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Lestes uncifer was described by Dr. Karsch in 1899 from specimens collected at Bodei on the South African coast; his description was good, but he failed to mention the character of the inferior anal appendages. The species was subsequently described by Dr. F. Ris, who gave figures of the male anal appendages from specimens obtained from Lorenzo Marques and from Kasenga in the Belgian Congo. These figures demonstrated well the characteristic upturned spine of the inferior appendages. The species was also shown to be widely distributed although apparently rare.

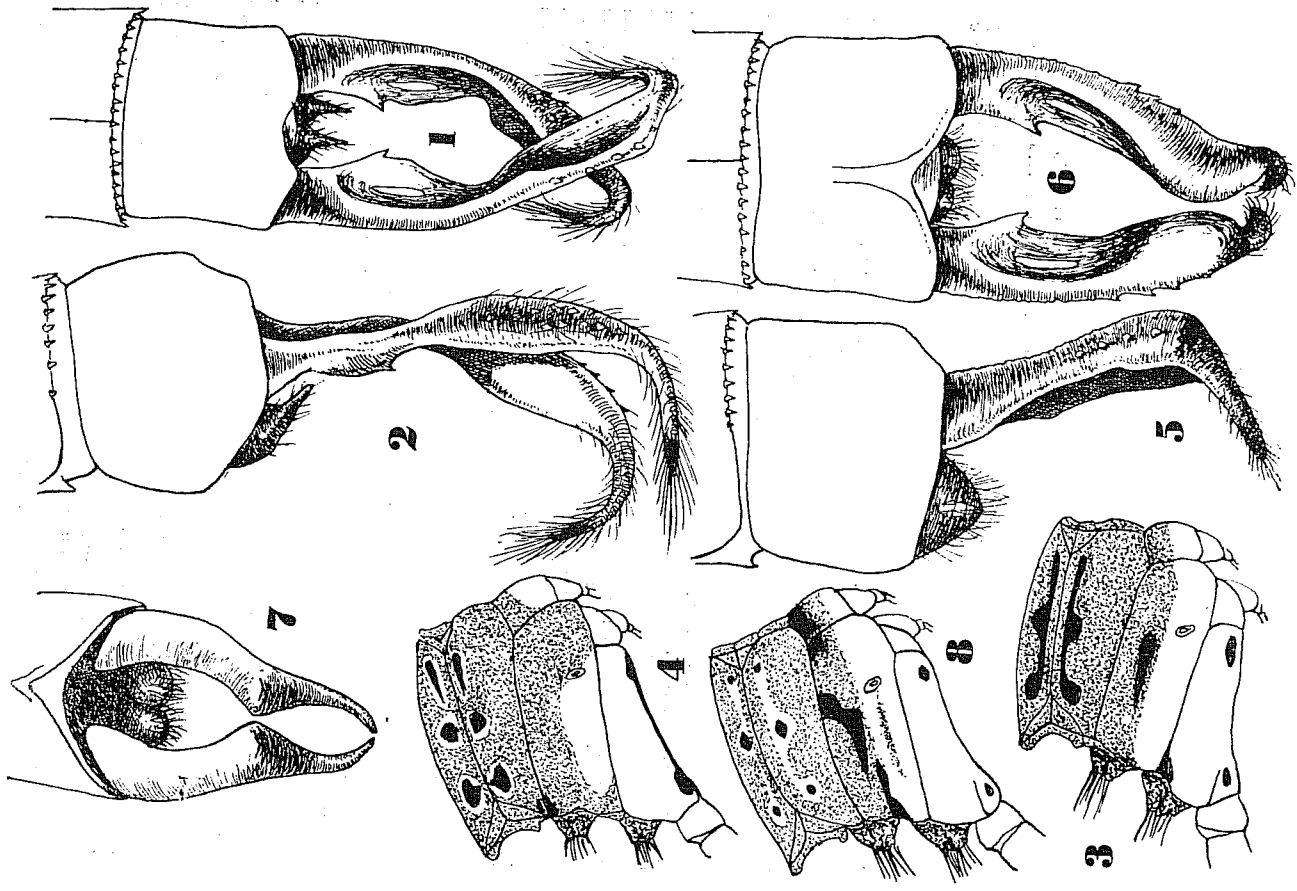
L. pinheyi Fraser has never been fully described although its salient characters were given in a comparison with those of *L. uncifer*, in a paper on the Odonata of the Upemba National Park, published in 1955. In this work, the anal appendages of both species were figured and showed no spine on the inferiors of *pinheyi*, a feature which serves to separate the two species at a glance.

