

Taken 17.10.63, at a river beyond Otu, 13.5 km along road to Calabar running south west from its junction with the Mamfe-Ikom road, West Cameroon, by Mr R.M. Gambles, in tandem with a male which is undoubtedly *balli*, by appendages and prothallus.

*ELATTONEURA ACUTA* KIMMINS, 1938 (FEMALE)

Figures 1 c, 2 d, 3 d, f

Rather discoloured insect. Head: Labium and labrum pale, discoloured. Elongated black spot on upper border of labrum. Anteclypeus dark. Pale stripe across postclypeus, from eye to eye, also covering lower border of frons. Rest of head dull black, save for a wide transverse stripe from eye to eye, posteriorly taking in anterior ocellus but skirting posterior ones, anteriorly its border at level of antenna, and also a fine line along posterior border of head. A few hairs on



frons. Thorax: Anterior lobe of prothorax an elevated ridge, with a deep central excavation. Hindlobe with doubled processes on each side, flattened dorso-ventrally; anterior process much longer than posterior, reaching forward over central lobe, triangular when seen from above, slightly outcurved. Posterior process short, wide, and straight. Synthorax black with pale markings: two antehumerals on each side, a very fine one close to the midline, and a wider one more laterally, tapering above but clubbed at the very top. On mesepimeron an irregular elongated v shaped mark, the apex above, the anterior arm produced finely downwards and then widening into a distinct spot. Wide stripes on metepisternum and lower half of metepimeron. Wings:  $R_3$  arises at Px 5 in right forewing, at Px 6 in left. Px  $\frac{13}{11}$ . Abdomen: Black with pale markings. Fine streak on dorsal keel of II-VI, and VIII-IX, wider on IX. Dorsal spot on X. Distal annulus on I. Vaguely pale laterally and ventrally on II-VIII, pale streak clearly defined on VIII-IX between dorsal black and ovipositor. Interrupted basal annulus on III-VI.

Abdomen 25.5 mm, Hw 18.5 mm.

Taken 1.4.73 at Wen stream, 25 km Bangui road, Bouar, Central African Republic, in tandem with a male agreeing with *acuta* Kimmins by appendages and prophallus.

**R e m a r k s.** PINHEY (1964) described both sexes of a species presumed to be *acuta*. His description of the female does not fit well with my specimen, and thus it seems valuable to put this latter on record. A Nigerian specimen collected in tandem by Gambles is almost identical in pattern. Its anterior processes are slightly more erect, although of the same form.

#### SPECIMENS

The holotype, allotype, and in tandem paratypes of *E. centrafricana* will be presented to the British Museum (Natural History), as will be the females of *E. halli* and *E. acuta*. The two other paratypes of *E. centrafricana* will be retained in the author's collection.

#### NOTES ON THE GENUS, WITH A KEY TO THE ETHIOPIAN SPECIES

The Ethiopian *Elattoncura* form a compact group. Fraser's two red species are distinct by the relative lack of black on the thorax, manifested by the width of the antehumeral stripes, reaching to the humeral suture, and by the wide confluence of the pale areas on mesepimeron and metepisternum. *Dorsalis* has wide stripes, but these are citron yellow. The remaining species are black in the adult male, usually with blue pruinosity. Identification entails firstly examination of the appendages, and then, if necessary, of the prophallus. The superiors are trigger shaped with upper and lower branches. The lower branch may have a

narrow origin from the upper, most marked in *nigra*, or a wide one, when it is flattened, as most typically in *glauca*.

In the female, markings are not always a reliable guide, owing to a general darkening with age. There may be a single antehumeral or a fine inner and wide outer one. The prothoracic hindlobe processes are single on each side in *balli*, *centrafricana*, and *henrardi*, doubled on each side in the remaining species. In most of these both processes are flattened dorsoventrally to form a boat shape on either side. The females of *vrijdaghi* and of *dorsalis* are apparently unknown.

#### KEY TO ETHIOPIAN *ELATONEURA*

##### Males

- |   |   |                   |
|---|---|-------------------|
| 1 | General colouration brick red, pale antehumerals wide .....   | 2                 |
| - | General colouration black; if antehumerals present, narrow or citron yellow ....  | 3                 |
| 2 | Head dark behind vertex. Upper branch of superior fine, tapering to a point ..  | <i>vrijdaghi</i>  |
| - | Transverse pale stripe behind vertex. Upper branch of superior blunt ended ...  | <i>henrardi</i>   |
| 3 | Lower branch of superior markedly flattened from side to side, taking origin from almost full length of upper .....       | 4                 |
| - | Lower branch of superior roughly cylindrical in cross-section, taking origin from no more than half length of upper ..... | 7                 |
| 4 | Lower branch of superior doubled .....  | <i>glauca</i>     |
| - | Lower branch of superior single .....   | 5                 |
| 5 | Lower branch of superior comes sharply to a tiny point apically .....   | <i>acuta</i>      |
| - | Lower branch of superior tapers smoothly to apex .....  | 6                 |
| 6 | Prophallus with two ovoid ventral swellings. Thorax with pruinosity .....   | <i>tropicalis</i> |
| - | Prophallus without swellings. Thorax unpruinose .....   | <i>frenulata</i>  |
| 7 | Striking citron yellow half antehumeral and two wide full length stripes on side of thorax .....                          | <i>dorsalis</i>   |
| - | Thorax not strongly marked with yellow .....  | 8                 |
| 8 | $R_3$ arises at Px 4 or 5 in forewing. Lower branch of superior narrow at origin, slender all way to apex .....           | <i>nigra</i>      |
| - | $R_3$ arises at Px 7 or 8 in forewing. Lower branch of superior moderately narrow at origin, tapering to apex .....       | 9                 |

- 9 Inferior very long, apex directed backwards ..... *centrafricana*
- Inferior short, curled upwards at apex ..... 10
- 10 Lower branch of superior forked, when seen from behind ..... *balli*
- Lower branch of superior simple ..... *pruinosa*

## Females

- 1 General colouration brick red, antehumerals wide ..... 2
- General colouration black, with pale markings. Antehumerals narrow ..... 3
- 2 Prothorax with two short unguate processes directed forwards over dorsum of middle lobe ..... *henrardi*
- Prothorax otherwise ..... *vrijdaghi*
- 3 Processes of posterior lobe single ..... 4
- Processes of posterior lobe doubled ..... 5
- 4 Anterior lobe of prothorax with deep central excavation ..... *centrafricana*
- Anterior lobe with tiny excavation only ..... *balli*
- 5 Posterior process of posterior lobe of prothorax longer than anterior one ..... 6
- Processes of equal length, or anterior longer than posterior ..... 7
- 6 Processes flattened from side to side, posterior ones longer than anterior and curved forwards over them ..... *pruinosa*
- Anterior processes short, no taller than wide, processes flattened dorsoventrally to form boat shape in dorsal view ..... *nigra*
- 7 Anterior and posterior processes of approximately equal length ..... 8
- Anterior processes much longer than posterior ..... 9
- 8 Processes tall and slender, height more than twice width ..... *frenulata*
- Processes relatively short and wide, height twice width ..... *tropicalis*
- 9 Inverted pale v on mesepimeron. Anterior processes curved outwards, posterior ones parallel ..... *acuta*
- No v on mesepimeron. Posterior processes inturned, anterior ones parallel ..... *glauca*

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