The two species bear a strong superficial resemblance owing to the similarity of the xerophilous ground-colour and dark metallic markings, and also the curious specialisation of the anal appendages; both possess the metallic oak-leaf design of the *praemorsa* complex on the dorsum of thorax and are obviously derived from that source. The oak-leaf design is but rarely developed in full and is often a mere chain of spots. It is better developed in *uncifer* than in *pinheyi* and in the female more fully than in the male. With advancing age, melanism develops, the design becomes lost, and the appearance of the insects is no longer characteristic.

The full description of *Lestes pinheyi* follows:

Lestes pinheyi Fraser (Pl. VII, figs. 5-8)

Male.—Abdomen 31-35 mm.; hindwing 20-23 mm.
Head: labium yellow; labrum, bases of mandibles, genae and anteclypeus dull olivaceous becoming pale bluish grey in adults; rest of head dull ochreous becoming blackish pruinosed. Prothorax and thorax dark ochreous or ferruginous on the dorsum and upper parts of sides, below which the sides are pale creamy yellow more or less pruinosed in the adult. Darker markings are a row of two or three dark metallic green spots close to and parallel to the middorsal carina; the two upper ones are irregularly quadrate and usually connected by a thin stripe of metallic; the lower spot is linear and nearly always slightly separated from the upper ones. All three may be connected to form a scalloped stripe, which, with its opposite, forms the characteristic oak-leaf design. On the mesepimeron there are two large irregular elongated spots, the upper one of which is angulated forwards below to meet the humeral suture. On the lower border of the metepimeron are found a large oval spot anteriorly and a smaller rounded one posteriorly. Beneath thorax two large black fusiform spots on the pectus. Legs sandy yellow, tarsi black; a black stripe running the length of the outer sides of femora. Wings hyaline very palely tinted with yellow especially along the costal borders in the adult; pterostigma pale to dark brown, the distal and proximal ends bordered with pale yellow, elongate, more than twice as long as broad, not swollen, covering two cells. Postnodals very variable in number, 10-12 in forewings, usually similar or one less in the hind. Abdomen sandy yellow, segments 7 to 9 dark reddish brown, 10 and the anal appendages bright ochreous becoming darker in adults; the tips of the appendages black. Segments 2 to 6 with black apical and pale yellow basal rings; the dorsum of these segments clouded with dark brown with a steely lustre in teneral, but becoming black in adults; this stripe deficient at the bases of segments where the yellow ground-colour comes forwards to form narrow basal yellow rings. Apically the dark dorsal band expands on each segment to form broad subapical rings. Anal appendages; superiors as long as segment 9, basal three-fifths moderately broad, with a sub-basal medial spine followed by a moderate medial expansion after which the appendage becomes somewhat clubbed and with the apical two-fifths turned down abruptly at a right angle finally tapering to a point which is curled inwards and ends with a tuft of short hairs. Inferior appendages almost lost, short conical processes closely apposed and without any armature by way of spines. The two superior appendages are curved evenly inwards and meet at the bulbous portion, after which the apical portions separate to form a pair of small callipers, the tines just meeting.



LESTES UNCIFER KARSCH AND L. PINHEIYI FRASER

FIGS. 1-8.—1 and 2, anal appendages of *Lestes uncifer* Karsch, seen from the dorsum and right side respectively; 3, thoracic markings of the male of the same species; 4, the same of the female (diagrammatic; the stippled areas are reddish brown); 5, 6 and 7, anal appendages of *Lestes pinheyi* Fraser, right lateral, dorsal and from behind respectively.

Female.—Abdomen 29-34 mm.; hindwing 22-24 mm.

Very similar to the male, but of a paler colouring and with the metallic markings more fully developed and therefore more conspicuous against the pale ground-colour. The abdomen usually darker on the dorsum and more decidedly metallic; the dorsal marking on segment 2 bisected by a fine yellow mid-dorsal line on the basal half of the segment; the apex of segment 9, the whole of segment 10 and the short conical anal appendages bright ferruginous. Postnodals as variable as in the male, 12 to 13 in the forewings, 9 to 11 in the hind. Ovipositor dull ochraceous, its apex falling slightly short of the end of abdomen.

Distribution: CENTRAL AFRICA: Rusape, S. Rhodesia; Katanga, Lubumbashi, Elizabethville and the R. Mubale in Belgian Congo. The species described by Pinhey as *uncifer* from S. Rhodesia is actually *pinheyi*; his description and figures leave no room for doubt. Pinhey describes the insect as 'flying actively among reeds around an open pool', thus indicating a habitat very usual for species of the genus. Type and allotype to be deposited in the British Museum (Natural History), paratypes in the Transvaal Museum, Musée du Congo Belge and my own collection.

Lestes uncifer Karsh (Pl. VII, figs. 1-4)

Male.—Abdomen 36-43 mm.; hindwing 22-27 mm.

Female.—Abdomen 34-39 mm.; hindwing 25-28 mm.

This species differs from *pinheyi* in its greater size, although occasional specimens of the latter are found approaching it; the usually stronger development of the oak-leaf pattern on the dorsum of thorax and finally by the very different form of the anal appendages. The superior ones are longer and, after a medial narrowing, taper gradually to the apices which end in a tuft of long hairs like a horse's tail. The subbasal spine is more robust, the medial expansion shorter and followed by a deep notch after which the appendage expands and then tapers away to the apex which is curved evenly downwards without an abrupt angulation. Usually the long apical portions are held crossed over one another and not doubly forcipate as in *pinheyi*. The inferior appendages are conical and terminate in a long robust spine which is sloped strongly upwards and backwards.

Distribution: the type came from the coast of S. Africa, but the species has since been reported from Lorenzo Marques, Portuguese East Africa and various parts of the Belgian Congo. Generally it is rarer but more widely distributed than *pinheyi*; usually it can be determined at once by its larger size, but a glance at the anal appendages will suffice to separate the two species. Nothing is known of its ecology.

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DESCRIPTION OF THE FEMALE OF *NOTOGOMPHUS FLAVIFRONS* FRASER
(ODONATA, GOMPHIDAE)

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Notogomphus flavifrons Fraser was described from two males from Matuga Forest, Kigezi, Uganda, collected by T. H. E. Jackson, June, 1951; the female has never been described although taken at the same time and place.

Female.—Abdomen, 35.5 mm.; hindwing 33 mm. Pterostigma variable in size in the fore- and hindwings, respectively 2.75 and 3 mm. The specimen has lost most of its colouring and markings, but such as are visible are similar to the male. Head: labrum black with a large citron yellow spot on each side, ante- and postclypeus black, frons rounded, broadly bright citron yellow save for the base above which is dark reddish brown; vertex black, as also occiput, but the crest of the latter thin and raised into a broad arch coloured bright citron yellow, which colour extends over the whole of its posterior aspect. Thorax with a greenish lecitine-shaped middorsal stripe, the rest as in the male. Abdomen black, its colours lost save for the sides of segments 8-10 which are broadly yellow. Ovipositor greatly abbreviated, but followed by two unique flattened plates with raised horse-shoe border (fig. 1). Anal appendages black, shortly conical. Wings hyaline, venation much as in the male—nodal index—15 antenodals and 12 postnodals in forewings, 10-11 antenodals and postnodals in the hindwings. An incomplete basal ante-nodal in all wings; *Cu1* and *1A* divaricate, separated by 5 cells at border of wings; anal loop well formed, of 2 cells; anal field 4 cells deep; *1A* in forewing pectinate, 4-branched. Pterostigma short and swollen, of variable size, pale yellow framed in black veins, covering 3 cells, strongly beaded.

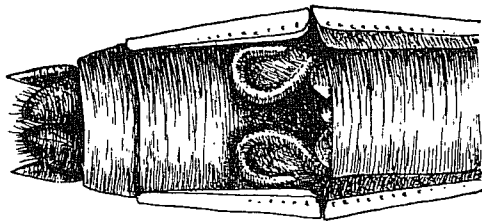


FIG. 1.—Female genitalia of *Notogomphus flavifrons* Fraser.

The species belongs to the group *lecythus* Campion, but differs in size and venational details; the anal field is only 4 cells deep instead of 5 or 6, *Cu1* and *1A* are widely divaricate in the hindwing instead of nearly parallel, the nodal index is considerably higher; lastly the character of the ovipositor is quite unique and differs from *lecythus* or any other species known. The same characters will serve to separate it from *N. longus* Martin, *N. immisericos* Campion, *N. stublmanni* Karsch, *N. nyassicus* Grun., *N. ruppelli* Selys, *N. clorsalis* Selys and *N. leroyi* (Schouteden); *N. agilis* Martin belongs to genus *Neurogomphus*. Other species of the genus also differ widely in their markings. Campion states that the anal field of the hindwing in *N. lecythus* varies from 4 to 7 cells deep, but this variation is so wide as to make it impossible for all to belong to the same species; the depth of the anal field in the Gomphidae is usually very stable.

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